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ARABIAN AEROSPACE

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FIGHTING FIT

ONE YEAR ON… AND GULF AIR IS CLIMBING – PAGE 115

comment

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Dubai Airshow rains supreme

Sandstorms followed by torrential rain caused the final day of the Dubai Airshow to be cancelled – the first time a day had ever been lost at any of the major global aviation events – but even this could not put a dampener on the event.

In recent years the show has been the scene of mega orders or commitments dating back to the original A380 pledges more than a decade ago.

The November 2013 event trumped all previous milestones with $206.1 billion worth of orders – the largest in any airshow history.

But it was more than just the sales figures, as Etihad and Qatar waded in to join Emirates in jointly providing the commitments to launch the exciting Boeing 777X programme.

This cooperation signified a change in the mood for the Dubai show, suggesting finally there is an acceptance that this is not just about Dubai investment, but is of great value to the aerospace industry in the UAE as a whole, across the Gulf states and even the rest of the Middle East, Africa and eastern Asia.

There was no better example than Abu Dhabi's Mubadala, which used the show to record a series of deals that, when put together, showed an emerging pattern of recognition of the company's competencies and of its strategy to become a player on the global aerostructure manufacturing and engineering stage.

All-in-all, the show was an overwhelming success, with organiser F&E claiming 60,692 trade attendees from around the world, along with 1,046 exhibitors from 60 countries and 1,735 international and regional media representatives.

The new venue at Dubai World Central worked well, with access to the show running smoothly for the visitors. The remoteness of the showground had its critics but its journey time and free-flowing traffic was a significant improvement on anything that Farnborough or Paris visitors experience. However, that same remoteness meant that gusting winds would move the sands of the surrounding desert across the roads, the parking lots and the airfield.

Dubai's successful selection as the World Expo 2020 will see a burst of activity in construction around DWC with new hotels, shopping malls, commercial properties and leisure spots – this will have an effect on the sands.

However, it won't stop the rain. If the exhibition halls at DWC are to become a permanent fixture and the Dubai show is to seriously challenge the supremacy of Paris and Farnborough, then the buildings have to be fit for purpose.

Thousands of litres of water pouring through the roof and ruining equipment and materials inside the show hall is unacceptable and threatens future potential. Torrential rain is no longer an oddity in Dubai and the owner of the property – Dubai Airports – needs to be sure that the halls, like the new passenger terminals, are ready for what the elements can throw at them and that Dubai can continue its progress with its reputation intact.

Safe landings.

Alan Peaford, editor-in-chief
Arabian Aerospace

COVER: Bahrain's Minister of Transportation Kamal bin Ahmed Mohammed. Picture: Ian Billinghurst.

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PREPARE TO ENGAGE YOUR SENSES.
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Atlantic's ocean of support

Atlantic FuelEx has launched another arm to its core business.

The Dubai-based company will now offer trip support services with the creation of Atlantic Flight Support. The offering comprises flexible commercial planning, flight operations, crew management, and operations recovery for commercial, business and military operations.

Alpha goes first again

The first new-generation ATR 72-600 has been sold into the Middle East.

Saudi Arabian private operator Alpha Star Aviation Services has signed a firm deal for a single aircraft, plus an option on a second. The first aircraft will be delivered in September 2014.

Riyadh-based Alpha Star, which boasts activities including aircraft management, charters and air ambulance services, was also the first Middle East operator of the ATR 42-600.

The smaller aircraft has been operating with the carrier since the end of 2012.

The operator has chosen a high-comfort layout for its ATR 72-600, seating 66 passengers. The aircraft can operate from paved and unpaved runways.

"Given the intense market dynamics, with a multitude of business opportunities in the region, Alpha Star needs more reliable, comfortable, and high-performance aircraft, such as the ATR 72-600, to better satisfy the rising demand in private transport," said company CEO Salim Al Muzaini.

Easing the suffering as A380s arrive

Emirates Airline, Airbus Corporate Foundation, and Action Against Hunger (ACF), have joined together to utilise future deliveries of A380 aircraft to Dubai to transport humanitarian support to the United Nations Humanitarian Response Depot (UNHRD).

A pioneering goodwill flight landed at the end of October with 31tonnes of cargo to support ACF's fight against hunger. It will be distributed where needed most.

The shipment travelled from the Hamburg, Germany completions centre to Dubai and is being stored in the UNHRD facility in the emirate. The food bars will be used to feed children, aged five and under, suffering from malnutrition.

This is the first long-term agreement the Airbus Corporate Foundation has made with a customer airline for goodwill flights. The Airbus Corporate Foundation has been working with ACF since 2009.

The maiden flights of up to four Emirates' A380s a year will be goodwill flights, arriving in Dubai with relief goods for the UNHRD.

Jetex launches FBO at World Central

Jetex Flight Support has launched a new full-service fixed base operation (FBO) at Al Maktoum International Airport at Dubai World Central.

The company said the launch capitalises on the growing demand for high-end executive travel in the UAE.

The FBO provides a VIP lounge, ground support, fuelling, handling, and security services. There is a concierge on site, and the FBO also offers catering and limousine services. There is complimentary Wi-Fi.

Adel Mardini, CEO said: "Dubai World Central marks the next chapter in Dubai's development as one of the world's leading aviation hubs. It makes absolute sense for us to be present there."

Satcom1 website aids customers

Airborne connectivity specialist Satcom1 has launched a new website, complete with features to assist customers in getting their satcom network upgraded for existing or new aircraft. Satcom1 will become a reseller of Inmarsat Global Xpress (GX) airtime when the Ka-band service launches.

Darwin and Etihad together for the Etihad Regional launch.

Role for the Swiss as Etihad stakes regional claim

Etihad Airways has launched its first branded regional operation, after taking a 33.3% stake in Swiss carrier Darwin Airline.

Darwin Airline will rebrand its operations as Etihad Regional and align its network to connect passengers from secondary European markets on to the main networks of Etihad Airways and its equity alliance partners.

Etihad Airways will also launch daily services on June 1 from Abu Dhabi to Zurich, which will become one of Darwin Airline's main operating hubs.

CEO James Hogan said: "This is a step-change for Etihad Airways. We are creating a unique approach to network development for global airlines.

"European travellers will now be able to connect from a far, far wider range of European towns and cities on Etihad-branded aircraft, through Abu Dhabi to our destinations worldwide. We are also linking the new Etihad Regional network into the key hubs of our equity alliance partners, bringing benefits to the customers of Airberlin and Air Serbia."

Darwin currently offers scheduled flights to 21 destinations in Europe, using a fleet of 10 50-seat Saab 2000 turboprop aircraft.

Abu Dhabi Aviation brings the first Bell

Abu Dhabi Aviation is the first commercial operator in the world to purchase a Bell 412EPI. The new helicopter will be used for offshore oilfield support in the UAE.

"The Bell 412 platform has been a vital part of our operations for many years. We chose to add the Bell 412EPI upgrade to our fleet for more flexibility and increased safety in the demanding environment in which we fly," said Khaled Mashhour, commercial director at Abu Dhabi Aviation.

Flydubai gets the bill – electronically

Flydubai's cargo division has begun implementing electronic airway bills (e-AWB) throughout its operations. The initiative aims to reduce the amount of paperwork needed for cargo deliveries, while streamlining the process between different entities.

Flydubai vice president - cargo, Mohamed Hassan, said: "Switching to electronic airway bills is an important milestone in the history of our cargo operations. With deliveries often requiring 20 or more paper documents each, the initiative keeps our costs at a minimum, allowing us to be more productive, more reliable and deliver orders with greater accuracy."

Mary Petryszyn with engineering student Mohammed Alshamsi.

Northrop's challenge is a great idea

Big ideas were very much on the agenda as Mary Petryszyn, vice president, international, Northrop Grumman Aerospace Systems, and Dr Tayeb Kamali, vice chancellor of UAE-based Higher Colleges of Technology (HCT) signed a memorandum of understanding to launch the 2014 UAE Innovation Challenge.

During the competition, Northrop Grumman engineers will mentor student teams from HCT – a community of approximately 20,000 students and 2,000 staff based on 17 campuses throughout the UAE – for several months as they design, build and fly unmanned aerial vehicles.

Abu Dhabi Autonomous Systems Investments has also signed up as an additional sponsor.

Surface support

Boeing's defence division and the UAE's Tawazun Precision Industries have signed an agreement to establish a production aerospace surface treatment facility in the UAE.

"This endeavour reaffirms our commitment to support the UAE aerospace industry," said Dennis Muilenburg, president and CEO of Boeing Defense, Space and Security. The project is scheduled to be commissioned in 2016 at Tawazun Industrial Park in Abu Dhabi.

Vertis expansion

Swiss-based Vertis Aviation has opened a new Dubai branch of its aviation charter business as part of its international expansion strategy.

Located in the Free Zone at Dubai World Central (DWC) Vertis is aiming to capitalise on the development of business aviation at the airport, and develop a broader customer network within the countries that form the GCC.

Al Raha's F-15 nod

Riyadh-based Al Raha Group for Technical Services has been awarded an estimated $45 million extension of an existing contract for third-party logistics, repair and return management services on Royal Saudi Air Force (RSAF) F-15s.

The modification adds a further six months to the existing basic contract.

Pilot scheme

Jetstream Aviation Academy has signed a long-term agreement with Saudi Arabian airline Nasair to provide pilot assessment and provisioning services.

Under the terms of the recruitment services deal, Athens and Dubai-based Jetstream will supply Nasair with Airbus A320-qualified captains and first officers.

The agreement covers recruitment, screening and assessment of candidates.

Flynas class act

Saudi Arabian value-carrier Flynas has launched a business class service on all its flights between the UAE and Saudi Arabia.

Marking Turkey as a delivery centre

Turkish Aerospace Industries (TAI) marked the delivery of its first F-35 Lightning II centre fuselage to Northrop Grumman and Lockheed Martin with a ceremony at its facility in Ankara, Turkey in December.

The centre fuselage will be installed into a US Air Force aircraft at Lockheed Martin's facilities in Fort Worth, Texas.

"Delivery of the first F-35 centre fuselage is a major step by TAI to demonstrate its commitment to adding value to the programme," said TAI president, Muharrem Dortkasli.

Once the programme reaches full rate production, TAI will support F-35 final assembly lines in the United States and Italy by shipping one centre fuselage every 10 days. TAI's centre fuselages will be integrated into the Turkish F-35 aircraft as well as other participating nations' aircraft.

"TAI has played an integral part in the development and production of the F-35 for more than a decade," said Steve O'Bryan, vice president of F-35 programme integration for Lockheed Martin.


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HP source for Honeywell products

Honeywell Aerospace has signed an agreement with Hawker Pacific (HP) to enhance its approved business and general aviation channel partner network in the Middle East.

The deal sees HP become a Honeywell avionics dealership and service centre, making it easier for business and general aviation operators to receive sales, installation and aftermarket support.

The contract covers Honeywell's wide range of avionics products and services, including navigation for the cockpit and satellite communication technologies for both the cockpit and cabin.

Saudi solutions

The online travel industry in Saudi Arabia is developing at a rapid rate with online bookings expected to exceed $1.9 billion in 2014, according to Travelport co-sponsored research.

GCAS gets IATA nod

The Gulf Centre for Aviation Studies (GCAS), the training arm of Abu Dhabi Airports, has been appointed as an IATA authorised training centre (ATC). With this appointment, GCAS will be able to diversify its course portfolio by offering globally recognized IATA cargo & dangerous goods courses. GCAS has also been designated as the IATA examination centre for Abu Dhabi.

Jetex expands

Jetex Flight Support started the New Year with the launch of operations at the major airports of Turkmenistan – Ashkhabad (UTAA), Turkmenbashi (UTAK), and Turkmenabad (UTAV).

Jetex will provide a comprehensive range of flight support services, including ground handling, fuelling, trip planning, permit arrangements and credit facilities in Turkmenistan.

A team of dedicated professionals will provide concierge support, including hotel bookings, catering arrangements and ground transport.

Jordan jubilee

His Majesty King Abdullah II of Jordan joined his country's national airline, Royal Jordanian, on December 22, in a celebration to mark the carrier's 50th anniversary.

SMS message

Fujairah-based MRO company Skyone Maintenance Services (SMS) has signed a business alliance agreement with Lockheed Martin's Kelly Aviation Center (LMKAC), a provider of engine MRO services.

LTMES can clean up with wash service

Lufthansa Technik Middle East Services (LTMES) is to expand its business in the Middle East by providing its Cyclean engine wash service in Dubai and at regional airports. There are already more than 30 Cyclean stations around the world.

The engine-cleaning process frees the engines, in particular the fan and compressor blades, from dirt such as sand, mud, dust and pollen, increasing engine performance and reducing fuel consumption by up to 1%.

"For us and our customers, the performance of the engines, protecting the environment by reducing CO2 emissions, and cost savings from extended on-wing time, are foremost considerations," said Oliver Winter, Cyclean programme manager at Lufthansa Technik.

At the same time, LTMES will increase on-site technical services for nacelle components.

Mike Arcamone, president, Bombardier Commercial Aircraft, and Iraqi CEO, Captain Saad Al-Khafaji, celebrate the carrier's CSeries order.

Iraqi Airways Cs the moment

Bombardier Aerospace broke its nine-month CSeries sales drought with an Iraqi Airways order for up to 16 CS300s.

The airline's CEO, Captain Saad Al-Khafaji, said the carrier had firmly ordered five, with 11 options to be exercised in two batches of five and six. The first CS300 will be delivered in Q1 2016, with all delivered within 12 months. They will be in a two-class, 12 plus 122-seat configuration.

Iraqi Airways already operates Bombardier's CRJ900, although the CSeries would take on longer sectors, said Captain Al-Khafaji.

Pegasus wings

Pegasus Asia, the joint airline brand formed by Turkey's Pegasus and Kyrgyzstani airline Air Manas, has welcomed a new Boeing 737-400 to its fleet.

New Legacy

Embraer Executive Jets' newest aircraft, the fly-by-wire super-light Legacy 450 jet, made its successful first flight on December 28.

CANSO can do

The Civil Air Navigation Services Organisation (CANSO) – the global voice of air traffic management – has invited air navigation service providers and ATM industry stakeholders to attend its fifth Middle East conference, which will be held in Amman, Jordan on February 3-5 2014.

The Beech is back

Textron, the corporate owner of Cessna aircraft, has reached a $1.4 billion deal to buy competitor Beech Holdings, the manufacturer of Beechcraft aircraft, including the top selling King Air family.

Jazeera fleet hits 14

Jazeera Airways has taken delivery of a brand new Airbus A320, bringing its total fleet number to 14.

Turkish checks in

Turkish Airlines will install 80 new self-service check-in kiosks from SITA, in three of Turkey's busiest airports, to enhance customer service for its 38 million annual passengers. SITA doubled its New Year success with a contract to supply kiosks to Kuwait International Airport.

Vision on

CAE has signed a contract to supply a Global Vision simulator to Emirates-CAE Flight Training in Dubai.

HammerHead hits maiden flight target

The P.1HH HammerHead unmanned air vehicle (UAV), produced by Mubadala-owned Piaggio Aero in conjunction with Selex ES, has completed its maiden flight. The event took place at the Trapani 'Birgi' Italian Air Force base in November.

The UAV was flown from a ground control station, which allowed for testing of the navigation system and verification of its manoeuvring capabilities in both manual and automatic flight modes.

One giant step to Paradise

Air Mauritius has signed an enhanced commercial agreement with Dubai-based Emirates Airline, which will see the African airline codesharing with the Gulf carrier, allowing the tourism hotspot to extend its route opportunities.

Emirates responded to the arrangement by launching a daily A380 service to the Indian Ocean island from Dubai.

Monarch meets UAE rules

Monarch Aircraft Engineering (MAEL) has successfully carried out a General Civil Aviation Authority (GCAA) CAR 21 design approval repair scheme for cabin interior products in the UAE.

DWC gets its first national carrier

Gulf Air received a traditional water cannon salute as the Bahrain national carrier made its debut arrival at Al Maktoum International Airport at Dubai World Central in December, making it the first full-service carrier to begin operations to the new airport.

Tunisian Tigers aiming for upgrade

The US Defence Security Cooperation Agency (DSCA) has notified Congress of a possible foreign military sale after Tunisia requested a block 1 avionics upgrade for its 12 surviving F-5E/F Tiger II fighters.

Tunisia took delivery of eight new F-5Es and four new F-5Fs between November 1984 and March 1985, the type replacing MB326 armed trainers, which had supplanted the F-86F Sabres delivered in 1969. Four ex-USAF F-5Es bolstered the fleet in 1989.

The F-5E/F is Tunisia's principal air defence aircraft, and serves with the Force Aerienne de la Republique de Tunisie's 15 Squadron at Bizerte-Sidi Ahmed Airbase.

The need for an upgrade has been recognised for some years, since the aircraft have relatively modest capabilities, and are not able to effectively interoperate with likely coalition partners.

The Tunisian Air Force sent a delegation to Talavera AB in Spain in July 2009 to study the upgraded Spanish CASA/Northrop F-5Bs, with a view to commissioning the Spanish firm to undertake a similar upgrade to Tunisia's F-5E/Fs.

The proposed upgrade would be centred around the installation of a Northrop Grumman LN-260 standard positioning system GPS/INS, together with the necessary control/display units, and upgrades to electrical power, and environmental control systems.

The work would be carried out by Northrop Grumman and would take two years.

The modest nature of the upgrade would seem to make it something of an interim fix, pending the replacement of the F-5s with a more modern fighter. Tunisia is known to have had negotiations with Qatar for the possible purchase of 12 Mirage 2000-5 fighters.

Saudia has runway excursion

Flights were suspended at the Nigerian capital's Nnamdi Azikiwe International Airport in Abuja following an incident with a Saudia cargo aircraft on December 5. Described as a "serious incident", the Boeing 747 cargo aircraft overran the runway into a maintenance area of the airport before bursting into flames. The fire was promptly put out and there were no reported casualties.

Etihad scores a Gol in Brazil

Etihad Airways and Brazil's low-cost airline, Gol Intelligent Airlines, have implemented an interline e-ticket facility to provide seamless booking and ticketing opportunities for both airlines' passengers.

Thales signs new Iraq airspace deal

Thales is to lead the way in the modernisation of Iraq's airspace.

The European company signed a contract with the Iraqi Civil Aviation Authority (ICAA) to deliver a TopSky-ATC centre in Baghdad. This is in addition to the air traffic control centre equipped in Basra in 2007.

Thales will also supply three latest generation RSM970S secondary radars to the ICAA, which will complement Iraqi air space coverage.

This contract brings the total number of Thales air traffic management centres and towers in the region to 16; in addition to the radar coverage provided to the United Arab Emirates, Kuwait, Iran, Saudi Arabia, Qatar, Egypt and Pakistan. The company also supplies the navaids, which cover the entire region.

Indian row rages as air deal is signed with UAE

The UAE has finally signed a controversial extensive air services agreement (ASA) with the government of India, which opens the way for increasing numbers of flights and more travel opportunities for Indian citizens.

The agreement, which allows scheduled flights of any type of service (passenger or cargo) between both states, was signed by Saif Mohammed Al Suwaidi, director general of the UAE's civil aviation authority (GCAA) – pictured right, and Dr Prabhat Kumar, joint secretary of India's civil aviation ministry.

Al Suwaidi stressed the importance of the agreement, which, he said, would further boost travel and trade between UAE and India.

Unusually, the bilateral Indian agreement had to be approved by the country's prime minister and his cabinet, as it was becoming confused with an equity investment by the UAE national carrier Etihad in Jet Airways, which had seen additional capacity granted between India and Abu Dhabi.

The arrangement saw strong objections from several political leaders, who had demanded that the government reconsider the decision and freeze the agreement citing, among other things, adverse impact on the operations of India's airlines and airport operators.

Speaking at the Centre for Asia Pacific Aviation (CAPA) World Aviation Summit, Sir Tim Clark, president of Emirates airline, said the Indian market has remained relatively suppressed and foreign carriers had been indirectly held back by domestic politics.
(See story page 40.)

UAE launches biofuel industry

Etihad Airways, Takreer, Boeing, Total and the Masdar Institute of Science and Technology, are collaborating to develop a sustainable aviation biofuel industry in the UAE.

BIOjet Abu Dhabi will focus on research and development and investments in feedstock production and refining capability in the UAE and elsewhere.

The 'home-grown effort' was proven last month with a 45-minute demonstration flight in one of Etihad's Boeing 777s, partly powered by Abu Dhabi sustainable aviation biofuel, converted from plants by Total and refined into jet fuel by Takreer, a wholly-owned subsidiary of Abu Dhabi National Oil Co (ADNOC).

SAEI signs

Saudia Aerospace Engineering Industries (SAEI) has awarded a turnkey construction contract for a new 14-metre engine test cell facility in Jeddah, to Safran subsidiary Cenco.

When the facility opens in 2016 it will test GE90-94/115 engines, as well as all the current engine programmes, such as CFM56-5B / 7B, CF34-8E / 10E, CF6-80C2D1F, B5F and V2500-D5.

It provides growth for future engine programmes, such as Rolls-Royce Trent 700/900/1000, and GE Aviation GEnx-1B / 2B.

Kuwait renewals

Kuwait Airways has signed a contract with Airbus to buy 25 new aircraft and lease 12 others. The company will start to receive the new planes from the second quarter of 2014.

Wings play

Libyan Wings has signed an MoU for three A350-900s and four A320neos.

"The A350 XWB and A320neo will play a significant role in ensuring that our new airline operates one of the most modern and efficient fleets in the Middle East region," said Wisam Al Masri, the start-up's chairman.

"With these fuel-efficient aircraft, we can offer passengers the highest levels of comfort on both long-haul and shorter regional routes, while benefitting from the lowest operating costs and best environmental performance."

Joining the Q

Abu Dhabi Aviation signed a letter of intent at the Dubai Airshow for two Q400 NextGen aircraft from Bombardier, in a deal valued at $70 million. The airline is a long-time Bombardier Q-Series aircraft customer.

POD cast for UAVs

Rubb Buildings used the Dubai Airshow to launch a new UAV hangar.

The UK company unveiled the 12 metre x 28 metre aluminium-framed UAV POD, which is the seventh product to be introduced to Rubb's expeditionary forces aircraft shelter system (EFASS) range.

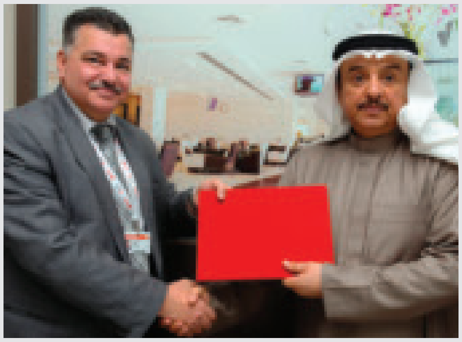
The new lightweight hangar is designed to suit military loading (100kg/m2 snow loading and 41.6m/s effective wind speed), and rapid erect, with minimal use of machinery to aid construction. It can fit into containers when not assembled.

My suite Lord

Lord Corporation, a US-headquartered diversified technology and manufacturing company, has opened its office in Dubai to tap into the MENA aerospace, construction, infrastructure and transport domains.

The office, in the Dubai Airport Free Zone's east wing, was opened with a ceremonial ribbon-cutting on November 21.

JorAMCo wins Gulf Air deal



Jordanian engineering company JorAMCo has won the contract to provide C-checks and other heavy maintenance on the Gulf Air fleet

Gulf Air's acting CEO, Maher Al Musallam (right), and Husam Zayed – vice president commercial at JorAMCo, signed the agreement in January.

"JorAMCo's vast experience and high quality technical expertise in the area of airframe maintenance is the primary reason we selected the company as our MRO provider. Secondly, their close proximity to Bahrain has the added benefit that our aircraft will no longer have to leave the region for maintenance, thereby improving efficiency, decreasing turnaround time, reducing ferry charges and ultimately lowering Gulf Air's operational costs, while maintaining the highest quality of safety standards," Al Musallam said.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Arab Wings to get new Lineage

Jordanian business aviation operator Arab Wings has ordered an Embraer Lineage 1000.

The aircraft will be managed on behalf of an undisclosed customer and be available for third-party charter. It will join a super-midsize Legacy 600 and large Legacy 650 already on Arab Wings' AOC, operating out of its Jordan base.

Delivery of the aircraft is scheduled for the first semester of 2014.

Air Algerie leads the ATR push

Air Algerie has signed a purchase agreement for three new ATR 72-600s. The contract value is $74.1 million at current list price.

Entry into service is expected from the end of this year.

When delivered, the 68-seat newcomers will join an existing ATR fleet that includes 12 ATR 72-500s, flying primarily on domestic and short regional routes.

The order consolidates Air Algerie's position as the largest ATR operator on the African continent and the MENA region.

The airline also announced a commitment for eight Next-Generation 737-800 aircraft.

Royal Jet in seventh heaven

Abu Dhabi-based international luxury flight services company, Royal Jet, set an unprecedented record by winning the 'world's leading private jet charter' title for the seventh consecutive year at the prestigious World Travel Awards (WTA).

At a glittering ceremony at the La Cigale Hotel in Doha, Qatar, attended by CEOs of leading travel companies, government ministers and tourism board chiefs from around the world, Royal Jet's chief commercial officer, Fahad Wali, (pictured above) received the award from Graham Cooke, chairman and founder of the awards.

"The World Travel Awards are regarded as the 'Oscars' of the travel industry and we are extremely proud to be recognised as the best for a record seventh consecutive year," said the operator's president, Shane O'Hare.

JorAMCo's repeat

Jordanian MRO specialist JorAMCo has signed a repeat contract with hybrid carrier Flydubai to provide the UAE-based airline with 'C' checks for its 737-800 aircraft due for maintenance services throughout 2014.

JorAMCo will also be carrying out cabin modifications on Flydubai's fleet, including the addition of business class seats. New Satcom and Lumexis IFE systems will also be installed.

Landing injures 29

Twenty-nine people were injured when a landing gear failure on a Saudia Boeing 767, on its final approach to Madinah Airport in western Saudi Arabia, led to an emergency landing.

The B767 is believed to be leased to Saudia by Orient Thai Airlines to carry passengers heading to Saudi for Umrah. The flight originated from Mashad in north east Iran.

AACO date set

The Arab Air Carriers Organisation (AACO) has announced the date of its 47th annual general meeting for November 18-20. The event will be held in Dubai and will have the theme 'Arab Aviation Summit for the Future'.

Danzas builds the right chemistry

Danzas AEI Emirates has broken ground for its airfreight and chemical logistics facilities at Dubai World Central (DWC).

The buildings are due for completion by November.

The airfreight operations facility will contain two fully equipped 7,500sqm chambers that will integrate with airfreight movements to and from the Al Maktoum International Airport.

Police mission

Bell Helicopter has delivered the first seven of 15 Bell 429s to the Turkish National Police ahead of schedule. The aircraft will be used for a wide array of law enforcement missions, including surveillance, personnel transport and air support of ground operations.

Air Mall

Low-cost carrier Air Arabia has launched a Sharjah city check-in terminal in Safeer Mall, Sharjah.

The new facility is equipped to accept baggage, which is then sent straight to Sharjah International Airport. Passengers can check-in 24 hours before their flight and up to four hours before departure.

Mike Creed and Perry Orr promoting the MD range.

MD Helicopters on a new Quest

Dubai-owned Quest Aviation Solutions is looking east. Following a successful Dubai Airshow appearance, where it was named as the UAE's exclusive dealer for MD Helicopters, it has now spread its rotors to India and China.

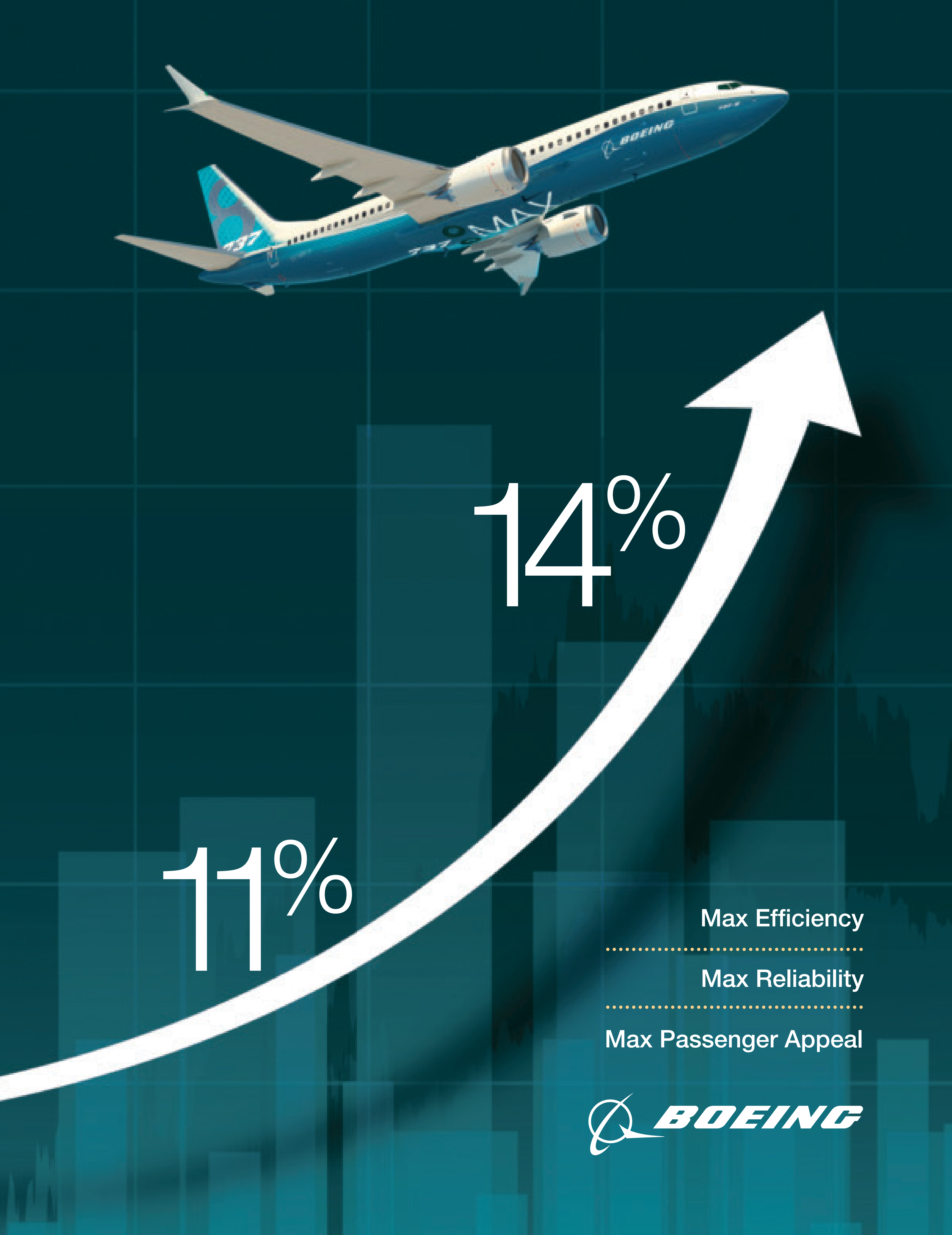
Quest is to take on sales of MD's multi-mission family of helicopters in both countries. It will support India and China from sales offices in Bangalore and Beijing.

"We are delighted to have been appointed by MD Helicopters as their agent in China and India to complement our exclusive sales status role in the UAE for the MD product range," said Quest Aviation commercial director Mike Creed.

"Both of these markets have vast potential, especially for special missions such as emergency medical services and police applications, and we look forward to selling these extraordinary helicopters to two of the fastest growing markets in Asia."

MD Helicopters will open an office in China next year. "We are extremely satisfied with our partnership with Quest and look forward to broadening our relationship beyond the UAE," said Perry Orr, MD Helicopters director for the Middle East and Africa.

To date there are no MD helicopters in the UAE but an aircraft displayed at the Dubai show is in service with Qatar's Gulf Helicopters, and has supported the Hamad Hospital in Doha since 2008.


14%
11%
Max Efficiency
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Environmental legislation, consumer rights, and airspace capacity emerged as the main talking points of the Arab Air Carriers' Organization (AACO) 46th AGM in Doha.
Alan Dron *was there.*

TEFFAHA: A MAN ON EMISSION

The overall mood in Doha remained optimistic. AACO secretary-general Abdul Wahab Teffaha noted that anyone wanting to witness the pivotal role civil aviation played in economic development should come to the Middle East – and particularly the Gulf.

However, he again raised longstanding concerns over continuing restrictions on free market access under the Damascus Convention, and the need to allow airline consolidation across national borders.

The Damascus Convention had to be transformed from a set of principles to a reality, he said.

He accepted that "this transformation is not easy, especially when some Arab airlines have not yet reached the stage that would allow them to enter immediately into a total liberalisation process".

Nevertheless: "Liberalisation of air transport has become the norm. Non-liberalisation is the exception. Clinging to the exception will only lead to unpreparedness in dealing with liberalisation when it happens."

However, the topic that undoubtedly aroused most anger during the two-day conference, was the European Commission's (EC) unexpected move to reinstate aspects of its controversial emissions trading scheme (ETS).

The original ETS would have seen non-European Union (EU) airlines paying a levy on the entire length of sectors that originated or terminated at EU airports; that was suspended while the International Civil Aviation Organization (ICAO) tried to hammer out a global emissions scheme.

Loads better

AACO airlines recorded a 14.2% increase in passenger numbers and 15.4% rise in revenue passenger kilometres (RPKs) in 2012, hugely outstripping the average global growth rate of 4.6% and 5.9% respectively for those categories, the AGM heard.

Despite the growth in passenger numbers, close control of capacity meant that average load factors across AACO members had risen 2%, to 71.6%, a figure that was expected to be maintained in 2013.

In 2012, AACO members had recorded net profits of $400 million, despite the fact that this average figure had been dragged down by some individual carriers sustaining losses.

It had been assumed that ICAO's success in agreeing to develop global market-based measures by 2016 would have removed the need for the ETS. However, to general astonishment and fury, the EC decided shortly after the ICAO announcement to propose a modified ETS that would still impose a levy on non-EU airlines, based on those sections of their routes that fell inside EU boundaries.

In his 'state of the industry' speech, Teffaha took aim at the EC proposals. He noted that three years of hard work and compromises by both the industry and governments had resulted in an historic agreement.

With that achievement just days old, he added: "The least we can say is that we were surprised by a proposal coming from the EC straying away in substance from what was agreed at ICAO."

This, he said, again raised the spectre of a trade war between the EU and non-EU nations, especially as the EC's new proposal had already been rejected by almost every non-European state – as well as some within Europe – during the ICAO meeting.

"This proposal does not encourage countries to reach an agreement in 2016," he said. How could the countries of the world work seriously to reach an agreement when they had seen the EU "renege on a previous one and choose a unilateral action that the rest of the world have already rejected?"

Moving on to passenger rights, he said these had mushroomed into multiple regimes that added burdens to airlines without necessarily giving passengers corresponding benefits, due to overlapping and contradictory national rules in a global industry. ICAO was the best forum for harmonisation of global passenger rights, he insisted.

On the issue of increasingly cramped airspace, he said that progress was falling behind the creation of new airport infrastructure.

Air traffic control bottlenecks had reached the point that necessitated "galvanising efforts to an urgent remedy for the bottlenecks". These should include establishing new routes, new technologies to maximise air transport capacity, and reducing restrictions caused by the large areas of military airspace in the Gulf.

"I am extremely hopeful that, with the help of [AGM chairman] Akbar Al Baker, other CEOs and governments, we will be able to address these issues very quickly. Unlike other governments elsewhere, governments in this region are very aware of the importance of the air

transport industry to the economy of the region."

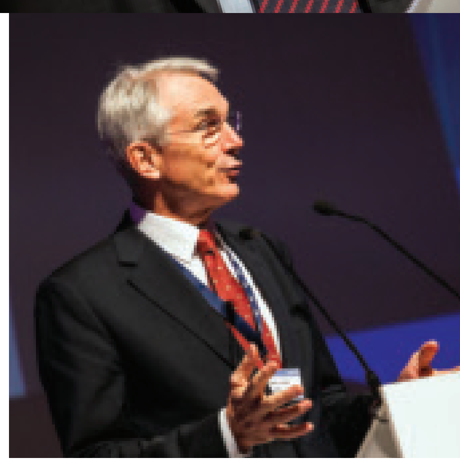
Following Teffaha's speech, Tony Tyler, director-general of IATA, noted that the airline business in the Gulf was "going from strength to strength but airlines in areas like Egypt and others continue to go through difficult times".

Aviation, said Tyler, had changed the world for the better and much of that progress was due to the laying down of global standards. IATA's operational safety audit (IOSA) was a prime example of this. While it was not a guarantee of safety, airlines that had adopted it had been shown to have better safety records than those that had not. He recommended that governments incorporate IOSA into their national regulatory regimes, as countries such as Egypt and Bahrain had already done.

Passenger rights

Like Teffaha, he hit out at conflicting and overlapping passenger rights throughout the world. Aviation was already a highly regulated industry, but more than 60 countries had introduced legislation specific to aviation, creating extra costs and confusion for both airlines and passengers. "This goes beyond what is imposed on other industries." Governments should undertake a cost-benefit analysis before any new regulation or tax was introduced.

Returning to the Gulf region, he endorsed AACO's calls for the opening up of more airspace in the area to cope with booming traffic levels. "Only around 50% of airspace in the region is open to civil aviation and we are already seeing delays becoming commonplace and that will only grow. The system could slowly disintegrate. One solution is unlocking military airspace."



Taking the floor: Top: Wahab Teffaha. Centre: Tony Tyler. Above: Henrik Hololei

Air traffic capacity problems were not unique to the Gulf, he added; the lesson to learn from the long-delayed single European sky project was that political will was required to usher in change.

Asked later what progress was being made with military authorities on the airspace issue, Teffaha said: "They are listening [to us]."

Tyler said it was no exaggeration to say that the EC's response to the ground-breaking ICAO deal to limit CO_2 emissions had been "greeted with disbelief, shock and horror".

Sort this out

He warned: "Governments will need to sort this out and we call on them – particularly European governments – to do so."

Speaking afterwards, a senior EC official seemed almost to be attempting to distance the Commission from the new ETS policy. Henrik Hololei, head of cabinet for EC transport vice-president Siim Kallas, insisted that the EC had merely made a suggestion and that the final decision would lie with legislators from across the European Union in the organisation's parliament. "The Commission is only an initiator; it is the European Parliament who have to approve, amend or reject it."

He argued that EU pressure, in the form of the previous proposed ETS legislation that had been suspended to give ICAO an opportunity to come up with a global solution, had accelerated the agreement.

Dubai and the deal good factor

Aviation analyst **Saj Ahmad** *looks at the headline news from the Dubai Airshow and concludes the deals by the 'big three' Gulf carriers have changed the market forever.*

The 2013 edition of the Dubai Airshow is one that will echo in the pages of aviation history. The venue stamped its authority on the world in the same way that the UAE has led the way in developing airports, infrastructure, transport and, of course, airlines.

But, at the same time, the wider GCC airlines that have also plied their trade to reach dizzy heights emerged from the shadows to demonstrate that their headline-making buying power was not just to make the front pages; it was a long-term vision of intent.

A quick look at the 2013 Dubai Airshow vital statistics shows why the show will now be considered "the place" to do business – ahead of both Farnborough and Paris. They included:

- Largest air show in the world for deals;
- More than $206 billion worth of deals;
- More than 60,000 trade/industry attendees;
- The biggest-ever commercial launch of a new aircraft.

It is that final point that leads us to this juncture. For the best part of five or more years, Emirates' president Tim Clark had almost "hounded" jet maker Boeing to the point of virtual submission.

Clark's desire? A revamped 777-300ER that would form the backbone of the Emirates fleet for the next 20-30 years.

But it was Etihad that actually got the airshow order frenzy under way.

In ordering 25 Boeing 777X jets (eight 777-8Xs and 17 777-9Xs), Etihad became the first airline to buy the 777-300ER-sized, long-range 777-8X jet. It will be one of the (if not the launch) customers for the new variant.

But Etihad didn't stop there. With the new Abu Dhabi terminal ready to open in 2017, it wanted to make known that it was ready to explode on to the world stage – faster than its preceding 10 years.

It ordered 30 new 787-10s – a jet only launched a few months earlier at the Paris Airshow – making it the single biggest customer for the 787, while adding 10 Airbus A350-1000s, 40 A350-900s, 26 A321neo, 10 A320neo and one A330-200F, worth a whopping $45 billion in total.

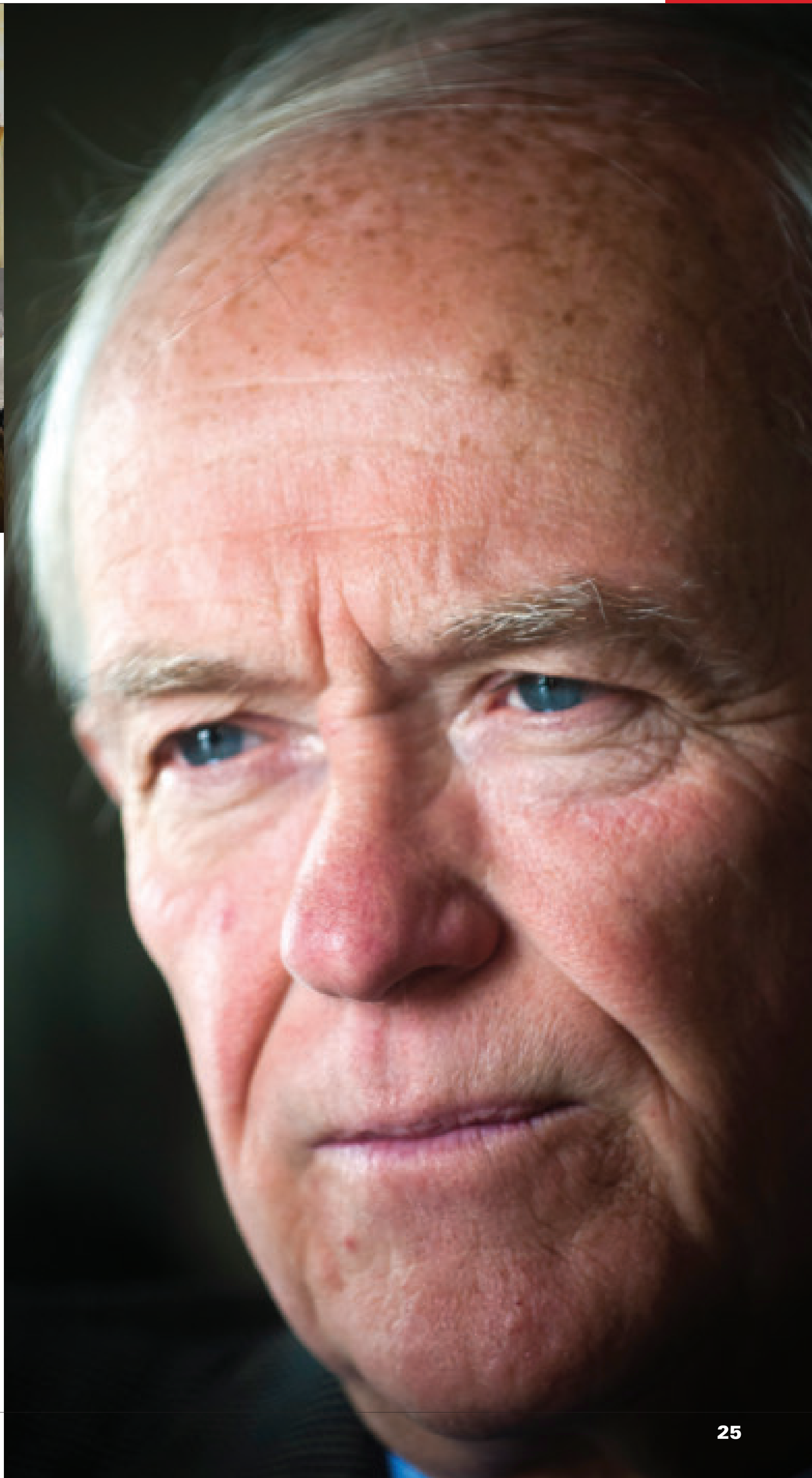
Qatar Airways ordered five A330-200Fs alongside 50 777X jets. At the time of writing, Qatar had not revealed how the 777X order would be split between the 777-8X and 777-9X.

As expected, Emirates made two big splashes. First off was the $76 billion-plus deal for 150 new Boeing 777X jets, comprising a mix of 35 777-8X and 115 777-9X aircraft. That was quickly followed by a deal with Airbus for a further 50 A380-800s – taking its total orders for the type to 140. It now means the airline holds almost half the A380 orders to date.

The A380 deal was a surprise, given that no one had expected to see Emirates buy more when all the focus and speculation before the show had been solely on the size of the impending Boeing 777X order.

Emirates has made no secret of the fact that it can't operate all 140 A380s in one go.

Dubai Airport is undergoing expansion at a current cost of some $7 billion and Tim Clark has noted on numerous occasions that the A380 fleet size is restricted by the physical available



Top left: Etihad's James Hogan (centre) and Boeing's Ray Conner shake on the milestone deal. Top centre: The heads of Qatar Airways, Emirates group and Flydubai prepare for the mega-sales announcement. Above: Boeing unveil the model that details the 777X at the Dubai Airshow. Right: Emirates CEO Tim Clark continues to build the fleet.

footprint at the airport to accommodate the leviathan quad-jet.

Equally, of the 50 Airbus A380s that Emirates ordered, itself a potential record order for Airbus and the A380 worth around $20 billion, many will be used to replace the oldest, overweight and heavily modified A380s that were subject to a litany of changes in the wake of the wiring fiasco that led to heavy delays for customers.

The balance of that order will be used to complement Emirates' international expansion and growth plans, while allowing it to increase capacity on slot-constrained routes. Emirates already swapped its 777s for A380s out of London Heathrow Airport as one way to get around the capacity issue – if only because the airline continues to experience such massive demand from a vital gateway such as Heathrow.

Many will have seen the A380 order as something as a double-edged sword.

Some will say that it's a good for the A380 programme because it helps boost a dwindling backlog. But, at the same time, many, including myself, criticise the A380s dependency on just one airline – an airline that now has almost half the entire A380 order book under its wings.

Of course, you'd never trade Emirates for another airline to be

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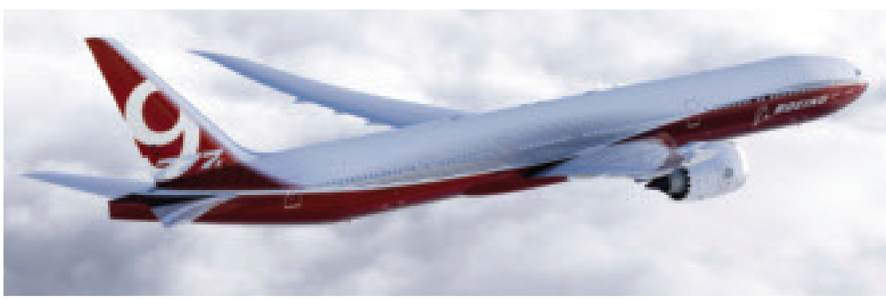
holding that much of a backlog for just one aeroplane, but at the same time, the weak market demand for the A380 spawned an opportunity for Boeing – ironically with Emirates.

That was the 777X family.

Boeing secured 259 orders and commitments for the 777X family at the Dubai Airshow launch with 150 solely for Emirates. On paper, Emirates has almost two-thirds of the entire 777X backlog – more than it has on the A380. However, the difference here is that the 777X will build on the huge installed base of current 777 customers and that proportion held by Emirates will plummet.

The emphasis on Emirates' huge 777X order cannot be underestimated.

With the Dubai Airshow debuting at its new permanent home in Dubai World Central at Al-Maktoum International Airport, it is fitting that the Dubai-based Emirates used the opening day to not just launch the 777X programme, but to catapult itself on to the world stage with such vigour, that every single airline around the globe will sit up, take note and fear the muscle that Emirates is so eager to flex as it aims to cover the Earth with one-stop connections via its hub in Dubai.



The Boeing 777X family launch boosted the Dubai show.

Emirates will not be using all 150 777X jets purely for expansion.

The decision to lock in so many 777Xs is based on two fundamental reasons. The first is that the today's 777-300ER will not last forever in its current guise. It is technological progression that allows OEMs to develop and launch new jets. The 777X is a culmination of just such a strategy at Boeing, leveraging the 787 technologies with lessons learned on how to better manage development and provide airlines with a bigger, more fuel-efficient aircraft that lowers costs and provides additional revenue-generating capabilities for airlines. In that regard, replacing the 777-300ER was always on the cards.

Secondly, Emirates was acutely aware that demand for the 777X would be so strong if they bought it that airlines would be queuing round the block for it. The 777X will ultimately follow the same sales success that the 777-300ER has seen, and it's no surprise, therefore, to learn that Emirates worked with Qatar Airways to define the 777X family.

They both looked at what performance, payload and range they needed to service existing routes, as well as new city pairs. Given the geographic proximity between Doha and Dubai, as well as the climate similarities, both carriers provided much-needed input to the 777X from an early stage. So, then, to see them sitting side-by-side at the official press conference on the opening day of the show, the world knew immediately that this was a massive deal in more ways than one.

Akbar al-Baker has made no secret of the fact that he'd like to see Qatar Airways and Emirates form a closer alliance. Even Tim Clark is receptive to the idea – but both men are acutely aware of the opposition it would have from some quarters.

You only have to look at both airlines having a vested connection with Qantas to see that there is more commonality for them than meets the eye. As part of a five-year pact with Qantas, Emirates knows only too well that this is a carrier in the Oneworld alliance, which Qatar Airways has signed up to and vice-versa.

We've come to learn that the 777X negotiations involved both Qatar Airways and Emirates – now they have a link via Qantas too. It wouldn't take much to push Qantas out of the way and meet hand-in-hand to take their Middle East travel nexus and exploit it – and, with one fell swoop, castigate their Asian, European and American airline rivals with such ferocious power.

With Qatar Airways and Emirates acknowledging and being supportive of the other, it would not be entirely out of the question if, at some point, they converge their activities in one form or another. They certainly converged their press conference and there is every possibility that they will try, at some point, to go beyond that PR platform.

But, the stage was not entirely monopolised by two of the 'big three' airlines – a deftly placed model of a 737 MAX on the table in the colours of Flydubai equally piqued the interest of those at the press conference.

This opening day of the Dubai Airshow was making more than headlines. It was making poetic aviation history. While the Emirates order for 150 Boeing 777X jets was a big deal, in my mind, the deal for up to 100 new 737 MAX 8 jets for Flydubai was simply breath-taking. That's before you include the additional 11 Boeing 737-800s that the carrier ordered!

As, arguably, the world's fastest-growing low-cost airline, Flydubai has only been in operation for a little more than four-and-a-half years and, in that time, it has gone from strength-to-strength.

A notable UAE airline absent from the airshow ordering bonanza was Air Arabia, but it will have looked at the colossal order from Flydubai with an air of trepidation.

CEO Ghaith Al-Ghaith has opined on several occasions that he'd like to see Flydubai turn into a "triple-digit airline" – triple digit destinations and triple-digit fleet size. The airline has recently elected to move away from the low-cost moniker and, instead, focus on providing affordable, flexible and reduced fares for passengers.

With a fleet of 34 737-800s today and a further 16 to arrive before the end of 2015, Flydubai has already amassed nearly 70 destinations since its June 2009 inaugural flight to Beirut.

The 11 new 737-800s will serve as a capacity bridge until its new 737 MAX 8s start arriving in late 2017 – but the sheer scale of its order demonstrates that the pace at which Flydubai has grown will be increased at an even more frenetic rate.

It is just a matter of time before the airline smashes through the 100-destination barrier and, while its fleet may take a good few years to match that number, you can be assured that this initial 737 MAX order is not over and done with.

The airline will need another 50 737 MAX jets to eventually replace the current 737-800s. What we're seeing is an explosive response to growth led by demand from passengers who want low fares all the time, to cities that previously were not served out of Dubai by any airline.

In times gone by, it was American, European and Asian airlines that were seen as the traditional market players who launched new airliners – particularly the pricier wide-body jets. But the 777X orders from the Arab 'big three' airlines highlight more than just a tectonic shift.

The sheer scale of the 777X deal with Emirates alone is unlikely ever to be repeated until such time that the 777X itself needs replacing. That's not going to happen for a couple of decades at least – and even then, who'd bet against Emirates breaking that record order with something even bigger?

Arab airlines have weathered the storms of the post-911 era, the recent financial meltdown, and turbulent oil prices, while having to adapt to the regional turmoil seen in places like Libya, Egypt and Syria. Yet, all the while, they are still growing at double-digit rates –faster than any other region in the world – and the need to secure new generation jets has become even more of a "must" for them than ever before.

The Middle East has the fewest number of old jets to replace – but it does need more of the newest wide-bodied aircraft to continue its momentum.

The Dubai Airshow gave the 'big three' the platform to show the world just how serious they were about developing the 777X family – and it is fitting that the world's biggest and best twin-engine, twin-aisle airplane was launched by the best three airlines the world has ever seen.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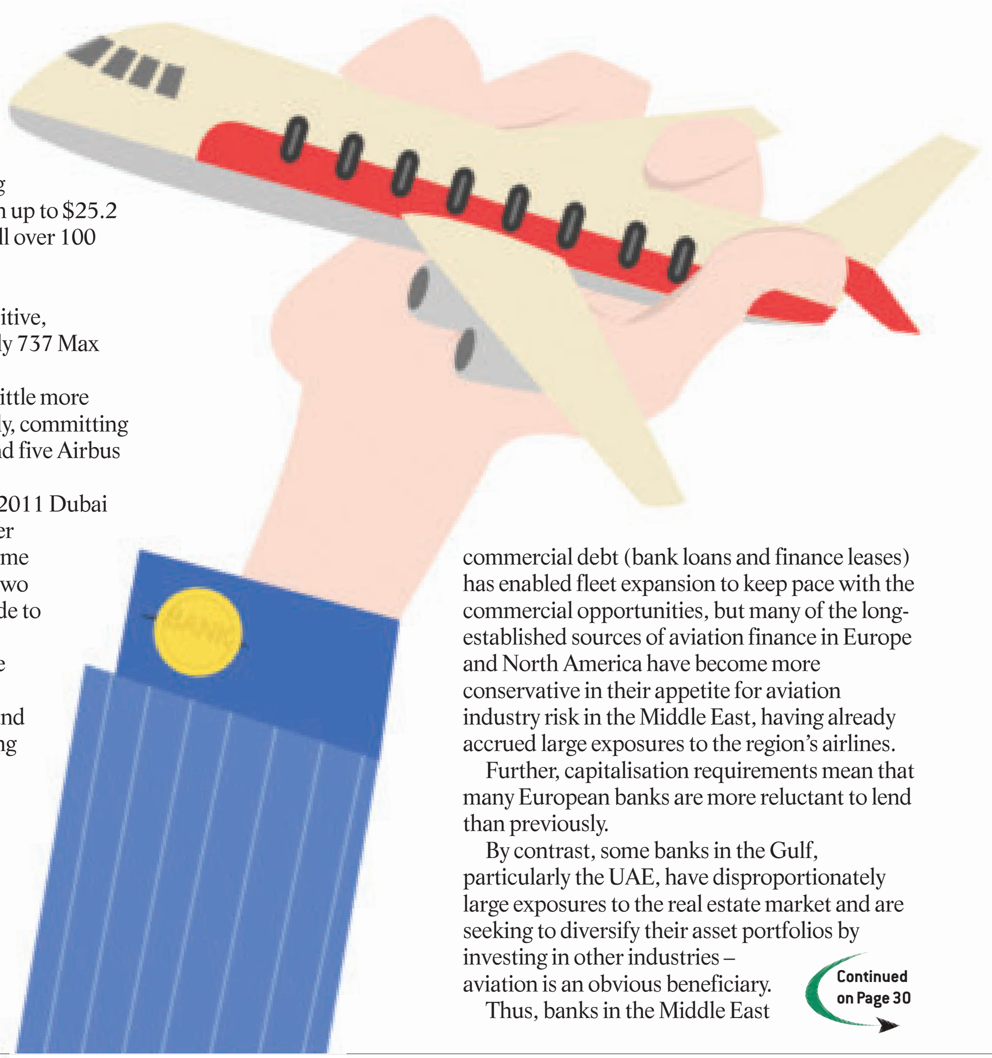
The vast aircraft orders placed at November's Dubai Airshow highlight the rapid growth of the Gulf's carriers and represent a bold statement of intent regarding their future expansion plans. **Oliver Tebbit** *reports.*

How banks give the big deals a helping hand



Emirates placed orders with a combined list value of $99 billion at the Dubai Airshow (mostly Boeing 777X aircraft, along with 50 Airbus A380s), while Etihad also committed to a vast order of Boeing 777X and 787 aircraft (alone worth up to $25.2 billion at list prices), along with well over 100 Airbus A320neos, A330 freighters and A350s.

Flydubai was also notably acquisitive, purchasing 111 Boeing 737s, mostly 737 Max aircraft.

Qatar Airways, while perhaps a little more conservative, also purchased heavily, committing to up to 50 Boeing 777X aircraft and five Airbus A330 freighters.

To put this in perspective, at the 2011 Dubai Airshow, Emirates' $18 billion order for Boeing 777 aircraft was an all-time record for the manufacturer – just two years later that record has been made to look like a relatively small order.

Now that the dust has settled, the question of how to pay for these aircraft will need to be addressed, and the size of these vast orders is driving increasing diversification in the sources of liquidity being accessed.

Aviation is a hugely capital-intensive industry. A combination of corporate and asset-backed finance enables airlines to fund their high operating costs. Given the vast expense of aircraft, much of the finance raised by airlines is asset-backed. Traditionally, commercial debt (bank loans and finance leases) has enabled fleet expansion to keep pace with the commercial opportunities, but many of the long-established sources of aviation finance in Europe and North America have become more conservative in their appetite for aviation industry risk in the Middle East, having already accrued large exposures to the region's airlines.

Further, capitalisation requirements mean that many European banks are more reluctant to lend than previously.

By contrast, some banks in the Gulf, particularly the UAE, have disproportionately large exposures to the real estate market and are seeking to diversify their asset portfolios by investing in other industries – aviation is an obvious beneficiary.

Thus, banks in the Middle East

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are increasingly becoming involved in aviation finance transactions.

Boeing, itself, estimates that Middle Eastern sources have recently nearly doubled their aircraft financing capacity year on year.

Although Middle East banks are relatively liquid, compared with those in more established markets, they are often less familiar with sophisticated aviation finance structures, and a feature of many recent local transactions has been the involvement of experienced aviation finance providers (such as the German and French banks) working in partnership with local banks as security agents, assisting with the structuring and syndicating of aviation finance transactions.

As Gulf banks become more familiar with the market and its structures, and their relationships with the airlines mature, we would expect them to become less likely to involve the European banks, instead dealing directly with the airlines.

Islamic financing structures, most commonly Ijarah lease structures, have been used by airlines in the Middle East for many years and continue to be an important source of funding for local airlines. Bond issues have also been a feature of Emirates' financial plans, issuing Sukuk bonds to a value of $1 billion in 2012.

As local investors with a preference for Islamic-compliant structures become more interested in obtaining exposure to the aviation market, Islamic finance will feature more prominently in the expansion plans of Middle Eastern airlines.

Operating lessors have also grown in the last decades to own approximately 30% of the world's airliner fleet. They represent an important part of the Middle East airlines' financing options, allowing fleet planning flexibility as well as off-balance-sheet treatment in relation to the asset by the airline.

Industry average

The exact proportion of the leased Middle East fleet is difficult to know precisely, but this is believed to be above the industry average.

US and European export credit agency (ECA) backed finance has been important for airlines globally over recent years. During the credit crunch, traditional aviation financiers were restrained from taking on additional risk and the availability of government guarantees, which underwrite ECA or EXIM-backed facilities, meant that risk could, in essence, be taken out of the equation.

However, the cost of export credit-backed finance has risen significantly as a result of the 2013 aircraft sector understanding (ASU), aimed at levelling the playing field between those airlines which have access to ECA financing (airlines outside North America and Europe, home to Boeing and Airbus), and those that don't (airlines located in Airbus and Boeing's home markets). Therefore, while still an important feature for some airlines, bigger carriers, which are able to access other sources of finance, have moved away from ECA-backed facilities.

New sources of finance are also becoming important to satisfy the Middle East airlines' voracious appetite for capital. The arrival of capital market finance to the Middle East aviation sector, even if only for Emirates, is therefore a welcome development.

Emirates has recently been using the enhanced equipment trust certificate (EETC) structure – essentially asset-backed commercial bonds – enabling it to obtain a significant portion of its finance needs for 2013. EETCs are not commonly seen outside the US and, so far, only British Airways and Emirates are successfully using this route to finance.

■ Oliver Tebbit is a partner in the Dubai-based aviation legal practice Clyde & Co.

Abdel Aziz Fadel: "We will recover again."

EGYPT SPRINGS BACK

Two consecutive revolutions have wrought a heavy toll on Egypt's tourism sector but civil aviation minister, Abdel Aziz Fadel, tells **Martin Rivers** *that long-term recovery is written in the script.*

The decision by Britain's Foreign & Commonwealth Office to relax its travel advice for Egypt could not have come too soon for the north African country, whose leaders are desperate to consign the political upheaval of recent years to history. Announcing the move on November 8 – two days before Cairo hosted the inaugural Egyptian Development & Strategies of Civil Aviation (EDSCA) conference – Britain said the Red Sea resorts of Sharm El Sheikh and Hurghada were once again safe for holidaymakers. A

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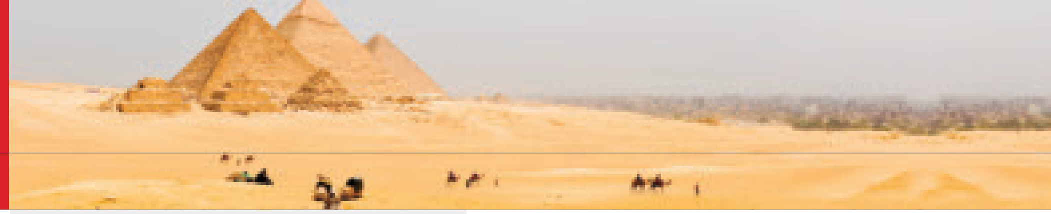

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fortnight later it added Cairo and the Great Pyramid of Giza to the list of approved destinations, easing the stranglehold on a tourism sector that contributes 12% of Egypt's GDP.

Travel warnings had been issued by governments around the world after the July 3 overthrowing of Mohamed Morsi, the leader of the Muslim Brotherhood party that was democratically elected in 2012. Regardless of whether his downfall was a popular revolution or a military coup d'état, it sowed widespread anxiety in foreign capitals.

Indeed, despite 26 countries having lifted travel bans by the time of writing, Egypt's future is far from clear. Britain still cautions its citizens against visiting more-volatile regions such as north Sinai, where 10 soldiers were killed in a suicide bombing in November.

But, as Egypt's fledgling institutions wind their way towards another attempt at democracy in 2014, the country's exemplary aviation sector is pushing forward with plans to expand its fleet, modernise its airports, and develop Cairo as an intercontinental hub.

Amid a palpable sense of optimism at the EDSCA conference, civil aviation minister Abdel Aziz Fadel said he is determined to bring Egypt's long-delayed expansion plans to fruition.

Clear vision

"We have had a very clear vision from 2003/04. The aviation sector is well organised, and when I was appointed minister this was only a continuation, not a new beginning," he said. "No-one is making any big changes to the plan. We know very well what will be the expected number of passengers in the years 2025-50, and we know very well how many aircraft EgyptAir should operate."

Focusing on long-term prospects is doubtless tempting for a country still mired in uncertainty. Tourist numbers plummeted 46% year-on-year in August, as travellers heeded warnings to stay away. Fadel estimated that overall traffic is down 60% on 2010 and 30% on 2012. His description of the Muslim Brotherhood as "terrorists" underscored the Government's rigid stance, but the military-backed interim authorities are working to reassure foreigners.

"The government is going on to implement milestones in democracy, starting with the constitution," Fadel explained. "It will be followed by the election of the parliament by March, followed by presidential elections by June. Egyptians now are establishing a new country, a new Egypt, based on democracy and improving the economy."

As the flag-carrier, EgyptAir has the most to gain from enticing the tourists back.

Hussein Sherif, vice-president commercial, admitted that the airline is based in a geographically "hot area" that will always be prone to shocks. But living in this tough neighbourhood, he added, makes Egyptians resilient.

"We are used to dealing with crises," Sherif insisted. "Right after January 2011 [when previous president Hosni Mubarak was overthrown], we had a downturn in traffic. We made a quick recovery in June 2011. Then we had another downturn in November, and recovered the following summer. Now we are in another downturn. We will recover again. When the tour operators start publishing deals online, the tourists will not wait any longer."

EgyptAir's current fleet comprises 81 aircraft, including 12 Embraer 170s used by regional subsidiary EgyptAir Express, and four Airbus A320s deployed by charter operator Air Cairo. About one-third of the fleet is wide-bodies, including four A300 freighters.

The flag-carrier has just one outstanding order – an A330-300 due in 2016 – but its appetite for expansion could hardly be more pronounced.

Consultancy studies have recommended that the fleet grows to 127 aircraft by 2025, with acquisitions based on operating leases rather than purchases. At present, the only leased units are six Boeing 777-300ERs.

"We will have to acquire what will be new in the market 10 years from now," Fadel predicted. "For wide-bodies, that will be A350 or 787 or 777X. For narrow-bodies, maybe it will be the A320neo or the 737-800 MAX, and also maybe the Embraer 195 or the Bombardier CSeries."

Declining to voice a preference for specific types, he stressed that no decisions have been taken and "each has its advantages and disadvantages".

Growth targets

Ambitious growth targets are nothing new for EgyptAir. Former civil aviation minister Hussein Massoud spoke of his desire to order wide-bodies between 2015 and 2020. Those plans were disrupted by the first revolution, but the airline continued taking delivery of new 777s, A330s and 737-800s, even as the political situation unravelled in 2011.

Receiving new aircraft during a downturn may seem risky, but the airline's older, fuel-inefficient jets were exacerbating its losses. Fadel is now looking to sell or lease 17 aircraft – four 737-500s, two 777-200s, three A340s and eight A320s – with orders taking a back seat until at least some existing units are shed. "We are using the 17 for now, but as we succeed in finding contracts we will start to look for new ones," he confirmed. Deals with three companies, including Libya's Buraq Air, have already been struck.

On the network front, EgyptAir has become adept at re-deploying capacity. Services to Tokyo and Osaka were axed after Japan's travel advisory pushed load factors down to 5%. But the airline has steadily grown its focus on Africa, expanding capacity by about 60% between 2011 and 2013. Harare and Abidjan were added to the network in June, while frequencies have also increased to Abuja, Accra, Kano and Lagos. N'Djamena flights will begin in spring 2014.

Elsewhere, long-standing plans to transform Cairo into an inter-continental hub mean that Europe, North America and Asia are under constant review. Manchester and Toronto were

Security first, then sun, sea and sand

While the main gateway to Egypt is managed by Cairo Airport Company, 19 other airports are owned and operated by the Egyptian Airports Company (EAC).

Spread across its vast territory, they include Sharm El Sheikh in Sinai; Hurghada off the Red Sea coast; Luxor in the Nile Valley; Sohag in upper Egypt; and Shark Elowainat in the western desert.

EAC chairman Gad el-Karim Nasr said the company had not recovered from the first revolution when the second struck. Passenger numbers fell from 21.5 million in 2009/10 to 17 million after the overthrow of Mubarak. By 2012/13 they had begun climbing again – up to 19.5 million – but the overthrow of Morsi in July precipitated a 60% slump in first-quarter traffic. "Perhaps by now we could have been 27 million," Nasr speculated. "We have really lost a lot."

Nonetheless, the growth continues. Sharm El Sheikh will add a 10-million capacity terminal by 2018, more than doubling its existing size. In Hurghada, a new 7.5-million capacity terminal will be opened by June this year, along with a 4km-long, 60m-wide runway capable of handling A380s. "I cannot tell you about tomorrow, but I know that Egypt will have a high-speed recovery," Nasr said. "Before enjoying sun, sea and sand, you must enjoy your security."

Maintaining the highest of standards

When EgyptAir was restructured into a holding company in 2002, its maintenance arm took a strategic decision to expand third-party work.

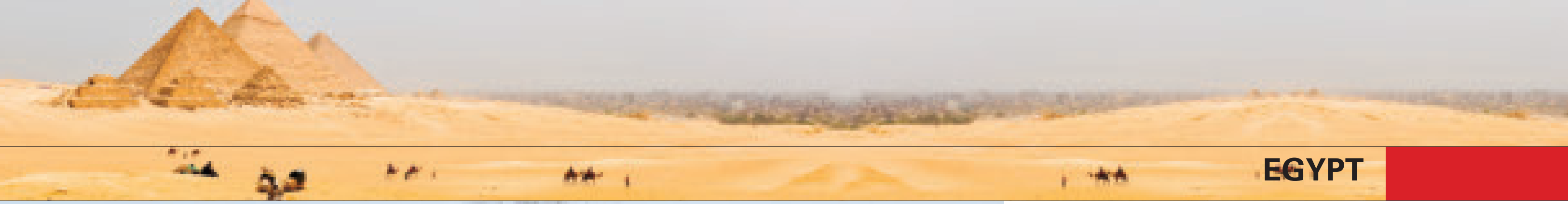
Just one decade later – having secured the necessary EASA 145 and FAA 145 approvals – EgyptAir Maintenance & Engineering (EGME) has grown its customer base to 130. Its profit of about 100 million Egyptian Pounds in 2012/13 offered sorely-needed relief for the parent company.

"We are fully capable of doing line and base maintenance for all mature, modern aircraft," said Mohamed Samir Ibrahim, EGME strategic planning manager. Three hangars plus workshops for engines, mechanical components and avionics provide an extensive range of technical capabilities. Although the 787 and A380 are not serviced, Ibrahim confirmed: "We are keeping an eye on those new models as they become more in operation around us."

Third-party business already accounts for 20% of revenue, but he wants to grow that figure to 25% "in the near future".

Further approvals from civil aviation authorities will contribute to this expansion, Ibrahim said.

Having formerly served as EGME's chief executive, Fadel keeps a close eye on the business. "The maintenance unit makes the highest profit of the whole EgyptAir group," he beamed. "It is very, very successful."



Abdel Aziz Fadel: "Our plan is that if a passenger comes from India and is going to London – and he stays here six or seven hours – we can arrange a tour of the pyramids."

introduced last summer, Sherif noted, adding: "We are now targeting Hong Kong, Shanghai, Vietnam and a second point in India."

He admitted that sixth-freedom traffic could be low-yielding, but shrugged: "This is what is available right now."

Star Alliance partners will bolster passenger flows, aided by the under-one-roof concept at Cairo International Airport's Terminal 3. Liberalised visa restrictions that allow transit passengers to enjoy day-trips to the pyramids could further enhance the hub proposition, Fadel suggested, while also giving a welcome fillip to the tourism sector.

"Our plan is that if a passenger comes from India and is going to London – and he stays here six or seven hours – we can arrange a tour of the pyramids," the minister explained. "The number of transit passengers at EgyptAir is now 30%. Before, it was almost nothing. This proves that we have the geographic advantage and we have the facilities."

Infrastructure growth requires hefty funding and Fadel conceded that some projects were disrupted by the second revolution. The African Development Bank, the Japan International Cooperation Agency and the World Bank halted talks over funding for new terminals in Sharm El Sheikh, Alexandria and Cairo respectively. "But they have now agreed to continue," he said. "There is no problem for financing."

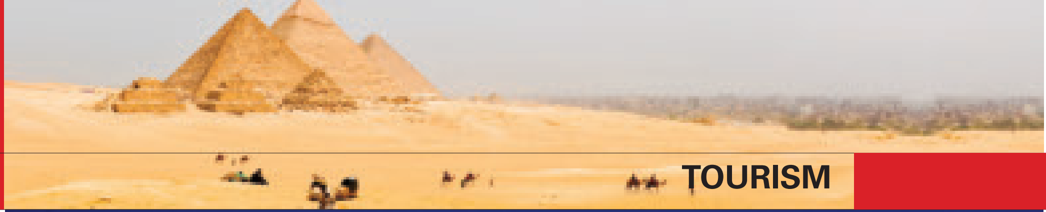
The sector's strong credit rating will be called upon again when details for Cairo Airport City are finalised. The aerotropolis is expected to cost about $1 billion, with investors due to be approached this year and construction likely to last until the end of the decade. "It will contain a cargo terminal, leisure facilities and manufacturing," Fadel explained. "Goods can come from the Suez Port by road to be assembled here and shipped by air. It will be a good step for the economy of Egypt."

Another long-term plan focuses on possible equity investments by EgyptAir in African airline partners. The flag-carrier currently serves 19 destinations on the continent with its own metal. Since late 2012, it has been pursuing a 50/50 joint venture with Ghana's CTK Citylink.

"I believe we need to have a footprint in west Africa," Fadel said. "We are just awaiting the acceptance of the appraisal we sent to Citylink. The volume of passengers will not be high at first, so we can start with the E-170, and then maybe after that we can change to 737-800s. After we achieve success in this project, then we will look to another project. Maybe one joint venture in west Africa, one in east Africa, and one in central Africa."

Before spending money on foreign carriers, however, the

Continued on Page 34



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airline wants to improve its own financial performance. EgyptAir trimmed its loss for the 2012/13 fiscal year ending in June to 1.6 billion Egyptian pounds ($232 million), halving the previous year's loss.

While the cost-cutting continues, Fadel's overarching priority is to strengthen overseas ties and reassure foreigners that they are welcome in Egypt. "We know it is to our benefit to be neutral, and to have good relations with all countries," he said. "Egypt is the biggest country in the Arab world. It is a pivot for the region, and we support our neighbours. The Egyptian people are also very friendly. No-one ever comes to Egypt and feels like a foreigner."

Bilateral ties

There will, inevitably, be obstacles on the path to recovery. Support for the Muslim Brotherhood by Qatar and Turkey has already prompted a cooling of bilateral ties, with Al Jazeera journalists and Turkey's ambassador being expelled from the country. Nonetheless, Egypt has form for staging quick recoveries.

In November 1997, Islamist militants massacred 58 foreign tourists in Luxor in a terror attack that sent shockwaves around the globe. "You cannot imagine what I was feeling as I heard this news," said Sherif, who was at the time EgyptAir's manager for Germany. "It was a disaster. No hope." Tourist traffic immediately plummeted 60%.

"But in May 1998, six months afterwards, we were operating 471-seater jumbos between Dusseldorf and Hurghada," he recalled. "We were even double-shuttling." By 1999, visitor numbers had rocketed to 4.5 million, well above the 3.7 million seen two years previously. "So when will the traffic return this time? I could say not more than three months. As soon as the political situation stabilises, and the media calms down, the tourists will be back."

Abdel Aziz Fadel: "We know it is to our benefit to be neutral, and to have good relations with all countries."

Abu Simbel, Valley of the Kings (centre) and the Sphinx: "The main tourist areas are not affected. There is no real threat to travellers," said Joachim von Winning.

EGYPTIAN AIRPORTS BULLISH, DESPITE THE SLUMP

The continuing unrest in Egypt has dealt a blow to the country's airports as tourism numbers have collapsed – but representatives of the Egyptian airports at World Routes were optimistic about recovery.

"It is all about perception," said Joachim von Winning, chief commercial officer of Cairo International Airport. "Germany has lifted its advisory against travel to Egypt but there are still warnings from the UK and the United States."

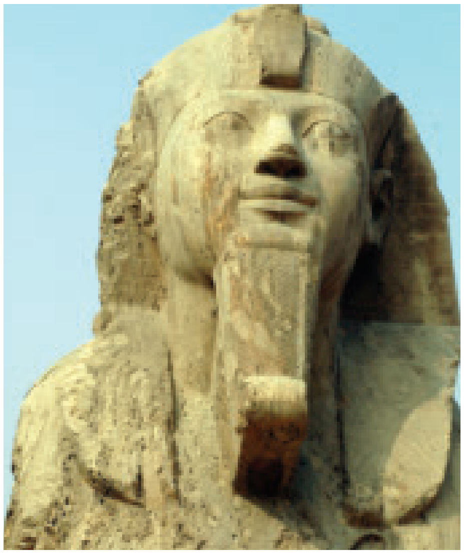
Traffic to Egypt dropped after the revolution during the Arab Spring period in 2011 but, during the period of stability, numbers began to grow. "We had our best figures ever in June this year and were optimistic we would better our 15million target, but then came the violent gatherings and the coup d'état. Our numbers plummeted. Then there were the harsh crowd control measures and the numbers plummeted even more," von Winning said.

By September, the management of Egyptian Airport Company, which manages 12 of the country's secondary and main tourist airports, and Cairo Airport Company, feared the worst. "The sad thing is that the areas where there are problems are well known. The main tourist areas are not affected. There is no real threat to travellers," von Winning said.

Despite the problems, Cairo is continuing to invest in the rebuilding of Terminal 2. "It will be open in 2015," von Winning said.

Routes meetings have also shown up the divisions in perception. "We have seen the Gulf carriers want more slots, as they can see that it will pick up; the European carriers want discounts and the new airlines are very hesitant because of the current situation," von Winning said.

While cargo numbers are stagnant, Cairo has continued with the construction of a new cargo village. "It will come back. We are positive," von Winning concluded.

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Hossam Kamal, EgyptAir's new CEO, was in bullish mood when he met up with **Tom Pleasant** *at the Dubai Airshow.*

KAMAL: WE ARE READY FOR TAKE OFF

Egyptian politics and business has begun to stabilise following the second revolution in July 2013, according to EgyptAir CEO Hossam Kamal.

The Arab Spring saw the carrier's load factor fall from 81% to 65%, from 14 million passengers a year in 2010 to nine million in 2012. Kamal says this has since recovered by almost 30%.

"Yes, the number of tourists and businesspeople flying to Egypt has decreased, but they are returning. People will always want to come to Egypt. Soon we will exceed 2010's figures," he said.

He added that this was due to reliable demand from certain types of passengers: "We have four kinds – tourists, businesspeople, ex-patriots and seasonal, such as for the Hajj or Umrah.

"Ex-patriots and pilgrims are fixed. Revolution or no revolution, it doesn't matter, they will still come. For the rest, they have the right to still be afraid of coming to Egypt, but most of the country is safe now, very safe."

Nonetheless, there is no denying the political instability has harmed the airline.

"Of course we've been affected by what's happened over the past two years," said Kamal. "But EgyptAir's network is still one of the best in the area. We have 22 destinations in Africa and are already expanding our network, opening new routes to Toronto, Manchester, Harare and Abidjan, and we're planning more, looking at Los Angeles, Hong Kong and Jakarta."

Hossam Kamal: "Most of the country is safe now, very safe."

To serve the expanding network, EgyptAir currently has 81 aircraft in its fleet. Nine are grounded, such as A340s and 737-500s, typically due to being older than 20 years.

"They aren't grounded only because of the drop in passengers, but also because some of them simply aren't economical right now.

"They're too old. The A340 was a good aircraft at the time, but now fuel burn and maintenance make it a bit costly," he said.

Kamal says the market is not good for selling those three A340s so, for the time being, EgyptAir is using them for peak traffic, such as for pilgrims, but it is still looking for long-term lessors.

As for new aircraft, no orders have been made yet, but they are expected to be announced very soon.

"Our plan is to have 127 aircraft by 2025, of which 32 will be wide-bodies," he said. "We haven't made any orders yet, we're still studying the proposals, but time's running out for the production slots, so we will announce our orders within a month or two.

"We have some A320s we would like to replace with the A320neo or the 737MAX. Also, we are intending to phase out the A330-200s by 2018, replacing them either with A350s or 787s."

Freighter fleet

Replacements will also include freighters. The airline carried 170,000tonnes in 2012 and Kamal expects this to remain stable in 2014. To that end, he intends to upgrade the current freighter fleet of one A300B4-200F and two A300-600RFs with A330Fs.

Another revenue stream is the company's training and MRO facilities.

"We have the biggest and the oldest training and engineering centre in Africa and a joint venture Rolls-Royce station in Cairo for engine maintenance. They have 128 customers from all over the world and remain an important part of our company and strategy."

While Kamal admitted the airline had yet to post a profit for any month this financial year, it is reducing its losses and he was confident the passenger and financial figures would rebound to pre-revolution levels by 2014.

"Yes, our finances are not strong, but there is not an airline in the world that has passed through a situation as we have at EgyptAir," he said. "In the meantime we are in negotiation with the government to reduce our taxes and we are having some discussions with airlines in the area about partnerships."

However, he said he was not considering equity partnerships. "We are surviving and already running fast on our expansion plans," he added. "We are looking to a better future."

An Egyptian charter company plans to enter the hybrid world. **Alan Dron** *reports.*

BRAVE NEW WORLD FOR AIR CAIRO

Yasser El Ramly: "We believe capacity creates demand."

Egyptian carrier Air Cairo plans to double its fleet of four Airbus A320s as it moves increasingly from its original role as a charter airline to operating a hybrid business model that also offers low-cost scheduled services.

Despite its name, Air Cairo does not operate from the nation's capital, to avoid competing with EgyptAir, its largest shareholder with 60% of the company. Two government-owned financial institutions, Misr Bank and National Bank, hold the remaining 40%.

"There are some restrictions on flying from Cairo because of the strategy of the Ministry of Civil Aviation," explained Air Cairo chairman and CEO Yasser El Ramly, speaking during the Arab Air Carriers' Organization AGM in Doha.

Despite the national carrier's controlling interest in Air Cairo, the leased aircraft will come from an external leasing company rather than the EgyptAir Group.

Air Cairo currently continues to concentrate on charter, but made the decision in 2012 to change its strategy and work on developing the low-cost carrier concept, said El Ramly.

The airline wants to start regular scheduled services between Europe and Red Sea resorts such as Sharm El Sheikh. Last summer the first such flights began between Hurghada and Belgrade, attracting good load factors, says the company.

El Ramly said the planned new A320s would be used to strengthen scheduled services from airports such as Alexandria and Assiut. The new services are concentrated on regional destinations, such as Tripoli, Amman, Riyadh and Jeddah.

The change in strategy will not mean easy profits for the Egyptian carrier. It faces competition from three other privately owned Egyptian airlines, as well as major established low-cost carriers such as Flydubai, Air Arabia and Jazeera Airways.

However, El Ramly, a former professional handball player, is used to competing. And he is convinced that there is enough business, through a combination of inbound tourism and the large numbers of Egyptians working in the Gulf, for Air Cairo to meet its targets. "We believe capacity creates demand," he commented.

He wants the new A320s in service by June. With Airbus having long backlogs for deliveries of the single-aisle product, the new aircraft will be acquired on dry leases, in an all-economy layout. The first will arrive between March and May and will be acquired on a permanent, rather than seasonal, basis.

These new arrivals are just the first stage of a much larger, medium-term expansion of Air Cairo. The company plans to operate 20 aircraft five years from now.

Egyptian carriers, such as Air Cairo, have faced obvious challenges in recent times due to the political unrest both in their home market and elsewhere in the region, resulting in sharp fluctuations in passenger numbers. These fluctuations have been particularly sudden due to European nations issuing official warnings to its citizens to avoid areas, such as Cairo, where demonstrations have been common. However, El Ramly is convinced that if Egypt's political situation regains stability, traffic will grow very quickly.

For the moment, the charter business remains a major part of Air Cairo's operations. "We have a good name in charters to Sharm El Sheikh and Hurghada. Last summer we were operating about 35 flights a week [to those destinations]."

Financially, Air Cairo is weathering the political storms well. "We're just about profitable now," said El Ramly. "It's a little marginal, but we are not losing money. And we can't have anything worse than what we've had in the past two years."


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Time for China to

Airline CEOs from Europe, the Middle East and Africa, gathered at November's CAPA world aviation summit, heard that the Chinese aviation market is growing in importance but is still some way short of realising its potential. **Martin Ferguson** *reports.*

Last year Chinese carriers made $22 billion, according to the International Air Transport Association (IATA).

Some 56 new airports in China will be ready before the end of 2016, while 91 others will be expanded. And the Chinese Civil Aviation Authority has admitted it may still struggle to keep up with demand.

CEOs from leading carriers in Europe, the Middle East and Africa (EMEA) recognise the growth opportunities for foreign carriers, but believe the market is not growing fast enough because the Chinese authorities have been too focused on their domestic market.

Tim Clark, president of Emirates Airlines, told delegates at the CAPA aviation summit in Amsterdam that, after many years of restrictions, the Chinese were beginning to increase access. He urged the Chinese to open the doors wider and faster if worldwide carriers were to benefit from the country's unprecedented growth.

Airline CEOs at the CAPA event outline views of China's potential.

Robust market

"It's very important to us that China is opening up because it is such a robust market and it will be the future," he said. "The statistics are stellar, the likes of which we haven't seen in this industry before. In 30 years the Chinese middle class will total 50% of the entire population. Suddenly there are 600 or 700 million people who want to travel abroad."

But it's often not that simple.

Willie Walsh, chief executive of the International Airlines Group (IAG), which owns British Airways and Iberia, lamented that visa restrictions in countries like the UK and parts of the Middle East meant economies were missing out on Chinese tourism. Clark agreed, saying any government that did not welcome Chinese spending power was foolish. "The Chinese are no threat to anybody. They are wealth multipliers and prosperous in themselves."

Clark recounted the presence of the Japanese in Europe during the 1980s. "Tourists were walking down the Champs Elysees in Paris and Oxford Street in London buying up almost everything available. That will be the Chinese, though increase the quantum but at least 10."

He said the Chinese aviation sector would also be fuelled by its demand for people, products and services from the west, adding that Emirates' yields on seats out of China were already very strong. "The corporate business community is very powerful and demanding. It sees what is coming out of Europe. They want, for example, the expertise and the engineering capabilities of the German manufacturing industry. They want to import stuff from the US and Europe. That's the balance and there is opportunity. And with all those [airports being built and revamped] they clearly have fantastic plans for infrastructure. It's a colossal story of growth."

Peter Foster, chief executive of Air Astana, added: "The Chinese, when they invest in something, like to bring lots of people, not just two or three ex-patriot managers. They tend to bring vast numbers and that's great for the airlines."

Clark acknowledged past speculation about China looking to establish a hub in the Middle East. However, he said the presence of its carriers was still not significant in the region. "The Middle East is an enormous market, as is Africa, so it's a little bit surprising. I'm not quite sure where it fits in with their strategy. Maybe they're more focused on Europe or North America. I don't know. But there is an opportunity [for them]."

He said Emirates was presently serving Beijing, Shanghai and Hong Kong, but claimed he could fill planes to another 20 more destinations. Working in partnership with Chinese carriers would be conceivable, if not entirely necessary.

"China is a player in our network, though not a major player. We don't currently have partnerships. If I were given 15 to 20 more destinations I'd like to think I could work with one or two. The low-cost carriers do a good job and

open its doors...

would be potential partners. But even if you have a commercial relationship it can still be difficult to get access to inventory. You are fighting a battle on yields, diluting their point-to-point business, and so there's a toss up between the value of the commercial relationship and the commissions they may earn on an interline basis on the legs you operate."

Clark said there is an enormous and growing Chinese community in Dubai that was moving back and forward all the time. "I just wish the doors would open wider," he said, adding that he had offered to support Chinese carriers in the past by making training facilities in the Middle East available for pilots and crew.

"You have to persuade the Chinese government that airlines can bring value by reciprocating access. Chinese carriers will flourish, and will be forced to emulate the commercial savvy of these carriers. It's already unravelling."

Tewolde GebreMariam, chief executive of Ethiopian Airlines, said Chinese carriers had, until recently, been preoccupied with their home market. But pressure on them from the government to go outside was growing.

Reaching bi-lateral agreements for capacity and air space with African nations is notoriously challenging but GebreMariam said he was already preparing the foundations. "We expect, in the coming years, they will come to Africa. They may not be able to fly to every small market in Africa. They need a hub, and we are trying to create it for them."

He said Addis Ababa would be the main point of entry, supported by three other hubs in west Africa, south (Malawi) and central Africa. He said doing this would help him grow business with Chinese customers.

"This will increase the [potential for partnership] because the Chinese strongly believe in reciprocity. For us, China will be the single largest country market so we have to provide them with a platform when they fly to Africa."

The Ethiopian boss said the Chinese Government was slowly shifting its focus from the domestic market and was in talks with governments in Africa. He said the Chinese had faced difficulties in the past while trying to reach reciprocal traffic arrangements with governments in Nigeria and Angola.

"I think, going forward, the Chinese are forming a new strategy." GebreMariam added that the language barrier would also have to be overcome, calling it "a big challenge".

The Indian market has a lot of similarities with China in terms of potential, said Clark. But the market has remained relatively suppressed since a round of liberalisation measures enabled foreign carriers to increase capacity in 2004.

Domestic politics

He said the potential in India was tremendous, but foreign carriers were now being indirectly held back by domestic politics. "Today, an A380 is not allowed to fly into Delhi or Mumbai airports. Delhi was built as one of the most advanced airports in Asia, yet they allowed that to happen. Much of what will happen to the future of India is in the hands of its government. They need the ability to be able to deal with the pressures of multiple stakeholders in the political landscape as well as within the commercial community. They must recognise air travel is critical to the growth of the economy, which still has enormous potential."

Clark said Emirates has offered 54,000 seats each way on 185 flights a week to 10 Indian destinations since 2004. "But I haven't had a seat since," he said.

"If you analyse the growth we have experienced since then with that of India, we should by now have 85,000 seats in each direction to 20 destinations."

Clark said turmoil in the domestic aviation sector and the government's commitment to financially underwriting Air India was bad news for the marketplace. "The intellectual skills the Indian people bring to many countries and companies around the world are known to all of us. But they are restricted in terms of outbound travel." Clark claimed Emirates was now known as the national carrier of India and said it was "shameful" that Air India had never evolved into one of the world's leading carriers.


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As the Gulf's other low-cost carriers shift towards a hybrid business model, Air Arabia is standing by its decidedly no-frills approach. Chief executive Adel Ali explains why to **Martin Rivers**.

Middle Eastern low-cost carriers (LCCs) continued their unstoppable march in 2013, growing seat capacity by another 17.7% during the first half of the year.

But, in a region where double-digit growth has become the norm, their expansion amounts to only modest inroads by the still-fledgling sector.

LCCs today account for just 13.5% of Middle Eastern traffic, compared with nearly 40% in the more mature European market.

Their rise has also been accompanied by a qualitative watering down of the LCC ethos. Bundling frills into the core ticket price and expanding premium products has prompted some observers to question whether the Middle East's LCCs are really budget carriers at all.

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In October, Flydubai rolled out its first aircraft with a dedicated business class cabin. In November, Saudi Arabia's Nas Air re-branded itself Flynas, and seemingly did away with any pretence of being a LCC.

Kuwait-based Jazeera Airways, meanwhile, was already giving its economy passengers a free 40kg baggage allowance plus complementary on-board meals.

Gulf passengers may be warming to the low-cost moniker, but their options for no-frills flying are dwindling.

And yet, for the region's oldest and most-established LCC, Sharjah-based Air Arabia, the fundamentals of the low-cost business model are as relevant today as ever.

"LCC is a tag that any airline can use," said Adel Ali, chief executive of Air Arabia, which was founded in 2003 and operates a fleet of 34 Airbus A320s. "The true LCC is about moving people from one point to another at the lowest possible cost. Having all sorts of luxury things that cost a lot of money does not necessarily put you in that category."

Ali conceded that there are challenges specific to the Middle Eastern market. European-style open skies are a distant prospect in a region where governments keep tight control of their airspace. The success of super-connectors Emirates, Etihad and Qatar Airways only lessens the chance of other Arab countries liberalising their skies. High fuel prices and the lack of secondary airports further undermine the LCC model.

Grow yields

But this higher cost burden has not proved insurmountable. While his competitors sweeten their products in an effort to grow yields, Ali is standing by the appeal of no-frills travel to the mass market. His pursuit of the very lowest basic fares keeps ancillary surcharges at the heart of Air Arabia's business model.

"We will continue to develop ancillaries. They provide a good income," he said. "You're in a market where everybody's giving everything away for free. There are already plenty of premium seats in the GCC market. If one thing is needed, it's more LCC seats."

Ali would not rule out eventually considering a business class, but he insisted that the all-economy layout of Air Arabia's A320s would only be re-evaluated if the airline started trailing behind its competitors. "Today we have not seen that we're losing market share because we don't have that [business class cabin]," he pointed out. "So we're sticking with the model that we have. Why fix it if it's not broken?"

Indeed, there is little to suggest the airline is coming under pressure at present. Air Arabia has posted a profit in each of the past eight financial years.

First-half profits spiked 17% to 134 million Emirati dirhams ($36 million) last year, against revenues of 1.5 billion dirhams. Although the airline's result worsened slightly in the third quarter, Ali remains confident of securing full-year profitability for 2013. "The business model that we've got has been working for us very well in the last 10 years," he emphasised. "We have 10 years of seat factors above 80% year-round. I don't see any reason to change what is working."

"You're in a market where everybody's giving everything away for free. There are already plenty of premium seats in the GCC market. If one thing is needed, it's more LCC seats."

ADEL ALI

By contrast, Jazeera's focus on higher-yielding premium traffic sees load factors frequently dip below 70%. Higher seat occupancy in theory pushes down Air Arabia's fares, but the pile-'em-high strategy entails risks when set against its bold growth trajectory.

Air Arabia carried a record 5.3 million passengers in 2012 and it expects to report an increase of between 12% and 15% for the 2013 fiscal year.

With passenger numbers then forecast to continue rising by about 7% per year, another 22 aircraft will be added to the fleet between now and the first quarter of 2016. A funding facility with Qatar National Bank and Abu Dhabi's Commercial Bank International will support 10 deliveries in 2014, while 10 more are being lined up for next year.

"Two or three" older units will also be withdrawn this year, Ali noted, adding: "Because we have one of the highest utilisation rates, we do need a reliable and young fleet." But, with an average aircraft age of just three years, replacements are not yet a priority and most of the upcoming units are earmarked for expansion.

Indeed, Air Arabia is already considering the next wave of growth beyond 2016. Ali was light on details, saying the final decision will not be made until later this year. But, in a rare departure from the traditional LCC ethos, he threw open the possibility of mixing fleet types.

"I think it would be wrong for us to just have a tunnel focus and not consider everything in the market before we conclude our decisions," he said, confirming that talks are under way not just with Airbus, but also Boeing and Bombardier. "Yes, there are golden rules of LCC, but the technology is changing. Once you have 50-plus aeroplanes of one type, it's cost-effective to consider another type."

He added that it would be wrong to "under-estimate" Bombardier's CSeries before it enters service this year. Commitments for the type have so far been disappointing but two other Middle Eastern operators – Iraqi Airways and Gulf Air – have placed orders, while Qatar Airways and Libyan Airlines are known to be conducting studies.

The 110-seater aircraft could potentially open up new Middle Eastern markets that are difficult to serve with the larger A320. "It all depends on seat-mile costs. I think some thinner routes are good for the CSeries," Ali explained. "There are also quite a lot of short routes – 45 to 90 minutes – that will benefit from more frequencies."

Among the existing 34-aircraft fleet, four units are deployed by Air Arabia Maroc and one by Air Arabia Egypt. The two franchises began operations in 2009 and 2010 respectively.

Ali's use of subsidiaries underscores the challenges faced by private airlines, especially LCCs, in the Arab world. Some 51% of Air Arabia Egypt and 59% of Air Arabia Maroc is held by local partners. Ownership restrictions necessitate the kind of joint ventures that Marwan Boodai, Jazeera's chairman, has called troublesome. Boodai also wants to build a network of pan-Arab hubs, but his plans are on hold until Jazeera can retain full control of new bases.

Delivering results

Notwithstanding such concerns, Air Arabia's joint ventures are delivering results. The Casablanca-based offshoot has taken advantage of Morocco's open skies agreement with Europe, connecting Air Arabia's network with 14 western cities plus Istanbul. It also links the secondary cities of Tangier, Fes and Nador to the continent.

Air Arabia Egypt, meanwhile, connects the city of Alexandria with six destinations across the Middle East – Beirut, Amman, Kuwait, Riyadh, Jeddah and Dammam.

The ultimate goal for Air Arabia will always be European-style point-to-point connectivity between all major city pairs in the region. "My aim is to make sure that any airport in the Arab world and any airport within four or five hours' flying time should be served," Ali confirmed. But, in the absence of open skies, the best he can do is continue to export the brand with individual joint ventures and franchises.

Plans to establish a Jordanian subsidiary were disrupted first by the 2007 financial crisis and then again by the 2011 Arab Spring. Although Ali would not be drawn on the current status of that project, he left no doubt that Air Arabia is actively pursuing a fourth hub.

"Our branding fits in anywhere between

For the region's oldest and most-established LCC, Sharjah-based Air Arabia, the fundamentals of the low-cost business model are as relevant today as ever.

Morocco and Muscat, the Indian Ocean to North Atlantic," he noted. "I'm very open-minded, and we will continue looking at new investment opportunities.

"The Arab world has a long way to go in developing aviation. It's not going to be easy, because some countries don't welcome non-government airlines. But we have done it, we did it before everybody else, and as we progress we gain more credibility and more understanding from countries that had been opposed to these ideas."

While negotiations over a fourth hub continue behind the scenes, Air Arabia is pressing on with incremental expansion of its bases.

In its home base of Sharjah, the airline was last year granted rights to three points in China. Although the destinations have yet to be announced, Ali noted that several cities in the west of the country are within four hours' flying time of the UAE. Chinese services could begin as soon as the first quarter of 2014, he said, complementing the more than 60 cities currently served from the hub.

In Morocco, efforts to gain flying rights to the lucrative west African market drag on. In contrast to the "fantastic" open skies agreement Morocco struck with Europe, Ali complained that flag-carrier Royal Air Maroc still enjoys preferential access to the sub-region.

"Five years into our Morocco business, we still have not been granted rights into west Africa," he noted. "The Moroccan authorities don't feel that we should be going to that part of the world, simply because it increases the competition with Royal Air Maroc. But the day it happens we will welcome it, and we will be able to employ more people and put more aircraft in Morocco."

Sands are shifting

Though Air Arabia still encounters resistance from some governments, Ali insisted the sands are shifting. He cited the extraordinary growth his airline has enjoyed in Saudi Arabia – a country whose civil aviation sector is gradually liberalising through privatisation and new licences.

When Air Arabia was founded in 2003, he recalled, Saudi Arabia was "not in our business plan". Three years later, the airline had a couple of flights a week into three airports. Last November, it launched its 10th destination in the kingdom.

Hofuf joined Riyadh, Jeddah, Medina, Dammam, Qassim, Yanbu, Taif, Hail and Abha. Air Arabia now operates more than 80 weekly flights to Saudi from Sharjah, plus more than 10 from Alexandria.

"It's not open skies, but it's a big leap into liberalisation," the chief executive enthused. "It's a clear indication that they are moving, in their own way, doing it in stages. And I think it's a very clever thing.

"In my opinion, every authority and every airport operator wants to open up, because opening up means more money for them – through airport departure taxes, ground handling, fuel – and more jobs. The issue is that some carriers and some countries have got a stronger power stopping them. As time goes on, I think it's inevitable that they'll open up."

And when they do, Air Arabia's no-frills fares and strong economies of scale will put it in pole position to ignite the Middle East's LCC revolution.


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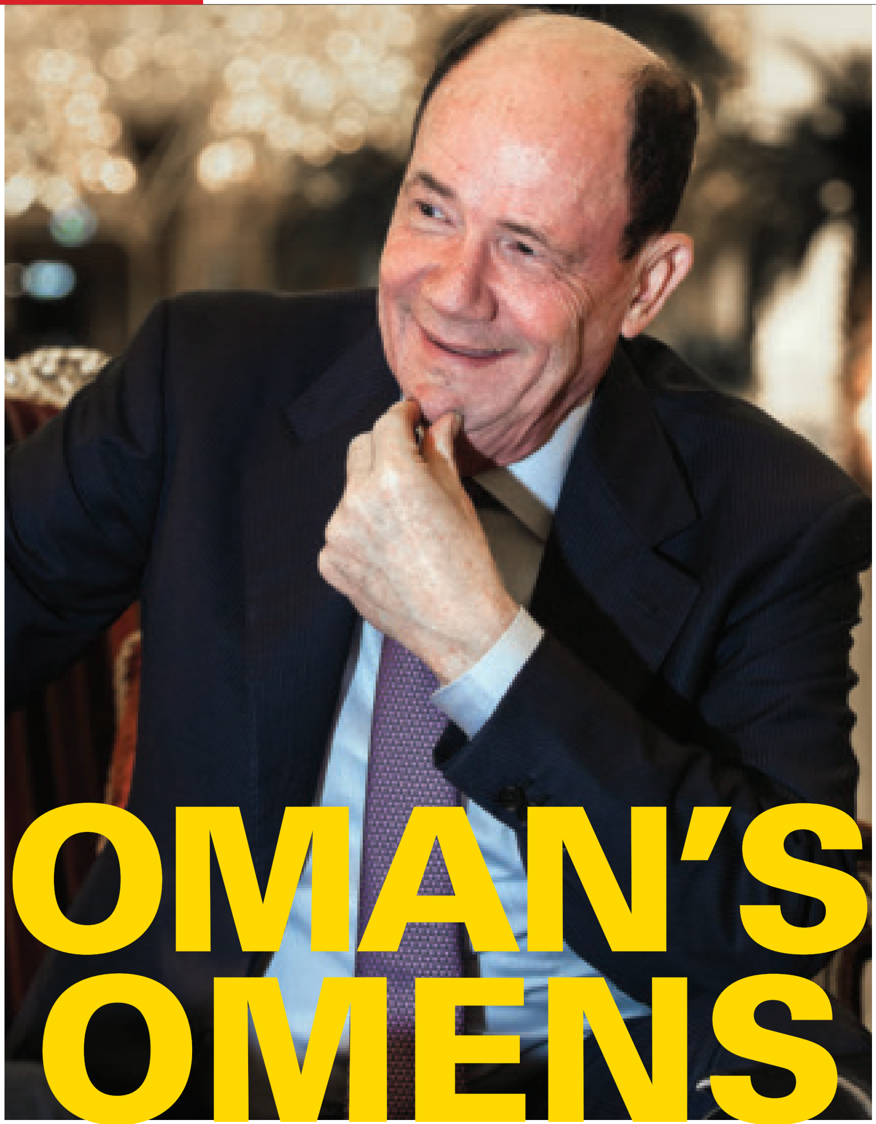

OMAN'S OMENS

"The prime goal is to try and have as much traffic into and out of Oman as you can."
WAYNE PEARCE

Despite gearing up for Oman Air's fastest-ever growth spurt, chief executive Wayne Pearce explains to **Martin Rivers** *that the flag-carrier is sticking to what it does best.*

Perched on the south-eastern tip of the Arabian Peninsula – with the United Arab Emirates just across its border – the large, sparsely populated sultanate of Oman exists in an aviation neighbourhood dominated by mega-hub expansion.

Unlike Dubai or Abu Dhabi, however, Muscat has little interest in becoming a major bridging point between east and west. The Omani capital's airport handled just 7.5 million passengers last year and, although officials want to grow that figure, sixth-freedom traffic looks set to remain a peripheral contributor.

Instead, flag-carrier Oman Air is focused on promoting origin-and-destination traffic between the sultanate and key points in Europe and Asia.

Tourism will continue to be a key driver, with the sector forecast to grow between 6% and 8% annually until 2017. But chief executive Wayne Pearce also wants to boost domestic connectivity in a country which – despite being almost the size of Germany – has just four airports served by scheduled carriers.

"The prime goal is to try and have as much traffic into and out of Oman as you can," he said. "We do also sell the opportunity to transit through Oman, but Muscat is booming, Salalah is booming. We've got a lot to take advantage of here, and dealing with that is our main focus."

With Oman Air posting losses in each of the past five years – most recently sinking 97.5 million Omani Rial ($254 million) into the red – financial performance is another priority for 99.8% stakeholder the Omani Government. Far from cutting back, however, Pearce is scaling up in pursuit of greater efficiencies.

The airline currently operates 30 aircraft, comprising 15 Boeing 737-800s, two 737-700s, four Airbus A330-200s, three A330-300s, four Embraer 175s and two ATR 42s. It is targeting a fleet of 50 aircraft "by the end of 2017", Pearce said, with orders already placed for 20 more units (six 787-8s, six 737-800s, five 737-900s and three A330-300s). Some 16 units will arrive

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between October 2014 and December 2015, while two more are scheduled for delivery in 2016 and 2017.

But the airline also plans to retire eight aircraft during that timeframe – six older 737s, plus two 737s wet-leased from Prague-based Travel Service Airlines. This leaves its order book "well short of what is required" to meet the target for 2017. That makes a near-term order all but certain.

"We are still talking at length about that [upcoming aircraft order]," Pearce confirmed. "We do have further plans and proposals that are being discussed. Those plans would cover the bulk of what's left – they would bring us much closer to the 50."

He declined to give further details about which types will be required. However, noting that the existing 3:1 ratio of narrow-bodies to wide-bodies "works pretty well", Pearce conceded that the upcoming 787-8s and A330s would temporarily tilt the fleet towards wide-bodies. "So, perhaps the second wave will balance it out, swinging the ratio back," he said, hinting at a narrow-body order.

"We have the 737NG; it's a great aircraft, it works really well, and I'm sure the MAX will be a fabulous aeroplane," Pearce continued, though

An Oman Air Boeing 737 and (right) the beautiful Oman landscape.

he stopped short of committing to an order. "There will be a point when Boeing stops making NGs and starts making MAX, and that's the stage that we would move into them."

A mixed narrow-body fleet of Airbus and Boeing jets will not be pursued – "it doesn't make sense, it drives up your costs" – and although the E-175 fleet is unlikely to be expanded, Pearce said he is pleased with the new type's performance.

"The Embraer enables you to operate a lot more frequencies close-haul," he explained. "So on Dubai we operate seven a day, on Salalah we often operate seven a day. We've also got three new domestic airports opening in Oman over the next couple of years: Duqm, Ras Al Hadd, and Sohar. And we're trying to operate the Embraer to Khasab, where we currently fly a daily ATR."

With a 45% increase in seat numbers on the horizon, preparations are being made to boost staffing levels. "We'll be recruiting a lot more pilots and cabin crew," Pearce confirmed. "We've already taken on a lot of cabin crew this year. We're in pretty good shape and we know what we've got to do."

Despite preparing for "the biggest spike in the company's history", there is only muted talk of

new destinations. Network expansion will be selective and cautious, the chief executive said, with higher frequencies seen as being more lucrative.

Oman Air's existing European services are to London, Paris, Frankfurt, Munich, Milan and Zurich. A second daily frequency to Heathrow Airport is actively being pursued, Pearce confirmed, while moves to make some of the other services daily will be reviewed as the wide-body fleet grows. "In Europe, the focus is definitely on ratcheting-up what we've already got," he emphasised.

Although Pearce did not rule out new destinations on the continent, he stressed that scaling up existing routes makes more commercial sense. The airline's recent run of losses has spurred management to focus on yields, but while keeping a lid on costs.

"Every time you start a new route, you're looking at three to four years to get through it," he explained. "Some of our routes are still in that process, while others have matured very quickly and are starting to call out for more flights. In many of these places, adding a fifth and sixth weekly flight gives you your crew virtually for free, because the crew are sleeping over for 48hrs rather than 24hrs.

"So you get tremendous economies of scale out of it. And if you operate into a station that you've already got, then you already have a sales office, a brand presence. It's got some tremendous commercial advantages."

Other regions, meanwhile, have greater scope for new destinations. Oman Air's existing Asian network focuses extensively on the Indian subcontinent, with 10 routes in India, three in Pakistan, and one each in Nepal, Bangladesh, Sri Lanka and the Maldives. Its only other Asian routes are Bangkok in Thailand and Kuala Lumpur in Malaysia. But the Filipino capital, Manila, and the Indonesian capital, Jakarta, are both now being considered.

In addition to its regional Middle Eastern footprint, Oman Air also serves three destinations in Africa. These are Zanzibar and Dar es Salaam in Tanzania, and the Egyptian capital Cairo. Pearce said further points on the continent would "definitely" be considered. But he again downplayed any suggestion of imminent launches, emphasising: "When you look at the Gulf, India, Pakistan, Saudi, that eats a lot of metal."

The cautious approach to route expansion may stem from a renewed appetite for bilateral partnerships. Codeshare agreements with Turkish Airlines and Royal Jordanian Airlines were signed at the end of 2013, complementing existing agreements with Dubai's Emirates Airline, Ethiopian Airlines and Qatar Airways.

Appetite for diversifying

However, Oman Air's appetite for diversifying through subsidiaries remains hazy. In March 2013, chairman Darwish bin Ismail Al Balushi had said the government was preparing to launch a low-cost carrier serving domestic and regional routes. It would also consider a dedicated cargo subsidiary, he added. But Pearce was tight-lipped about both subjects.

"I think we've got a lot on our plate right now," he said when asked about the plans for a low-cost subsidiary. "Anything's possible. It keeps being looked at. But we've already changed the airline a lot and grown it in the time I've been there [since January 2012]."

Pearce was equally ambiguous about a possible freight subsidiary, saying only: "We're very keen to look closely at cargo opportunities."

The flag-carrier grew its cargo tonnage by 29% in 2012, almost doubling the Middle Eastern average. That came despite a 1.5% dip in cargo traffic globally. The strong performance underscores Oman's potential for sixth-freedom expansion, even if connecting services do not form a critical part of the future model.

One final unknown entity is Solyom Airways, the ill-fated Hungarian airline that had planned to launch flights in September 2013. Its chief executive, Jozsef Vago, had claimed that an industry investor from Oman was bankrolling the project, along with financiers in Dubai. Hungarian media outlets were more specific, identifying Oman Air as the backer.

But, again, Pearce declined to confirm or deny speculation about the venture. Asked if the sultanate had held talks with Solyom, he said: "I can't say categorically no, because I don't know if somebody else was involved with them… But I was puzzled when I saw that [media report]." Nor are other investments on the cards, he insisted, adding: "I don't have anything that I'm chasing right now."

The focus, instead, falls on Oman's domestic fortunes, as well as its efforts to strengthen ties with European and Asian partners. In total, the sultanate has earmarked $6.1 billion for the development of its aviation industry over the next five years.

Burgeoning sector

Muscat International Airport will remain the centrepiece of the burgeoning sector, with annual capacity rising to 12 million by 2015. Subsequent redevelopment work will lift capacity to 42 million.

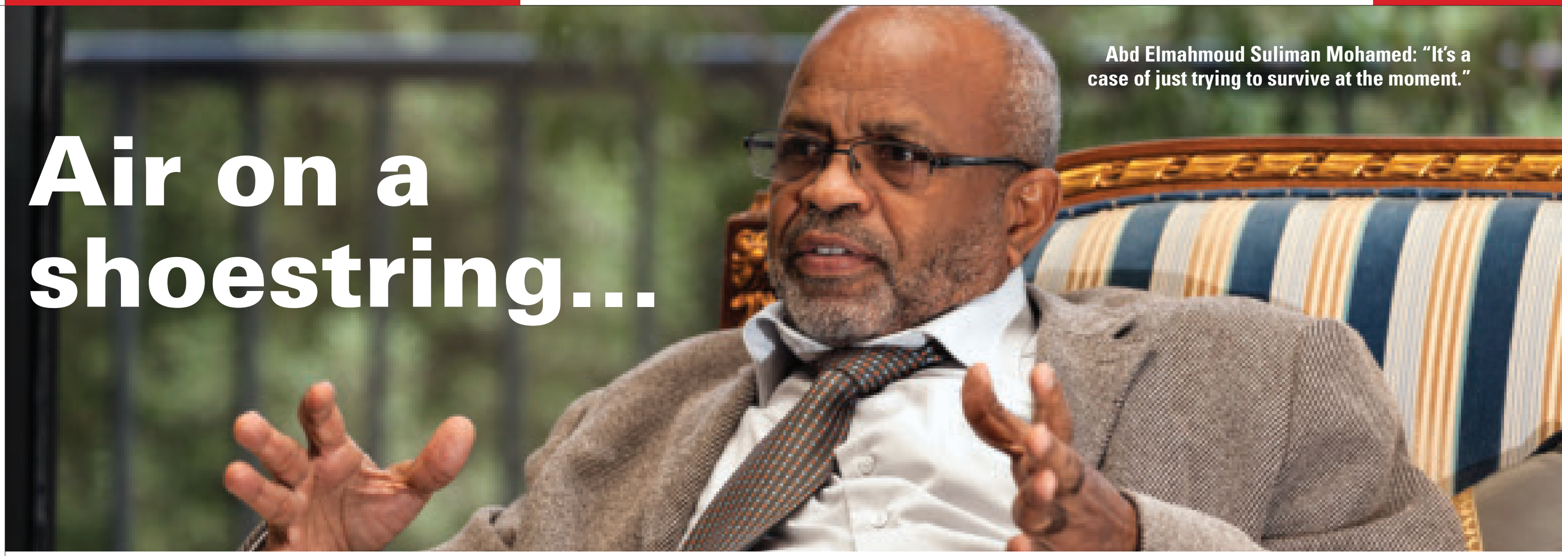
Elsewhere in the country, the opening of Al Duqm Airport, also in 2015, will allow Oman Air to relocate from its existing facility at Jaaluni International Airport, which is 25km from the central-eastern port town. The Oman Tourism Development Company has laid out ambitious plans to grow Duqm's population tenfold to 100,000 by 2020, with the airport set to play a pivotal role.

New airports at the industrial hub of Sohar and the eco-tourism village of Ras al Hadd will further enhance the sultanate's appeal. Its second city, meanwhile, is nearing completion of an expansion project that will boost annual capacity at Salalah Airport to one million.

Pearce noted that the flag-carrier also operates a handful of domestic charter services, mostly deploying its ATRs for local oil companies. The oil and gas sectors remain by far the largest driver of Oman's economy, accounting for more than half of nominal GDP. But amid dwindling natural reserves, the government has committed to radically diversifying its income. Charter services will, therefore, not form a major part of Oman Air's growth strategy.

Instead, Oman Air will redouble its focus on the premium tourism market, while also boosting domestic travel options for a new generation of entrepreneurial Omanis. As the sultanate sets about redefining its role on the global stage, the flag-carrier is doing its bit to raise awareness of this largely unspoilt gem in the Arab world.

Air on a shoestring...



Abd Elmahmoud Suliman Mohamed: "It's a case of just trying to survive at the moment."

Sudan Airways is hanging on to its continued existence as an airline by its fingertips. **Alan Dron** *reports.*

Sudan Airways' small fleet is grounded through a combination of economic and political factors. The national economy is coping with the loss of most of its oil revenues and clear guidance from national government is lacking, according to the airline's top official.

The carrier has single examples of the Airbus A300, A310 and A320. None is currently flying. "It's partly lack of finance, partly difficulties relating to US sanctions," explained general manager Abd Elmahmoud Suliman Mohamed.

The US sanctions, initially imposed in 1997 as a trade embargo on Sudan, blocked the assets of the government on the grounds that the country was a supporter of international terrorism and guilty of human rights abuses. A further 2006 US presidential executive order targeted those involved in the conflict in Sudan's Darfur region.

As a result, "it's difficult to find people who can work with you", said Suliman. "We find difficulties in funding from the international financial community. There are difficulties in even transferring simple sums of money."

Speaking on the sidelines of the Arab Air Carriers Organization AGM at Doha in November, Suliman said his company had leased in an A310, an A320 and a Boeing 737-400 to try to maintain services and was using two Fokker F50 turboprops for domestic sectors.

International services operated by the leased aircraft are focused on Saudi Arabia, where many Sudanese expatriates work. Sudan Airways also carries Hajj pilgrims to Saudi from locations throughout central Africa. The company used to operate to Qatar and the UAE, but these ceased due to its operational difficulties.

However, the presence of sanctions did not stop entrepreneurs or foreign companies offering solutions to Sudan Airways' equipment shortage, he noted.

"To be frank, almost every day I receive an offer from someone. But they want financial guarantees."

The carrier had an application for funding new aircraft with the Islamic Development Bank. "The bank is very willing, but its money comes from all its participating countries and they won't put us up the priority list."

Apart from the problems created by the US sanctions, he said the Sudanese economy had suffered following the 2012 secession of South Sudan as an independent nation.

Sudan had formerly been an oil exporter but most of the oil industry – 75%, according to the Sudanese Government – was bequeathed to the fledgling nation. That had had an obvious effect on the economy of Sudan, although modest growth is predicted for coming years.

In 2007, the Sudanese Government decided to privatise its national carrier, with Kuwaiti investors taking 49% of the shareholding and a Sudanese holding company acquiring a further 21%; the government retained 30%. But the Kuwaitis pulled out in 2011, selling its shares back to the Khartoum government.

"The government was very disappointed because what they thought was a solution turned out not to be and they didn't know what to do," said Suliman.

Africa is recognised as being one of the major growth areas for civil aviation over the next decade; Suliman agrees with this assessment, but is realistic about prospects for Sudan Airways.

"The potential, as they say, is there, but the limit is the government itself. They don't have a clear vision. There are two schools of thought. There is the 'national carrier' concept and the free market."

Sudan is a signatory to the open skies agreement but Suliman is sceptical about the reality behind the principle. Countries in the region have signed up to the idea but, in practice, they protect their national carriers, he said.

Part of the reason behind the success of carriers like Emirates, he said, was that their governments treated them as instruments of the national economy.

"Sudan has open skies, but other countries do not. Foreign carriers are not granted the necessary privileges [by those other countries]. We should treat them equally. We want the Sudanese Government to be more forceful in asking for privileges in return. Our location in the centre of Africa and connecting the Middle East to Africa is not being utilised."

Like many airlines around the world, Sudan Airways is finding that its future prosperity depends as much on events outside its control as on its success on filling seats through its own efforts.

As Suliman said: "It's a case of just trying to survive at the moment."

Sudan Airways has a single A300-600 on strength but, like the other two aircraft in the fleet, it is currently grounded.

Sukhoi showed off the Superjet to potential customers at November's Dubai Airshow.
Right: Production of the Sukhoi Superjet is ramping up at the assembly plant at Komsomolsk-on-Amur.
Right, below: Sukhoi has recently delivered the first full specification SSJ100 to Russian flag-carrier Aeroflot.

Will the SSJ100 be

The Sukhoi Superjet 100 (SSJ100) is adding a new ingredient to the regional airliner marketplace but, asks **Alan Dron***, can its combination of advanced technology, cabin space, and western involvement in both construction and marketing, win orders in the MENA region?*

As recently as the 1990s, it was not difficult to pick out the products of the Soviet Union's airliner industry at airports around the world. They had a distinctive appearance – intriguing aerodynamics, low-bypass ratio engines, and undercarriages that looked capable of operating from a ploughed field, rather than a runway.

No more! As Russian designers have followed their western counterparts and increasingly focused on an airliner's economics, rather than purely on an ability to carry passengers from A to B, the visual differences have evaporated.

Sukhoi Civil Aircraft Company's Superjet 100 (SCAC SSJ100) is a thoroughly modern aircraft. It includes the first application of fly-by-wire technology in a regional jet, a wide (five-abreast) cabin and a 'per flight hour' after-sales support programme, SuperCare, designed to solve the problem afflicting earlier-era Soviet types of patchy in-service support.

It also has significant Western input in the form of major systems.

The 1990s saw several Russian airliner manufacturers trying to make their products, such as the Ilyushin Il-96M, more acceptable to a wider market by grafting on western powerplants and avionics – with limited success. The SCAC team that developed the SSJ100, in partnership with Italy's Alenia Aermacchi, designed in western components from the outset.

The aim: to make the aircraft a more attractive proposition to markets that previously had not been attracted by Soviet-era designs.

Thales supplies the avionics, Messier-Dowty the landing gear, Honeywell the auxiliary power unit (APU) and Liebherr the flight control system. Goodrich, Hamilton Sundstrand and B/E Aerospace also contribute to the overall package.

The SaM 146 powerplants are the product of

super in the ME?

a joint venture between France's Snecma and Russia's Saturn. Significantly, the overseas marketing arm, SuperJet International, is also a joint venture, adding Italian flair from Alenia Aermacchi in Venice.

The SSJ100 is regarded as the current best hope for breaking out into non-traditional markets for Russian products. So, what are its prospects in the Middle East and North Africa?

SCAC regards the Middle East as a priority area for sales. It believes there is a modest, but useful, market to be accessed there and that it has opportunities to sell around 60 aircraft in the region over the next 15-20 years.

Negotiations with several airlines in the region are under way, said a spokeswoman, although, like most manufacturers, SCAC declines to name them. It presented the aircraft at last November's Dubai Airshow.

Embraer's 'E-Jet' family will be the SSJ100's main rival in the region, together with members of the Boeing 737 and Airbus A320 families.

The SSJ100 is regarded as the current best hope for breaking out into non-traditional markets for Russian products.

Sukhoi believes that the SSJ100's fuel-burn will give it a substantial advantage over the latter types, as well as over the E-190/195, which is a similar size to the Russian jet. Work is under way, the spokeswoman added, to improve further the SSJ100's fuel consumption to increase this advantage.

The other area in which the SSJ100 will score over competing regional jets, she said, is in passenger comfort, offering mainline aircraft standards of space and other facilities in a regional jet package.

It is also sufficiently flexible to be able to substitute for single-aisle mainline jets on routes to European destinations, she argued.

SCAC's figures show, for example, that a SSJ100/95 basic version operating from Cairo could reach Paris with its 3100km range, while the SSJ100/95 long range variant's 4600km reach would enable it to cover the British Isles and all of Scandinavia, or to reach Dar es Salaam in Tanzania.

When the Superjet entered service with Armavia, the now-defunct Armenian flag-carrier, in spring 2011, followed by Aeroflot, both carriers complained of a series of faults. Availability dropped.

Some commentators leapt on the problems as evidence that Russian manufacturers had still not succeeded in producing a reliable

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airliner. However, Sukhoi can reasonably point to similar teething problems – some of them major – suffered by the Airbus A380 (cracked wing-rib brackets) and the Boeing 787 (overheating batteries) as evidence that even the world's most successful airframe manufacturers do not always get it right.

And the crash of an SSJ100 on a demonstration flight in Indonesia in May 2012 was found by the subsequent accident investigation to be a result of the pilots being unaware of mountainous terrain close to their flight path and air traffic control shortcomings, rather than faults with the aircraft.

Meanwhile, upgrades to the aircraft are already reaching customers.

Sukhoi signed a contract for 30 SSJ100s with Aeroflot in 2005 in a standard specification, with a 98-seat single-class layout. Aeroflot later asked the airframer to improve the specifications, including better passenger cabin equipment and new avionics.

To avoid delivery delays, both parties agreed that the first 10 aircraft would be delivered with a 'light' specification and later examples would be in full contract layout. The latter includes an upgraded flight management system, plus weather radar with a wind direction detection function.

In the passenger cabin, refinements include separate controls for lighting systems in business and economy-class cabins, individual air vents, plus an extra toilet and galley.

SCAC delivered the first full-specification SSJ100 to Aeroflot on May 31 2013. However, SCAC says that several Russian and foreign airliners are interested in buying the aircraft in its original, 'light' configuration and plans to conclude contracts "shortly".

Meanwhile, SCAC will repurchase the original 10 Aeroflot examples for approximately $19 million each (the list price for a new SSJ100/95 in basic configuration is $35.4 million, while the long-range version retails at $36.2 million).

Sukhoi vice-president Igor Syrtsov is reported by Russian media outlets to have said that the aircraft could be converted into business jets before being re-sold to private buyers.

This business jet version may well be of interest in the Middle East. Designed to fit between large Gulfstream-type executive jets and Boeing Business Jet-sized conversions, extra fuel tanks in the hold are designed to give a range of around 8000km, more than double that of the standard airliner.

With its substantial range, large cabin volume and low internal noise levels, this aircraft could prove popular in the Gulf. SCAC believes, however, that the airliner version will win orders there first.

Critical to the success of the Superjet, says aviation analyst Richard Aboulafia, will be its performance with Mexico's Interjet which, at the time of writing, has received four of its order for 30.

"If Interjet gets quality planes and quick and responsive aftermarket service and is happy with their SSJs, that would be a nice endorsement," said Aboulafia, vice-president of analysis at the US-based Teal Group.

Early complaints

Referring to early complaints from airlines, such as lead customer Armavia, over the serviceability of the SSJ, he said it was possible that small airlines had not adequately provisioned or maintained the new type. However, that excuse would not wash with Interjet. "The Mexicans are pros. It's just a question of whether the OEM can adequately support [the aircraft]."

Aftermarket support has long been an Achilles heel of aircraft from Russia and the former Soviet Union. Nobody doubted their ruggedness and aerodynamic qualities, but spare parts could be a problem.

To prevent this, the marketing and after-sales support organisation for western markets, Italy-based SuperJet International, aims to support customers through a spares distribution warehouse at Frankfurt Airport managed by Lufthansa Technik Logistik.

In earlier times, one major advantage held by Russian or Soviet airliners was that they were less expensive to buy than their western counterparts, but this is no longer the case, due to changes in the way aircraft are acquired, said Aboulafia.

"It's getting harder to sell to the marginal markets these days because the big guys have done a better job lining up financing and getting out there and cultivating new markets."

In a previous era, if a western airliner's list price was $30 million and a Russian counterpart was $25 million, that was a useful difference to an airline in regions such as Africa or parts of the Middle East. "Today, you get somebody to finance it. This has become a game about third-party financing.

"If you're really looking to save money, you go with a depreciated asset like a [Bombardier] CRJ. Twenty years ago, you couldn't get a used regional jet. Today, there's a flood of used CRJs and Embraers out there. Ask anyone from Canada or Brazil what they are going to do with their surplus regional jets and [selling them to] Africa is high on the list."

He believed that only part of the MENA region was likely to yield sales for the Russian aircraft. In the Gulf states, "the 'minimum entry price' is an A320", with carriers being wary of adverse customer reaction to what they perceive as small aircraft.

He felt that Sukhoi would have better prospects in nations such as Egypt and Tunisia with "less stringent passenger requirements".

Regional airliners

This aversion to regional airliners may be changing; last summer, Gulf Air was revealed as the previously unannounced purchaser of 10 Bombardier CSeries.

However, Sukhoi says that the SSJ100 can operate happily alongside A320s and Boeing 737s in an airline's fleet, giving it the flexibility to substitute the smaller aircraft to handle daily or seasonal fluctuations in passenger numbers and operating at lower cost than the larger types.

Traditionally, Arabs travel with a lot of luggage. This has been a major reason for the lack of orders for existing regional jets in the area – there simply is not enough space to fit in passengers' baggage.

Any aircraft – "even an A380" – may struggle to cope with luggage demands on a fully-loaded flight, says Sukhoi. And, in comparison with aircraft such as the Embraer E-Jets, the Russian company argues that one area in which it scores over the Brazilian contender is in substantially larger overhead bins. The SSJ100 is comparable in luggage capacity with the larger A320 and 737, it says.

If the SSJ100 can demonstrate to potential customers that it is on a par with – or even better than – western competitors and crack the MENA market, that will be a significant indicator that SCAC has a winner on its hands.

Mexico's Interjet, which has taken delivery of several SSJ100s, will be an important litmus test for the aircraft's after-sales service.

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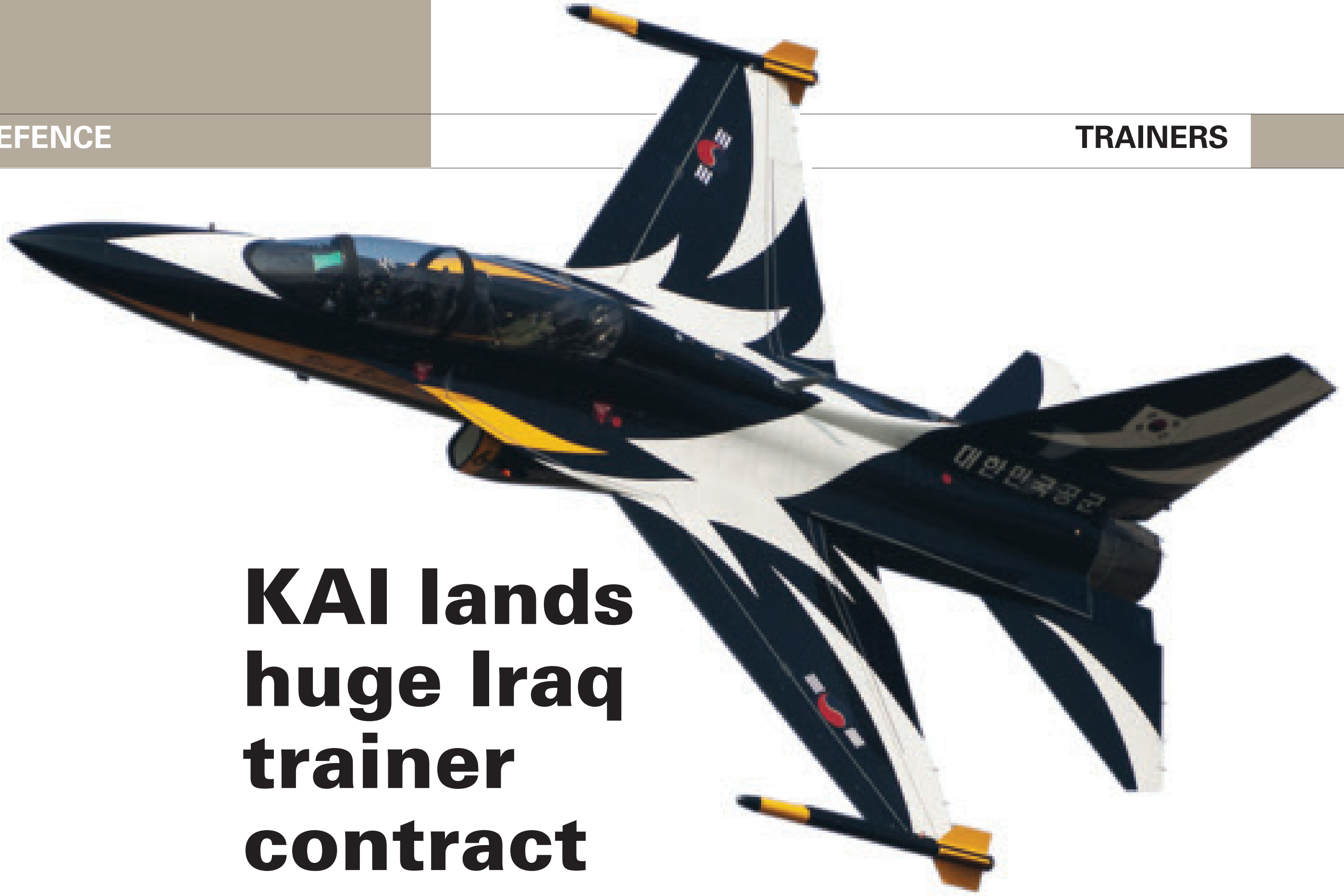

KAI lands huge Iraq trainer contract

Iraqi Government officials signed a $1.1 billion contract to buy 24 T-50IQ advanced trainers from Korean Aerospace Industries (KAI) on December 12 last year. **Jon Lake** *looks at the deal.*

The T-50IQ is the latest version of the T-50 Golden Eagle, an advanced trainer and light attack aircraft jointly developed by Lockheed Martin and KAI.

The Korean company will also provide training for a cadre of Iraqi instructor pilots, and expects to gain a second $1 billion contract covering through-life support and spares for the fleet for 20 years.

It should bring the value of the entire contract to more than $2 billion and make it Korea's biggest arms export to date.

The first aircraft is scheduled to be delivered in April 2016, with all 24 to be transferred within a 12-month period.

The aircraft will then serve as trainers for those Iraqi pilots selected to fly the 36 F-16C/Ds that have been ordered from the United States, though the T-50IQ version will be capable of using machine guns, air-to-air and air-to-surface missiles, and precision-guided bombs, making them more than just advanced trainers, and much more than a stepping stone from the T-6B Texan turboprop!

Iraqi Prime Minister, Nouri al-Maliki, has already suggested that the new aircraft may also have a frontline role, saying that they were being procured "for purposes of training and military actions".

It is understood that the new T-50IQ will actually be based on the most advanced version of the T-50, the FA-50. This light attack variant of the T-50 Golden Eagle supersonic trainer can serve both as an advanced jet trainer and as a light attack aircraft.

The exact equipment fit of the T-50IQ remains unknown, but the FA-50 now being delivered to the Republic of Korea Air Force (RoKAF) is equipped with a modified Israeli EL/M-2032 mechanically scanned pulse-Doppler radar (giving about one third greater range than the EL/M-2032 in the TA-50 version), as well as a Link 16 tactical data link, radar warning receiver, and a night vision imaging system, and features an internal 20mm cannon, with hardpoints capable of carrying up to 4,500kg (9,910lb) of weapons, external fuel or other stores.

The Iraqi aircraft would seem unlikely to be equipped with an Israeli radar, but a number of other choices are available for the T-50 and FA-50, all of them with active electronically scanned array (AESA) antennas, including the General Electric AN/APG-67(V)4, the SELEX Vixen 500E, and even Raytheon's advanced combat radar and Northrop Grumman's scalable agile beam radar. Samsung Thales is independently developing a new Korean multi-mode AESA radar for the FA-50.

Iraq began negotiations with KAI for the supply of T-50s in July 2011, after the aircraft was presented to al-Maliki during his visit to South Korea in April of that year. Iraq also evaluated the Aero Vodochody L-159, the BAE Systems Hawk Mk 128, and the Yakovlev Yak-130, with the Czech Aero Vodochody L-159T originally viewed as the leading contender.

Subsonic competitors

There have been suggestions that the supersonic T-50 could better augment the F-16 in the air defence role than its subsonic competitors, thereby justifying its somewhat higher price tag.

Relative prices of some of the contenders were revealed when the Polish Ministry of Defence published bids it had received for its eight-aircraft and full ground training system advanced jet pilot training requirement. Lockheed Martin UK's T-50 bid was for $593.4 million, while BAE Systems bid $577.4 million for a system based on the Hawk AJT, and Alenia Aermacchi bid $384.4 million for the M-346 Master.

Though the BAE Hawk AJT has gained some momentum in the Gulf region, with orders from Saudi Arabia and Oman, the UAE's requirement for an advanced trainer remains open, and there is no doubt that Lockheed Martin has made tremendous efforts to win over the UAE Air Force and Air Defence, most recently by flying many UAE personnel in the T-50 simulator that it took to the recent Dubai Airshow. Bahrain, Kuwait and Qatar will no doubt watch the UAE trainer competition with interest, since all have ageing Hawks and Alpha Jets to replace.

Just before Christmas, BAE Systems shares dropped 4% when it was announced that the UAE was not proceeding with the deal to buy some 60 Eurofighter Typhoons. **Jon Lake** *analyses the situation after talking to UK Secretary of State for Defence, Philip Hammond.*

Why did UAE Typhoon deal go up in a puff of smoke?

On December 19, BAE Systems announced that the UAE had "elected not to proceed with" British proposals to supply a range of defence and security capabilities, including the sale of 60 Eurofighter Typhoons.

The UAE decision was not communicated in writing, and little explanation was offered. This has left the way clear for a great deal of speculation, rumour, and conflicting reports as to exactly what went wrong.

Losing the opportunity to sell 60 advanced versions of the Typhoon to one of the UK's most important allies was clearly a bitter blow to BAE Systems and the UK Government.

Philip Hammond, the UK Secretary of State for Defence, said the UAE's decision was "disappointing news", but that he was "gratified to have had confirmation that the aircraft had met all of the UAE's requirements".

Senior BAE Systems and UK Government sources said that the decision had been made on "commercial" grounds, and that relations with the UAE remained entirely "amicable".

BAE Systems has already expressed its willingness to "stand ready to work with the UAE to address any future requirements"; perhaps indicating that this may be a temporary setback.

Amicable and gentle

Certainly seasoned observers of the military aerospace market contrasted the UAE's amicable and gentle disengagement with the humiliating public rejection delivered to Dassault when the Rafale was precluded from the UAE fighter competition in November 2011. It was then that the UAE opened up the competition to Eurofighter and Boeing. The Typhoon was soon reported to be the UAE's favoured choice.

Parts of the UK media immediately concluded that the deal had foundered because the Eurofighter Typhoon was too expensive, or because the aircraft had failed to meet UAE requirements. This seems not to have been the case, however.

One source suggested that the commercial "failure" lay in the fact that the customer had asked for a price reduction at the last moment. BAE Systems had been unable to improve its offer immediately, and had sought a deferment of the decision into the New Year, but the UAE refused.

The reliability of this account is questionable, as pricing never previously seemed to be a problem in the UAE Typhoon campaign. In early December, City of London sources involved in arranging finances for the Typhoon part of the package said that "everything was in place", while programme sources reported that pricing and specifications for the UAE Typhoon had been agreed.

Mr Hammond said the problem had been with the "commercial structure of the deal – in particular dealing with the Mirage fighter aircraft the UAE had". The UAE had always hoped that these aircraft would be 'bought back' for subsequent resale. This was something that only the French could realistically undertake, however.

Because the fighter deal was part of a wider package, a commercial failure could have been entirely unrelated to the Typhoon. "The aircraft price was perfectly OK for the Emiratis," one very senior programme insider said, "but the whole package was too expensive because of the costs of the industrial participation (IP), and of the UAS offering".

Meeting Emirati technical requirements was apparently particularly challenging, as the UAE's evaluation of the Typhoon had been exhaustive and in-depth, and the Emiratis had issued a list of changes that would be required.

The end result was that the UAE was going to receive an entirely new variant of the Typhoon, a true multi-role fighter with deep strike, anti-armour and littoral anti-ship capabilities.

It is understood that the plan was to deliver the 60 UAE Typhoons between 2018 and 2022; with the aircraft entering service in three progressively more advanced standards.

Entry into service

The first aircraft to be delivered were to have been in an initial 'entry into service' standard, with the baseline standard AESA radar, conformal fuel tanks on the single-seater, and armed with 2,000lb GBU-24 Paveway III LGBs and Storm Shadow/Black Shaheen cruise missiles.

The next batch, entering service in 2020, would have incorporated the next standard of AESA radar. The final aircraft would have incorporated further avionics and software improvements, with conformal fuel tanks on the two-seaters.

Many thought that the campaign had succeeded and that an order was a "done deal". Certainly, those close to the UAE Air Force and Air Defence reported that "at a tactical level", squadron pilots and middle-ranking staff officers were quite convinced that they would be getting the Typhoon.

By affirming that the new Typhoon variant met

UK Defence Secretary Phillip Hammond blamed the failure on the commercial structure of the deal - and in particular the UAE's requirement that the winning bidder took the Air Force's Mirage 2000s in part exchange.

its capability and timescale requirements, the UAE lent much-needed credibility to the Typhoon future capability roadmap.

It is understood that the UAE was starting to promote its Typhoon variant to other GCC nations, clearly indicating that the UAE believed that the aircraft fully met its own challenging requirements, and those of its GCC partners.

For BAE Systems and the other Eurofighter partner companies, the UAE programme promised to put new impetus into the development of future capabilities, producing an aircraft whose spectrum of capabilities finally matched or exceeded those of the rival Dassault Rafale.

Eurofighter GmbH would have an even more compelling version of the aircraft to offer to India, where Rafale negotiations are dragging.

It would, therefore, seem likely that the deal foundered because other elements of the wider British proposal (unrelated to Typhoon) were inadequate to meet Emirati expectations. This is perhaps unsurprising, since the required IP transfer, offsets, local industrial participation and Anglo-Emirati defence collaboration, all remained largely undefined.

But it clearly came as a surprise to the UK Government and BAE Systems, because all expectations had been that the Emirati decision would merely slip into January or February, “giving the IP/offset/industrial offering time to mature” and for some clarity to emerge on the Emiratis’ expectations on UASs.

Co-operation on future unmanned systems was probably the most important element in the proposed Anglo-Emirati deal, and many believe that the choice of fighter aircraft was always secondary.

Future funding

The credibility of UK future UAS programmes is questionable, given the lack of clear future funding, and real requirement documents, and by the demonstrably slow progress on Taranis. All this may have led the UAE to conclude that the UK was not the right partner for its own future unmanned aspirations.

Alternatively, there have been suggestions that the UAE may have reconsidered the benefits of entering into a wider defence treaty with the UK in the light of the British position on Syria, which made the UK appear to be an uncertain ally.

Whatever the case, a sustained diplomatic effort by the UK failed to win the Emiratis over, despite numerous visits by the British Prime Minister, other senior ministers and even the Queen during the last three years.

But the more directly relevant defence diplomacy effort has been less impressive, and the UK has failed to establish the kind of deep defence relationships that the French enjoy in the region.

Of course, the reason that the UAE has backed off may have nothing to do with the British. The UAE’s recent accommodation with Iran may have lessened tensions sufficiently to reduce the necessity for new weapons, perhaps giving the Emiratis time to see whether the F-35 Joint Strike Fighter will be made available.

BAE Systems said that a UAE order had been an exciting prospect but not part of its business plan, and that an order had not been factored into its financial projections (even though the UAE was clearly No1 on the list of Typhoon export targets). Despite this, BAE Systems shares dropped by 4% when trading began the next day (the biggest drop in more than a year).

The news certainly represented a bitter blow for the Typhoon programme, since a UAE order could have helped to extend the production line life by four years to 2022, as well as helping to fund the Typhoon future capability enhancement programme, which will be vital in winning further export orders.


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More than four decades after the YF-15A made its maiden flight, the Eagle – albeit in modernised and improved form – remains a viable and competitive fighter, and one that is near the top of many nations' wish lists. **Jon Lake** *looks at the latest variant bound for Saudi Arabia.*

New act in Eagle's variety club

The latest addition to the F-15 family – the fly-by-wire F-15SA for Saudi Arabia – is now undergoing testing, with service entry anticipated in 2015. Boeing's three F-15SA prototypes are actually already in their second phase of flight-test operations, having moved to the company's facility at Palmdale, California on November 1.

The switch from Boeing's facility at Lambert-St Louis International Airport, Missouri was made after the initial flights by the three aircraft and following a period of further development, ground tests, and simulations.

The move allows higher-risk testing to be undertaken in the vast, unrestricted Edwards and Nevada ranges, rather than in the airspace around St Louis, which is busy and constrained.

This move also reflects the fact that, as a US Government foreign military sales (FMS) programme, with the US Air Force (USAF) in control, the F-15SA is effectively an air force programme, (with Boeing a sub-contractor).

Palmdale Regional Airport (PMD) shares a common runway with the USAF Plant 42, a US Government aircraft manufacturing plant, which has long been a home to advanced and classified test programmes, and is thus well placed for keeping the F-15SA programme 'low key'.

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The Boeing company and the USAF have been reticent in talking about the F-15SA programme, with all *Arabian Aerospace* requests for information having gone unanswered.

Saudi Arabia has long harboured ambitious plans to upgrade, modernise and expand its armed forces and, according to the *Washington Post's* David Ignatius, the Saudis will ultimately expand the air force by about 400-500 new aircraft.

Saudi Arabia has always tried to pursue a dual-source policy for its military equipment and it was inevitable that it would augment its 72 Eurofighter Typhoons (whose purchase, via a government-to-government deal between Britain and Saudi Arabia was announced in August 2006) with another fighter type.

Despite reports of Saudi interest in the Dassault Rafale, it was always likely that any new fighter would be procured from the USA.

With the F-22A not cleared for export, and with the F-35A similarly 'off limits' and also unlikely to be available in time to meet Saudi timescales, attention soon settled on an advanced version of the F-15, already in service with the Royal Saudi Air Force (RSAF) in fighter (F-15C and F-15D) and strike fighter (F-15S) forms.

An F-15-based solution was reportedly pushed by the US side, not least since a substantial Saudi order promised to save the F-15 production line from closure following the completion of orders for South Korea and Singapore.

Initially, the USA offered the so-called F-15S+ configuration, based on the existing Saudi Strike Eagle but with Link-16 capability, Sniper targeting pods, and F110 engines, and with AN/APG-63(V)1 radar, like that fitted to the South Korean F-15K Slam Eagle.

Digital back end

The APG-63(V)1 features a fully digital back end married to a mechanically scanned array. This would have given a performance improvement over the baseline APG-70 radar and would have allowed an active electronically scanned array (AESA) antenna to be added at a later date, but was too modest a proposal for Saudi Arabia.

It is believed that Boeing, seeking a launch customer for its stealth-modified F-15SE Silent Eagle, then hoped to sell this advanced low observable aircraft to Saudi Arabia. Though, in the end, the Silent Eagle was not offered to (or possibly was not selected by) the RSAF. This may have been due to an ever-more-stringent and cumbersome international traffic in arms regulations (ITAR) regime, which reflected growing US sensitivity over the export of advanced technologies, perhaps particularly within the Gulf region.

There are numerous examples of weapons systems deemed as "not conducive to regional stability" and being withheld from Arab customers. Such systems include conformal tanks for the original Saudi F-15S, whose radar also had to be downgraded, with a detuned Doppler beam-sharpening capability giving an effective reduction in range and resolution (to about one third of that enjoyed by USAF F-15Es).

It was inevitable that Saudi would focus on the advanced F-15.

But it may be that the fully-modified stealthy F-15SE was viewed by the Saudis as being unnecessary, unproven, and perhaps not cost-effective, or that the Saudis may have been offered the choice between the F-15SE's low observable features (including internal weapons carriage) or a non-stealthy version of the aircraft armed with advanced long-range stand-off weapons systems like the Boeing AGM-84K SLAM-ER.

Whatever the reason for the failure to procure the Silent Eagle, the aircraft eventually selected by the RSAF was the non-stealthy, but otherwise similar, F-15SA.

The F-15SA (SA for 'Saudi advanced') was based on the multi-role, two-seat F-15E Strike Eagle, and built on the enhanced F-15K and F-15SG variants produced for Korea and Singapore, with further features and capabilities.

A mark of the F-15SA's advanced nature lies in the fact that its avionics and systems are largely the same as those adopted for Boeing's stealthy F-15SE Silent Eagle. Consequently, the new Saudi Advanced Eagle is, in many ways, more capable and more sophisticated than any of the USAF's own Eagles.

The F-15SA is the newest and most advanced production variant of the combat-proven F-15 Eagle, providing improved performance and increased survivability at a lower life-cycle cost than existing F-15 variants.

It also has a significance beyond Saudi Arabia, as similarly upgraded F-15 variants are contenders in a number of other local fighter competitions, while for the USA, the F-15SA programme safeguards Boeing's St Louis manufacturing facility, and gives America a second fighter line beyond the F-35 production set-up at Fort Worth.

The F-15SA also gives the USA another exportable fighter – invaluable in areas where the F-35 cannot yet be offered for export, but where the F-16 or F/A-18E/F might not be quite what a customer is looking for.

With budgetary pressures forcing the US to reduce its own permanent military presence in the Gulf (even in the face of a resurgent Iranian threat), and driving it to 'burden share' with its regional allies, the US has had to give those allies the 'right tools to do the job'.

An advanced, AESA-equipped F-15SA promised to allow the RSAF a far higher level of interoperability with US air forces, and also promised superior capabilities for dealing with sets of small targets – exemplified by the dispersed elements of Iran's Islamic Revolutionary Guards Corps (IRGC) and for the kind of asymmetric warfare required for combatting rebels, insurgents and non-state actors like those Houthi/Al-Qaeda in the Arabian Peninsula (AQAP) elements that the Saudis face on the Yemeni border.

Modernisation programme

The Saudi F-15SA requirement forms the centrepiece of the RSAF F-15 fleet modernisation programme and, with 84 new-build aircraft and the conversion of 70 existing F-15S aircraft to F-15SA standards, the $29.4 billion package (approved by the US Congress in 2010 and signed by President Obama in 2011) represents the most valuable foreign military sale to date.

The formal order for the 84 new-build F-15SAs was placed in March 2012, while a contract for the conversion of 68 F-15S aircraft to F-15SA standards was placed on June 26 2012 – two of the original 70 F-15S aircraft having been lost in the interim.

The new Eagle variant is fitted with a Raytheon AN/APG-63(V)3 AESA radar – the most advanced available for export F-15s – and is powered by General Electric F110-GE-129 IPE engines.

The aircraft is fitted with the BAE Systems digital electronic warfare system (DEWS), joint helmet mounted cueing system (JHMCS), Lockheed Martin AN/AAQ-33 Sniper surveillance and targeting pods, and AN/AAS-42 Tiger Eyes infrared search and track (IRST) pods, as well as low altitude navigation and targeting infrared for night (LANTIRN) navigation pods.

The weapons package notified to Congress included AGM-84 Harpoon Block II anti-ship and surface attack missiles, AGM-88 HARM anti-radiation missiles, GPS-guided JDAM bombs and CBU-105 cluster bombs, dual-mode laser/GPS-guided DMLGBs, as well as DB-110 EO reconnaissance pods.

To accommodate all of these weapons, the F-15SA has two additional under-wing weapons stations, which have, in turn, necessitated the integration of a new digital fly-by-wire (FBW) flight control system (FCS).

The 'new' weapons stations use hardpoints that were designed into the F-15 wing from the beginning, as stations 1 and 9, though these have never been used in service. They were originally introduced on the F-15A fighter and were intended for planned tactical electronic warfare system (TEWS) pods. It is said that these outboard TEWS pods destabilised the F-15 in pitch to the extent that the original control systems would not have been able to cope.

The new digital fly-by-wire FCS permits stations 1 and 9 to be reactivated and used for the carriage of a range of weapons and stores, and also gives greater flexibility in tailoring control laws for specific flight conditions, loadings, and tasks, while simultaneously conferring a significant reduction in maintenance.

Integration of an all-new FCS represents a major modification to what is otherwise a tried and tested and mature airframe. It will require a significant test and certification effort, clearing the new F-15SA's fly-by-wire flight control system over the entire flight envelope.

The new F-15SA made its maiden flight on February 20 2013, after completing its first taxi tests on February 15. The aircraft used for the landmark first flight was SA-2 (12-1002), actually the second of three instrumented F-15SAs that are serving as prototypes, flown by pilot Joe Felock, with Mark Snider in the rear cockpit.

Test programme

The first test aircraft, SA-1 (12-1001) followed on March 2, and a third, less heavily instrumented aircraft, SA-3 (12-1003) joined the test programme later.

The three F-15SAs will each have individual flight test responsibilities. SA-1 will be used for weapons testing, SA-2 for flutter and aerodynamics, and SA-3 for electronic attack testing.

The first flight announcement was not made until March 13 – some three weeks after the event.

After the first week of April, all flight testing was reportedly put on hold due to engineering issues with the digital FBW FCS, with envelope expansion having been much slower than anticipated

But, despite this hiatus, Boeing ceremonially rolled out the first F-15SA for the Royal Saudi Air Force at St Louis on April 30 2013. Dennis Muilenburg, Boeing Defense, Space & Security president and CEO, and Lieutenant General Mohammed Bin Abdullah Al-Ayeesh, commander of the Royal Saudi Air Force, attended the ceremony.

The F-15SA began a final series of test flights from St Louis on October 16 2013, when SA-2 made a flight of about 1.2 hours. It was reportedly "a complete success".

Pilot Joe Felock reportedly said that the aircraft "handled better than the simulator" and gave the up-and-away control laws particular praise, especially during a series of air-to-air tracking tasks.

There was a brief series of further test flights to support the planned transfer to Palmdale – originally scheduled for October 30 but actually undertaken two days later on November 1.

Soon after its arrival at Palmdale, SA-1 was fitted with a prominent nose-mounted test instrumentation boom, while SA-2 was noted flying without its conformal fuel tanks.

Testing is expected to continue for about another year, and new-build aircraft deliveries to Saudi Arabia are scheduled to begin in early or mid 2015 and will conclude by 2019.

The first two F-15S-to-F-15SA upgrades will be undertaken at the Boeing facility in St Louis, with this first phase ending by the end of December 2015, before the upgrade's second phase begins in 2016.

Plans and schedules

This will see the remaining 66 aircraft converted in-kingdom by the Alsalam Aircraft Company in Riyadh. The company, originally set up as part of a Boeing offset arrangement, received a $33.1 million firm-fixed-price contract to set up the required facility, and to develop manufacturing plans and schedules.

Alongside the manufacturing effort, Boeing and the USAF are establishing a major training programme, updating Saudi Eagle training at King Khalid Airbase (KKAB) in Khamis Mushayt to reflect the F-15SA's new features, and providing "differences training" for the initial cadre of RSAF pilots and maintainers moving over from other F-15 models, and for an initial cadre of USAF aircrew supporting the F-15SA programme.

The current plan is to train up to six USAF crews and six RSAF crews in September-October 2014, prior to the initial aircraft deliveries to KKAB in January 2015. Up to four additional instructor crews may be trained in the January-March 2015 timeframe.

The existing Saudi F-15A-D fleet is not being upgraded and will be retired; replaced, with the already withdrawn F-5E/Fs, by a mix of Eurofighter Typhoons and F-15SAs. Unit designations for the new F-15SA units are unknown, though the first squadron is likely to be the 17th, a former F-5E unit once expected to be the third Typhoon unit.

It is assumed that the existing F-15S squadrons will re-equip with new-build and upgraded F-15SAs.

C-27 gets a lift from new markets

Even as the US Air Force withdraws its brand new C-27J Spartan tactical airlifters from service, a host of new customers are emerging for this versatile airlifter.

Jon Lake *reports.*

At first sight, the decision of the US Department of Defense to withdraw the C-27J from service, even before deliveries were complete, could have looked damaging to the aircraft's reputation.

However, in reality, the cancellation of the programme after the delivery of 21 aircraft, reflects the impact of US budgetary cuts and sequestration, rather than any inherent deficiency on the part of the aircraft itself.

Now manufacturer Alenia is pushing hard to open up new markets in the MENA region, with the Royal Moroccan Air Force already operating four aircraft at the 3rd Air Force Base (3rd BAFRA).

The type is also in service in Bulgaria (3), Chad (2), Greece (8), Italy (12), Lithuania (3), Mexico (4), and Romania (6 of seven ordered).

The C-27J is also on order by Australia (10 to be delivered from 2015), and Peru (2), and has been selected by Slovakia and Taiwan, and shortlisted by Canada, India, Indonesia and the Philippines.

The USAF originally procured the C-27J in order to directly support Army urgent needs in difficult environments such as Afghanistan, where it was anticipated that airfield constraints might prevent the C-130 from operating effectively.

In practice, these constraints were negligible and the USAF expected them to be marginal in future scenarios, making the C-27J a 'niche capability' that it could no longer afford.

The USAF claimed that the C-130 could complete most of the C-27J's missions, and could do so more economically when it came to through-life costs.

Former Air Force Chief of Staff, General Norton Schwartz, told Congress that the C-27J cost $9,000 per hour to operate, while the C-130 cost just $10,400.

However, the Ohio Air National Guard, one of four guard units to fly the C-27J, differs with General Schwartz's cost estimates, saying that the C-27J's direct operating costs were just $2,100 per hour, while the C-130 cost $7,000 per hour to fly.

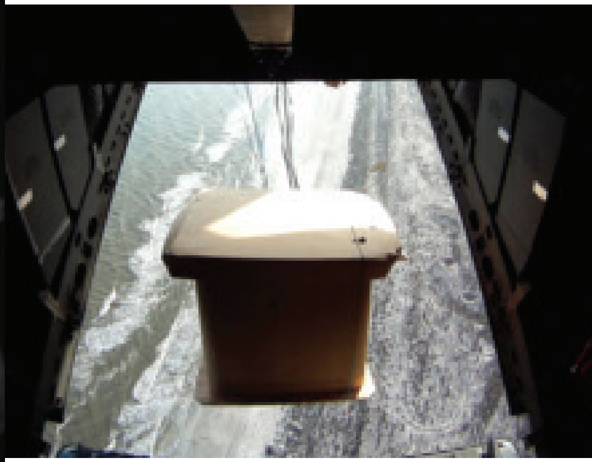
By the time the USAF cancelled the C-27J, just 38 were on order, reduced from an initial planned total of 145 aircraft – 75 USAF and 70 Army, with Finmeccanica projecting a possible total of 207 JCA aircraft.

Some 17 aircraft had been delivered by October 2013, by which time 13 had been withdrawn from use, retired to long-term storage in the Arizona desert at the USAF's military aircraft 'boneyard' storage facility outside Tucson.

One more was with L3 Systems at Waco (where systems integration work is carried out), and three had been delivered to Special Operations Command (SOCOM) at Pope AFB.

It is a tribute to the C-27J that, no sooner did the USAF retire it, than a number of US Government agencies immediately queued up to take the aircraft.

SOCOM will receive seven, for parachute training, though some or all could be converted to MC-27J Stinger configuration with a pallet-mounted GAU-23 30mm roll-on/roll-off gun system and systems from the AC-130 Hercules, as demonstrated to SOCOM officials at Eglin Air



Action stations: Images from the experimental firefighting mission.

C-27J goes to blazes

Alenia Aermacchi has completed an experimental campaign in a Romanian mountain range with a C-27J that operates with the Romanian Air Force.

The objective was to test an innovative fire-fighting system called Caylym Guardian.

The system allows C-27Js to drop up to six large cardboard containers on bushfires; each container has a capacity of 1000 litres of water or extinguishing liquid.

The system allows for a quick, accurate and innovative way to fight bushfires. Using the C27J's system of in-flight drop, extreme precision is guaranteed with a retardant liquid cloud well focused on the target. Containers are biodegradable but they can also be recovered by ground fire-fighters.

Containers feature standard dimensions type A22, which can be installed on C-130 and C-27J class aircraft without any peculiar equipment or modification and can be launched at higher altitudes (1,500ft) than traditional fire-fighting aircraft, thus significantly increasing mission safety and allowing night operations.

The tests, performed both on ground and in flight, have proved successful and have confirmed the great operating flexibility of the C-27J, whose wider fuselage section and flight characteristics allow it to manage loads and perform missions that other aircraft of the same class cannot.

Force Base, during July 2012. This is a different gunship configuration to the MC-27J 'Praetorian' gunship upgrade developed by Alenia and ATK and ordered by Italy, and offered to Colombia.

The US Forestry Service put in a bid for seven C-27Js for fire-fighting, dropping smoke jumpers, and for transporting passengers and cargo, but will instead receive seven HC-130H Hercules (which could carry the USFS's required load of 3,000 gallons of retardant, where the C-27J could carry just 1,850) from the US Coast Guard. This will allow the Coast Guard to take all 14 remaining C-27Js.

The Coast Guard originally wanted all 21 C-27Js, claiming that such a transfer would allow it to save $800 million by cutting its planned purchase of 36 HC-144A Ocean Sentry (CN-235) SAR/patrol aircraft to 18.

The C-27J is not equipped with the search radar, electro-optical and infrared cameras that are integral on the HC-144A, and it remains to be seen whether it can accommodate the HC-144's mission systems pallet (MSP) and command and control (C2) system.

The four remaining undelivered USAF aircraft are due to be delivered by April 2014, and will almost certainly go to SOCOM (via L3 at Waco).

What this means is that the ex-

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The C-27J is getting recognition at trade events around the world.

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USAF aircraft will not be sold to Alenia's potential export customers, a prospect that had led the Italian company to warn that it would not support the aircraft if the US resold them to other nations.

The aircraft does face considerable competition in the international military transport aircraft market, not least from Airbus Military's C295.

The C-27J and C295 are in the same broad class – both being turboprop-powered, high-wing military light transport aircraft. But, despite these broad similarities, they differ in some important aspects. In particular, their cargo bay dimensions mean that they have quite different load-carrying characteristics. The C-27J's cargo bay is wide and tall but shorter in length, which allows it to carry larger items of cargo (such as light military vehicles), whereas the C295's cargo compartment is longer, but narrower and lower, allowing it to carry more passengers, paratroops or stretchers.

Airbus Military also claims that the rival C295 has lower fuel consumption, longer endurance and lower maintenance man-hours per flying hour (MMH/FH) figures, and that it can use shorter runways – though Alenia says that its aircraft has a longer range and can operate from real, softer, unprepared strips, and is more rugged and robust, with redundant three-spar wings and tail surfaces.

The Spartan also features fully redundant hydraulics – the aircraft has two fully independent systems with two independent reservoirs and four pumps; two engine-driven and two electrically powered.

The Spartan has an auxiliary power unit (APU), allowing operation from semi-prepared and primitively equipped airstrips and making the engines more easily restarted in flight.

The Spartan also has an oxygen distribution system for the passenger compartment, with up to 46 distribution points (up to 60 may be fitted as an option), meaning that passengers do not need to carry personal oxygen bottles.

A greater power-to-weight ratio makes the C-27J significantly faster than the C295 (315kts or 583km/hr compared to 260kts or 480km/hr).

The aircraft has 16 cockpit windows, giving better visibility for the pilots, and allowing very steep approaches. The USAF judged that the C-27J had a "superior military operational envelope" and provided "superior military utility".

The USAF's judgement was based principally on the C-27J's performance and, perhaps, especially on its cargo compartment, which allows the carriage of light vehicles and which is more compatible with pallets from larger airlifters, thereby imposing fewer restrictions on the transfer of stores from the larger C-130 and C-17 aircraft than competitor aircraft.

Greater maximum width

The C-27J and C295 have virtually the same floor width (2.45m) but the C-27J has a greater maximum width, permitting the carriage of wider loads further forward. This allows the loadmaster to more easily inspect and check on loads in flight.

Due to height clearance requirements, neither aircraft can accommodate the maximum pallet height of 2.44 metres that a C-130 can carry, but with its higher roof, the C-27J can take pallets that are 35% taller than those accommodated by its closest rival.

The C-27J can adjust the height and inclination of the cargo floor to facilitate loading and unloading operations where no external cargo loader is available, and features extra-large paratroops doors (which are not influenced by propwash) for safer airdrops.

There is clearly a cost difference between the two aircraft and the RAAF assessed that the C295 would have lower acquisition and through-life costs than the C-27J, though when both aircraft were offered to the USAF in 2006, the up-front cost differential was put at just 15%.

Some operators would see such a cost difference as being a price well worth paying, especially if their requirement was more focused on carrying military vehicles and large items of cargo, rather than personnel.

As well as offering compelling performance and capability advantages, the C-27J also offers useful commonality with the bigger C-130J. The C-27J was designed from the start to be an upgraded and improved version of Alenia's G.222, using the C-130J's glass cockpit and powered by more powerful engines.

Between 1996 and 2006, development of the C-27J was undertaken by a joint venture between Alenia and Lockheed Martin, known as Lockheed Martin Alenia Tactical Transport Systems (LMATTS), and the C-130J's Rolls-Royce AE 2100 engine and six-blade propeller were adopted for the C-27J.

The LMATTS partnership was dissolved when Lockheed offered the C-130J to meet the US Army and US Air Force Joint Cargo Aircraft (JCA) requirement, in direct competition with the C-27J.

Thereafter, Alenia partnered with L-3 Communications (and later Boeing), forming the Global Military Aircraft Systems (GMAS) joint venture to market the C-27J.

But, though Lockheed is no longer directly involved in the C-27J, the aircraft still represents a remarkable complement to the bigger four-engined airlifter, with a similar cockpit and the same engines and propellers providing a degree of support commonality.


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Tractor beam

The UAE Air Force and Air Defence used the Dubai Airshow to present its, hitherto, very secretive special operations aviation capability. **Jon Lake** *took a look.*

At one end of the static aircraft display, the UAE Air Force and Air Defence displayed a trio of trainers (Hawk, PC-21 and PC-7) and almost the full spectrum of types used by the Joint Aviation Command.

This included one of the new, converted, Air Tractor AT-802U agricultural aircraft and an armed Cessna Caravan, together with specially equipped and armed examples of the Boeing CH-47F Chinook, Sikorsky UH-60M Blackhawk and Eurocopter AS550C3 Fennec helicopters.

These aircraft are all assigned to Group 18, with the rotorcraft operating from Sas Al Nakheel Airbase, while the fixed-wing types (which also include three DHC.6-300s and one DHC.6-400 Twin Otter) are believed to be based at a new airport at Falaj Hazza camp on the outskirts of Al Ain.

It was previously reported that Group 18 was part of the UAE's new Special Operations Command (SOC) headquartered in Abu Dhabi, though more recent reports suggest that Group 18 is merely the aircraft-operating element of the UAE Joint Aviation Command, a new tri-service force designated as a combat aviation brigade and primarily responsible for operating and supporting the Emirates' military helicopters, but also operating a variety of smaller, prop-driven fixed-wing aircraft.

Though Group 18 does support the SOC in its counter-terrorism mission, it also has a range of other roles, including anti-submarine warfare and maritime patrol, using AS332 Super Pumas and AS565 Panthers, though these are based at Bateen, rather than Sas Al Nakheel.

The bulk of the command's aircraft operate primarily in the support helicopter role and undertaking attack, observation, and liaison duties, mainly in support of ground forces, including, but not limited to the SOC.

The star of the Joint Aviation Command display at Dubai was the Group 18 Air Tractor AT-802U, a modified crop duster converted and equipped for light attack/close air support and ISR duties by the US company IOMAX, which specialises in providing innovative solutions to address the most challenging security issues.

In reality, this has tended to mean providing equipment, support and services to special forces customers in more than 30 countries, and providing air support to the US Drug Enforcement Administration.

Long endurance

IOMAX is aiming to become a full-service provider of long-endurance, intelligence, surveillance, and reconnaissance (ISR), precision strike aircraft to US allies, with the 24 Air Tractors for the UAE intended to be the first of many similar contracts.

Like others before it, the company has recognised the potential of the crop-duster as a potential armed surveillance aircraft, with the combination of a big wing, powerful engine, large payload capability, and long endurance, as well as the ability to operate from unimproved airfields, or even dirt roads and farm fields, while being maintained and supported from the back of a truck.

This all results in an aircraft that can provide direct support to ground troops, flying from semi-prepared bases close to the frontline, and operating in extreme heat and in primitive, dusty conditions.

These attributes are true of many agricultural aircraft and not just the Air Tractor AT-802U.

The concept was demonstrated by the success of the Ayres Turbo Thrush narcotics eradication delivery system (NEDS) aircraft used by the US Drug Enforcement Agency, and by Ayres' prototype/proof-of-concept Vigilante CAS aircraft, as well as by Air Tractor's own AT-802U submission to meet the US Air Force's light attack/armed reconnaissance (LAAR) requirement.

Like a number of competing crop-dusters, the Air Tractor is based upon the original Snow S2, built by Leland Snow's Snow Aeronautical from 1957.

Snow was purchased by the Aero Commander division of Rockwell in 1965, which built the aircraft as the Ag Commander and the Thrush. Then, when Rockwell dropped the Aero Commander brand, it continued as the Rockwell Thrush Commander.

The Ayres Corporation, a firm that had been set up to retro-fit turboprop engines to Thrush Commanders, purchased production rights to the aircraft and the associated production facility, and Thrush Aircraft bought out Ayres in June 2003.

In the meantime, Leland Snow resigned from Rockwell and designed the Air Tractor (another derivative of his original S2), putting it into production in 1972 and spawning a new family of aircraft, culminating in the Air Tractor AT-802, with a larger hopper and greater wingspan.

It was this variant that formed the basis of the

The converted Air Tractor 802U is one of several special mission general aviation aircraft in action with the UAE forces.

Far left: The Cessna Caravan prepared for special operations.

Left: weapons developed for the aircraft can be used on anti-submarine and other missions.

AT-802U, which was developed in 2008 to meet the USAF's LAAR requirement.

The AT-802U featured cockpit and engine armour, a bulletproof windscreen, self-sealing fuel tanks, and introduced a reinforced wing spar certified for 12,000 flying hours, and with further structural reinforcements to permit the carriage of 9,000lb (4,100kg, and later 5,340lb/2.422kg) of payload on a centreline pylon and on six under-wing hardpoints.

The space occupied by the former chemical 'hopper' provides volume for massive internal fuel capacity, such that the AT-802U can remain on station for up to 10 hours on internal fuel, long after other fighters or ground attack aircraft would have to go to the tanker or return to base.

Endurance could be further expanded through the use of drop tanks on the under-wing or under-fuselage hard points.

When the UAE became the first military buyer for the AT-802U, IOMAX was called in to install and integrate the required mission and weapons systems and armaments.

No details of the AT-802U's equipment fit have been confirmed, though it is believed that the aircraft does feature a militarised, night vision goggle (NVG) -compatible glass Esterline CMC Cockpit 4000, with three multi-function displays in the front cockpit and one larger tactical display in the rear.

The aircraft is also believed to incorporate a Honeywell inertial reference system (GPS/IRS), and a Wulfsberg Flexcomm tactical modular multi-band airborne FM/AM/UHF radio communications system, as well as a remotely operated video enhanced receiver (ROVER) -compatible compact multi-band data link (CMDL) that allows live video to be streamed from the aircraft to other aircraft, forward air controllers, or operations centres on the ground.

IOMAX has also developed a flexible pod system for the AT-802U's centreline pylon, allowing the carriage of a FLIR Systems electro-optical/infrared (EO/IR) turret, or a small synthetic aperture radar/moving target indicator (SAR/MTI) radar, and a range of other stores, from signals intelligence (SIGINT) packages to missile and radar warning receivers, without using the under-wing hardpoints.

Laser-guided rockets

Weapons options include 500lb GBU-12 laser-guided bombs or 'dumb' Mk 82 bombs, the new Moog Mini-Talon GPS/INS precision-guided stand-off glide bomb, AGM-114 Hellfire missiles, seven-round M260 rocket launchers, or DAGR laser-guided rockets, and even GAU-19/A 12.7mm three-barrel gun pods.

Firings of the AGM-114 Hellfire and Roketsan Cirit laser-guided 2.75inch rocket from the AT-802U have already been undertaken in the UAE, and other weapons clearances are under way.

The UAE Air Force and Air Defence received an initial batch of 10 'Block 1' Air Tractor AT-802Us between November 2010 and May 2011, and a further 14 'Block 2' aircraft were delivered later, ending in June 2013.

IOMAX has now migrated the mission system from the Air Tractor AT-802U to the outwardly similar Thrush S2R-T710P airframe, an aircraft that is slightly faster at altitude, and which reportedly offers greater scope for modification while still on the production line, resulting in what IOMAX market as the 'Block 3' ArchAngel BPA.

The company is reported to be in the last stages of contract negotiations with a launch customer for the Archangel, and also is pursuing a "lucrative opportunity" with another Middle Eastern air force. One of these may be the UAE, which is donating six of its early AT-802Us to Jordan, and which is expected to replace these aircraft with Block 3 Archangels.

The UAE AT-802Us augment a smaller number of DHC.6-300s and -400 Twin Otters and Cessna Caravan 208s within Group 18. The unit operates three DHC.6-300 Twin Otters, and two further DHC.6-400s are currently undergoing modification for a low altitude intelligence, surveillance, and reconnaissance (ISR) role.

The eight or so UAE Caravans are similarly equipped for low altitude ISR, and also have a weapons capability, but are not the same as those aircraft used by Iraq and Lebanon, which were modified by Alliant Techsystems (ATK) as AC-208 Combat Caravans, equipped with an L-3 Wescam MX-15D electro-optical/infrared sensor, an ATK-developed STAR fire control system, and armed with Hellfire missiles.

Instead, the UAE aircraft were reportedly weaponised by Sierra Nevada and incorporate some communications equipment from North Atlantic Surveillance Systems, including a FLIR Systems Brightstar EO/IR turret.


NO MISSION
IMPOSSIBLE
Mi-17

BAE Hawk soldiers on in the Emirates

The UAE Air Force and Air Defence has continued to rely on its ageing fleet of BAE Hawks for advanced and lead-in fighter training, though there are now signs of a change. **Jon Lake** *reports.*

The UAE selected the Alenia Aermacchi M-346 Master to meet its requirement for a new advanced trainer as long ago as February 2009.

But, though the air force was reportedly "very happy with the aircraft", negotiations had been abandoned by February 2011, with Alenia's Vincenzo Giangrasso blaming "political problems" that were outside his domain.

Since then there has been no sign of the trainer competition being re-opened.

In the interim, the UAE Air Force and Air Defence has continued to rely on its ageing fleet of BAE Hawks for advanced and lead-in fighter training.

Now, however, there are signs of an imminent change, with the UAE having reportedly agreed to transfer 10 Hawks to the Lebanon in a deal that forms part of the recent Saudi agreement to give the Lebanon a $3 billion grant to buy arms.

Emirati student pilots train at the Khalifa bin Zayed Air College, at Al Ain International Airport, where officer training and academic/ground school phases are followed by elementary flight training on the Grob G115TA, and primary training on the Pilatus PC-7 (now being replaced by the newer PC-21).

Flight course

The basic flight course is undertaken on the Hawk 63A and 63C, and it would seem most likely that some of this will be downloaded to the PC-21, allowing 10 aircraft to be transferred to the Lebanon.

Graduates are graded and assigned to transport aircraft, helicopters, or to the advanced strike course, which prepares pilots for the Block 60 F-16E/F or the Dassault Mirage 2000-9, and which includes basic fighter manoeuvres (BFM), basic weaponeering and navigation, including a cross-country flight to a neighbouring country, usually Bahrain or Kuwait.

The advanced strike course is undertaken with 12 Squadron on the Hawk 102 aircraft.

The UAE took delivery of some 29 "first generation" Hawk Mk 60 series trainers and 18 Mk 100 series aircraft. These were procured in separate contracts and were delivered between 1983 and 1994. About 20 (some sources say 22) Mk 60 series aircraft and 12 of the newer Mk 100s remain in service today.

Though the defence forces of four of the separate Emirates were theoretically merged into the Union Defence Force in 1976, in practice, they remained separate and undertook individual procurement until 1996, when the Dubai Defence Force became the UAE's Central Command, the Abu Dhabi Defence Force became the Eastern Command, Ras Al Khaimah formed the Northern Command and Sharjah's Defence Force merged with the Federal Police.

Interestingly, both Dubai and Abu Dhabi procured BAE Hawks of slightly different types, and these were subsequently taken over by the combined UAE Air Force.

Additional aircraft

Dubai ordered eight Hawk Mk 61s on June 30 1981 (at a reported cost of $40 million) and these were delivered between March and September 1983. A single additional aircraft was delivered in 1988.

Though primarily procured for training, they were also capable of being configured for the light strike, air defence and reconnaissance roles. At least three (and probably a couple more) have been written off in service. Three remain active at Minhad, with two withdrawn from use.

Abu Dhabi purchased 16 Hawk Mk.63s on January 2 1983 at a reported cost of $180 million, including spares and maintenance support. These were delivered between October 1984 and May 1985. From 1991 the 15 then-surviving Mk 63s were subsequently upgraded to Mk.63A standard.

At least two (and perhaps three or more) have been written off in service, but they were augmented by four new-build aircraft to Hawk 63A standard that were designated as Mk 63Cs.

In 1990 Abu Dhabi became the launch customer for BAe's Series 100 "enhanced ground attack" Hawk model with an order for 18 Hawk Mk.102 advanced weapons trainers, which were delivered between April 1993 and March 1994.

Six Hawk Mk.102s have been lost and the 12 survivors operate in the lead-in fighter-training role from Minhad, augmented by three Mk.61s.

Jon Lake *looks at the Airbus lighter military product line that is steadily gaining market share across the MENA region.*

CHARGE OF THE LIGHT BRIGADE

Though the A400M Atlas and A330 MRTT – multi-role tanker and transport – are the 'big ticket' items in the Airbus Military product portfolio, it is the company's 'light and medium' transport aircraft that have won the commercial success that has allowed the company its extravagant claim to be the world's leading manufacturer of military transport aircraft.

Because, while the company has consistently obtained more than 50% market share over the past 10 years, that has been in the light and medium transport categories. Airbus Military has received 1,089 total orders for military transports and tankers, delivering 874. Of these, 641 are actually in service.

But 881 of these orders have been for 'light and medium' transport aircraft, 850 of which have been delivered, and 617 of which are in service.

Airbus Military already enjoys a good presence in the Middle Eastern and North African market, with 70 aircraft in service in (or on order for) nine countries in the MENA region, comprising nine A330MRTTs, 28 C295s, 25 CN235s and eight C212s.

Assembled locally

But, while Airbus Military's definition of the MENA region includes Morocco, Algeria, Libya, Egypt, Jordan, Saudi Arabia, the UAE, Oman and Yemen, it does not include Turkey, where the air force, navy and coast guard are all operators of the CN235, and where many of the 61-strong fleet was assembled locally by Turkish Aerospace Industries.

Airbus Military's light and medium transport offerings are the product of the 2009 absorption of EADS-CASA which, in turn, was formed from Construcciones Aeronáuticas SA or CASA in 1999.

The unpressurised, fixed undercarriage, 25-passenger, 2.8tonne payload C212 (originally known as the Aviocar) is the least successful and widespread of Airbus Military's aircraft in the region, with just one example operational in Libya, and with Jordan and the UAE having retired their eight aircraft.

The company is improving and upgrading the C212 and has launched the new NC212i model in association with Indonesia's PDTI, with a new EFIS cockpit, and increasing seating capacity to 28.

At least 79 examples of the bigger, pressurized, 51-passenger/six-tonne payload CN-235 are operational in the region, of 86 delivered.

Saudi Arabia has retired its four CN-235s, while Morocco and Turkey have each lost two aircraft in service and the UAE one more. Two additional Spanish aircraft have been transferred to Jordan for gunship conversion by ATK.

ATK, under a contract placed by Jordan's King Abdullah II Design and Development Bureau (KADDB), is fitting the two aircraft with its new light gunship special mission aircraft capabilities package, including ATK's STAR mission system, which provides both day and night reconnaissance and fire control capabilities, with integrated electro-optical targeting systems, a laser designator, aircraft self-protection equipment, and a weapons capability that includes Hellfire laser-guided missiles, 2.75-inch rockets, and an ATK M230 link-fed 30mm chain gun, as used on the Apache helicopter.

Maritime versions

The CN-235 has been adapted to meet other roles – not least maritime patrol. There are two maritime versions of the CN-235, the CN-235MP Persuader, developed in Spain, and the CN-235MPA from the Indonesian partner company.

In 1998 Turkey ordered six CN-235MP Persuaders for the Turkish Navy and three for the Turkish Coast Guard, the first of which was delivered in November 2001. These aircraft are fitted with a Northrop Grumman APS-504 (V) 5 radar, a Northrop Grumman (Litton) AN/ALR-86(V) electronic support measures (ESM) system, an under-nose FLIR Systems FLIR-2000HP forward-looking infrared night vision system, and the Thales AMASCOS mission system.

The United Arab Emirates placed an order for four Indonesian-developed CN-235MPA aircraft, to be fitted with the Thales AMASCOS 300 and Ocean Master 100 radar in 1998, but subsequently took delivery of converted DHC-8s instead. But a maritime CN-235 could still meet other outstanding MPA requirements in the region, and further transport variants could still be purchased.

Some 270 CN-235s have been sold worldwide and the type is in service with 40 operators worldwide, making it the best-selling airlifter in the light/medium segment. The aircraft has accumulated more than one million flight hours.

The CN-235 enjoys outstanding hot and high performance and an endurance of up to 11 hours, thanks to its low fuel consumption, but it lacks the range, capacity and payload of a 'heritage Herk' (eg the C-130H, let alone the

Yemen, Egypt and Oman are all recent customers - more than 100 of the C295s have now been sold.

new C-130J Super Hercules), and is more closely comparable to the Lockheed/Alenia C-27J Spartan.

But, by stretching the CN-235 to produce the newer C295 (a developed and stretched derivative of the CN-235 with greater capacity and longer range), Airbus Military has provided an aircraft that, while remaining less capable than a C-130, can fly many C-130 missions.

While the C295 is 100kts slower than the C-130, and though it carries about half the payload, offering one third of the range with maximum payload, it has a longer cabin than the standard Hercules, with more useful cabin length, and features a more modern cockpit with open-architecture avionics, more efficient engines with lower fuel consumption (a C295 consumes 730 litres per flying hour and full-in-service-support costs represent €1,000 per hour (assuming 600 hours utilization) where the C-130H consumes 3,030 litres per hour and is estimated to cost €3,750 per hour).

The C295 has also been certificated as a civil aircraft under US FAR 25 and European JAR 25 regulations – useful for parapublic, humanitarian and emergency relief missions.

The C295 is also cheaper than a C-130, at less than half the up-front cost (a new C295 costs about the same as a second hand C-130H), and with considerably lower operating and support costs.

It has been estimated that the operating costs of the C-295 are 21% of the costs of the C-130, and to transport one tonne of load is 43.24% cheaper in a C-295.

Transport duties

The Algerian Air Force received six C-295s for transport and maritime patrol duties, and five of these remain in service.

Egypt received the first of 12 currently on order on September 24 2011, and six of these are now in service. The first of eight for Oman (including four in MPA configuration) is now in service, too.

Like the CN-235, the C295 is being adapted for maritime and other roles, and Airbus Military has completed carriage and release trials of the Marte air-to-surface missile to equip any maritime variants, and is evaluating different weapons options for the so-called C295 Gunner special operations gunship.

In future, C295s will be built to a new production standard, known as the C295W, allowing the installation of winglets and uprated engines as standard.

Announced on May 30 2013, and tested on the former C295 AEW demonstrator, the C295W is particularly aimed at those operating the aircraft from ‘hot and high’ airfields where payload increases in excess of 1,000kg are promised, together with increases in endurance (by 30-60 minutes) and operating altitude (by up to 2,000ft), with an overall reduction in fuel consumption of around 4%, depending on configuration and conditions, and all for a weight penalty of just 90kg.

The C295W is now being offered to the market and will be the standard version of the aircraft from the fourth quarter of 2014, following planned certification in the second quarter.

The improvements offered by the C295W promise to make the type even more attractive to operators in the Gulf and wider MENA region.


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The Avinode Marketplace, the world's leading tool for buying and selling air charter, holds data from activities around the world. Here is its 2013 report on the Middle East.

Charter demand continues to grow in the Middle East

The Middle East region as a whole has seen a steady increase in demand over the last few years. According to sources within the market, there was not enough charter availability to meet that demand in 2013, as owners took to the skies in increasing numbers, putting in more flight hours and reducing the amount of aircraft available for charter.

Even so, Avinode data shows that the rate of increase is growing steadily within the region.

From 2011 to 2012, flight requests for departures from the region grew by 24%, while in 2013 demand has shown an additional 11% growth.

According to a number of Avinode member companies, existing business aviation clients have been travelling more often over the past year and new clients are increasingly turning to business aviation when they travel.

The most trafficked departure city in the region was Dubai, with nearly twice the flight requests of its nearest competitor, Riyadh, and more than three times the number of requested departures of Jeddah.

Like the greater Middle East, traffic into and out of Dubai showed some volatility from January to June, but both the yearly high and low occurred during the second part of the year.

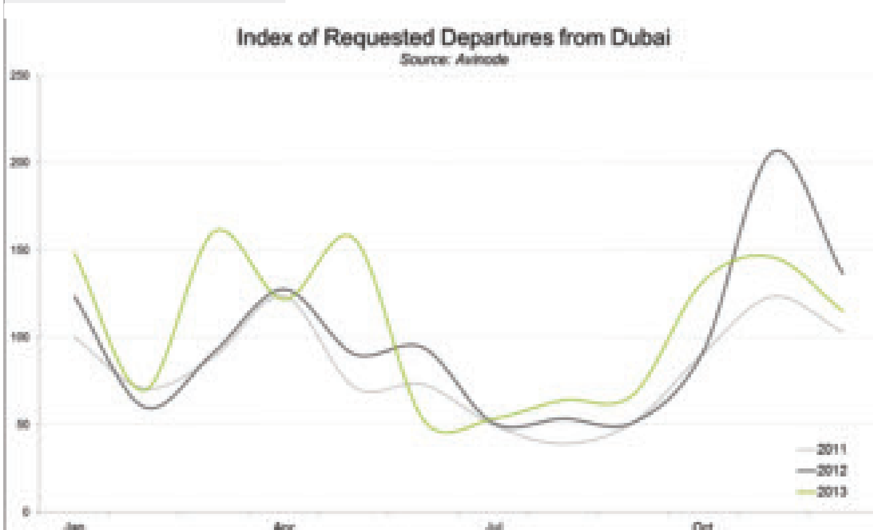
Where demand in the Middle East peaked in August, Dubai saw a distinct seasonal increase beginning in late October and peaking in mid-November.

Dubai also experienced an interesting shift in the top five most popular travel destinations. While Russia remained the most popular country, the former Soviet republic of Kazakhstan climbed up the list from number four in 2012 to number two in 2013.

Rounding out the list were Saudi Arabia in third, the United Kingdom in fourth and Turkey, which also garnered a substantial increase in requests, in fifth.

Top five departure cities in Middle East
1. Dubai
2. Riyadh
3. Jeddah
4. Kuwait
5. Beirut

Top five destinations from Dubai
1. Russia
2. Kazakhstan
3. Saudi Arabia
4. United Kingdom
5. Turkey



Increase in flight requests

Despite the shifts in popularity, every one of the top five destination countries had seen an increase in flight requests in 2013. Kazakhstan, Turkey and Kuwait showed the most demand growth among travellers from Dubai, while demand for trips to Iraq, Spain and Italy decreased more than 50% since 2012.

Despite some declines for trips to particular countries, Dubai saw a general increase in demand activity over the course of 2013. Unlike the greater Middle East region, the rate of growth for flight requests out of the city has actually increased over the last few years, from 19% growth in 2012 to 23% in 2013.

Prices per nautical mile are also on the rise in Dubai, though they have experienced a slowing rate of growth over the last few years.

For flights out of Dubai, heavy jets are by far the most requested aircraft, accounting for 66% of all flights. Second are mid-size jets, which account for 28% of requests. Both categories saw demand increases, with heavy jet pulling in 30% more requests during 2013 and mid-size jets increasing their share by 8%.

One Saudi Arabian operator is on the crest of a wave with new aircraft and better-than-expected financial results.

Mohammed Ali Ahli *reports.*

Three new aircraft mean NasJet flying even higher

Saudi Arabia's NasJet – the largest private aviation operator in the Middle East – is set to take delivery of three new fully managed aircraft, including a Boeing Business Jet 3 (BBJ), Gulfstream G650 and a G450 on behalf of Middle East-based clients.

The new arrivals join a rapidly expanding fleet of 65 fixed-wing aircraft currently under management and flight support.

They will be operated using NasJet's significant infrastructure, including 120 full-time crew and maintenance teams based in the region.

The Riyadh-based operator exceeded its financial expectations with figures for 2013 that indicate that Middle East business aviation market is in better health than many other parts of the world. NasJet recorded a 40% improvement over its 2012 performance, with revenues of $187million.

"Our unwavering commitment to deliver an exceptional level of service and an unrivalled operational capability positively contributed to the overall growth of the business," said NasJet CEO Ghassan Hamdan."We started the year cautiously optimistic, since parts of the region remain unsettled. However, we are fully prepared for a return to normality, particularly in Egypt, which is one of our core markets."

Captain Khalid Al Hamdan. Ghassan Hamdan. Captain Mohammed Al Gabbas.

The Honeywell forecast of aircraft deliveries highlighted 9,250 new business jets, worth more than $250 billion, entering into service globally between 2013 and 2022. NasJet chief commercial officer, Turki Al Jawini, said he expects to see many of the VIP commercial and wide-body aircraft being based in the Middle East.

"We'll continue to innovate in our core businesses of aircraft management and charter, with a number of new products added to our 'world of experiences' collection, which currently consists of the honeymoon, summer and Hajj, and Umrah jet cards. NasJet is the only operator in the region providing fractional ownership and we forecast a 5-7% increase in flown hours for 2014," Al Jawini said.

Reflect confidence

The latest arrivals – the BBJ and two Gulfstreams – reflect this confidence.

"We are pleased the owners have selected NasJet, a decision which was based on our depth of international and regional aircraft management experience, which spans 14 years," commented COO Captain Khalid Al Hamdan.

"We are also able to demonstrate significant cost-saving benefits on large operational expenses including fuel, insurance, maintenance and crew training."

Executive director project management, Captain Mohammed Al Gabbas, added: "With this aircraft type, a supreme level of safety, service and professionalism is a given. This is only achievable if you have the in-house capability to deal with the unexpected day-to-day issues, are able to proactively manage the operating costs and have valuable experience in operating VIP aircraft in extreme climates.

"The technological specifications on these aircraft are exceptional; cabin space in the BBJ, for example, exceeds 1100sqft, it has the reliability of a commercial airline and dependable world-wide manufacturer support."

BBJ and Gulfstream are currently the most popular aircraft types in the Middle East.

NasJet manages and flight supports five BBJs and has the largest fleet of Gulfstreams in the Middle East.

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Qatar Executive's new head, Dave Edwards, with two of the aircraft he has available for charter.

Edwards targets Executive expansion

Qatar Executive's new vice president, Dave Edwards, is fired with enthusiasm for his new post. He talks to **Liz Moscrop** *about his vision for the company, and where it will fit in the region's business aviation offering.*

Last year a seismic shock sent ripples through the small world of corporate aviation in the EMEA region when Dave Edwards, a lifetime employee of the UK's Gama Group, upped sticks to head up Qatar Airways' private aviation arm.

It was an amicable parting, and a major career opportunity for the man who recently established Gama's FBO and line maintenance services at Sharjah.

Edwards is now responsible for all strategic and operational aspects of four-year-old Qatar Executive (QE). The idea is that he will strengthen its footprint in existing markets, such as the Middle East, Russia and the Commonwealth of Independent States, as well as establish a presence in Africa and Asia.

It is a tall order. He aims to expand the operator's portfolio way beyond just business jet charter. This includes offering aircraft management (already under way), plus airliner charter.

Qatar is one of the world's leading sports hubs, and, according to Edwards, QE has experienced "huge demand" for narrow-body Airbus A320s in two class configurations for sports teams and business delegations.

Full range of services

Additionally, QE provides maintenance and a full range of FBO services at Doha International Airport. There is more of this to come, he said: "We will be offering those services at the brand new Hamad International Airport in the near future."

Launched in 2009, QE runs a fleet of seven Bombardier aircraft and, last June, earned its own Qatari air operator certificate (AOC), which allows it to expand its global charter business. Edwards is adamant that it will remain part of the Qatar Airways Group, however: "As it puts us in a very competitive position compared to other market players."

Expansion would have to mean adding more aircraft, he hinted. "The underlying strategy is to operate a young and modern fleet. As of now, no further information can be disclosed in regard to our expansion plans, but you can rest assured that there is more to come."

The seeming anomaly of the same company offering both private jet and first class travel is not lost on him, though he explained: "While some of our customers make use of Qatar Airways' premium class, they turn to us when the scheduled service does not suit them, or when they need to fly to remote areas, or when their itinerary includes multiple stops.

He added that global business is becoming increasingly interconnected and different parts of the world, which traditionally have not worked together, are establishing strong trade links: "This is naturally driving private jet travel, and we help facilitate global businesses and top executives to reach many destinations in the world non-stop."

Sticky issue

A sticky issue that could work either way for QE is that Dubai is becoming saturated in terms of airport slots, with more airline growth to come. Restriction at such a key destination could really hurt the region's business aviation community. Edwards is cautiously optimistic, however: "Airport access for business aviation is an issue worldwide, not just in certain destinations within this region. We need our business aviation industry associations to continue to support our efforts in ensuring that business aviation, with the unique investment it can generate, continues to have access to excellent facilities around the world."

That said, he foresees a rosy future: "The Middle East is a growing force for business aviation and our view over the long-term is positive. Business opportunities arise through high economic activity, including multi-billion dollar projects, flourishing personal incomes and the rise of strong companies in the region. [Its] increasing role in international business has led to growing demand for corporate jet travel, and in parallel given the leisure travel segment a real boost."

With such a positive attitude, he will be making waves in Doha for some time to come.

CEO Shane O'Hare is royally proud of the new interior on board the BBJ on the static.

Royal Jet schedules $700m fleet upgrade

Abu Dhabi-based operator Royal Jet has announced it is to replace its entire fleet by 2020 with orders worth $700 million, comprising new or nearly new aircraft.

CEO Shane O'Hare said: "The major manufacturers are all bringing out new types and our current fleet is around 10 years old. We are looking to use these new technologies both in the engines and the airframes."

The company is to acquire seven large aircraft including two super midsize Gulfstream types – likely a G550 and G450 – replacing the G300 it currently flies, and two corporate jets, likely Learjet 60s.

O'Hare said: "We are in close discussions with the major manufacturers about which types will replace our current large aircraft."

The investments reflect the fact O'Hare is anticipating a 6% growth between now and 2020.

Range will be a key factor in replacing the company's current Gulfstreams, as people in the region want to fly longer legs. O'Hare does not foresee taking on any larger airliner conversions for the time being. "That is a niche market," he explained. "We have close relationships with good partners when our clients want to fly further."

The company was at the Dubai Airshow in November with a $12 million fresh interior for its BBJ, which was also sporting a colourful new livery, based on the company's new logo.

New SPA MD Faisal bin Ghazi Kayal is bullish about the company's next steps.

Jaguar deal sees SPA keep roaring forward

Liz Moscrop *looks at the latest innovation moves by the private aviation wing of Saudia.*

At the start of this year SPA signed an agreement with Mohammed Yousuf Naghi Motors, agents of Jaguar and Land Rover in the kingdom, to use the Jaguar XJ as an official car to transport the airline's VVIP customers in major Saudi airports.

Passengers will be transported via Jaguar XJ from the airline's lounge to the aircraft and back.

The service will be available at King Abdulaziz Airport in Jeddah, King Khaled Airport in Riyadh, King Fahd Airport in Dammam, and Prince Muhammad Airport in Medina.

New CEO, Faisal bin Ghazi Kayal, said: "The agreement comes as part of SPA's efforts to improve its services to customers and unify standards."

Formerly the head of the airline's network planning and revenue division, Kayal is well versed in capitalising on an operator's strengths, and believes that there are a number of synergies that the company can use to benefit from its parent group's strengths.

He said SPA has plans to diversify into several other areas, such as aircraft management, private charter, MRO, VIP completions and even flight training. "Because of our relationship with the airline, we already have the capabilities in place to offer these services," he added.

SPA's services are already impressive, especially considering the company is only four years old. Its new six-lounge 6,400sqm FBO at Jeddah is now operational and Kayal was at the Dubai Airshow for the first time last winter with ambitious plans for growth.

SPA is also in the process of becoming a private company, a separate entity from the airline (which is also undergoing privatisation).

The firm has its own aircraft operator's certificate (AOC) and, with four of the type on its books, flies the world's largest fleet of Dassault Falcon 7Xs, alongside six Hawker 400XPs. In total it has 28 aircraft on its books, including 10 wholly owned jets.

According to Kayal, there are no plans to divest the Hawkers, but the company is looking at adding a mid-size type to plug the gap between the light and long-range jets. He explained: "The Kingdom of Saudi Arabia is large and people find the light jets perfect for the ranges they need domestically. Some might prefer a slightly larger cabin, so we are looking at what is out there. The Hawker fleet is still young."

The world's most used 7X fleet, the Falcons fly an average of 650 hours a year. The variant can carry up to 14 passengers, which is ideal for large family groups who would prefer to travel together.

Train flight attendants

Service is key to SPA's business ethos, and last year it hired Swiss operator PrivatAir to train its flight attendants in the fine art of serving VVIP customers.

The company is coming to the end of its first five-year strategic growth plan and Kayal reckons there will be significant changes in store as it creates its next phase of development. It looks likely that the company will open a further lounge at Riyadh's International Airport within the next few years, as well as open facilities at Le Bourget, France and somewhere near London, UK – possibly in partnership with another company.

Based on its track record, there is every chance SPA will succeed in realising its goals. Back in 2010 it went to the Middle East Business Aviation show in Dubai for the first time, and embarked on a shopping spree that saw it return with a fleet that represented 10% of the country's total private aircraft.

SPA has always been open about its ambitious plans and has said it intends to either own or manage 10% of the Saudi business aircraft market, which is expected to grow to 1,200 by 2020.

AgustaWestland CEO **Daniele Romiti** *reflects on the company's increasing presence in the Middle East, powered by demand from the offshore oil and gas sector.*

Why the Middle East is the place for AgustaWestland

The offshore sector that supports the oil and gas industry in this region is critical and has been growing constantly in recent years, with further significant prospects in the future.

The AW139 has enabled us to play a leading role in this application globally, and the Middle East is no exception.

A total of more than 50 offshore-configured AW139s have been sold to major operators in various nations, such as the UAE, Qatar and Saudi Arabia. These numbers represent more than 20% of all AW139 sales in the global oil and gas market.

However, as the need for longer range, higher endurance and larger capacity becomes more urgent to cope with the latest requirements from oil and gas companies, we are introducing the AW189, which is designed to meet these demands.

Gulf Helicopters' order for 15 AW189s to operate alongside its 18 AW139s provides clear evidence of this success.

AgustaWestland also has a successful presence in the government and military market in the Middle East, with products such as the Super Lynx 300, the NH90 and AW139.

Dual-use approach

The AW139 represents the best success of our dual-use approach. It responds to the demand for civil certified products with high safety standards, able to perform a wide spectrum of applications covering most of the homeland security and military requirements. This can be achieved at just a fraction of the cost of specialised products and this approach has been adopted in the UAE, Oman and Qatar.

Regional military customers are using their AW139s for many missions, including utility, troop transport, 'special forces' operations, border patrol and law enforcement.

As our regional fleet expands and with new models soon to enter service, we need to show even stronger commitment to enhancing the level of services offered locally.

We have performed important steps in recent years for both maintenance and training.

The AgustaWestland Aviation Services (AWAS) joint venture we established with Abu Dhabi Aviation (ADA) two years ago has progressed and is providing spares for the UAE operators of the AW109 and AW139 through a facility at Abu Dhabi Airport Free Zone. By December AWAS will also have the capability to conduct four-year repair and overhaul of floats and rafts for the same types.

Strong partnership

Elsewhere, we have a strong partnership in place with both ADA and Mubadala to provide training services for the AW139 and, more recently, we have appointed Gulf Helicopters as an authorised training centre for the AW139 in Qatar.

The AW101 has proven extremely successful in the VVIP and head-of-state/government transport market and there is growing interest for this powerful platform. The Middle East shows good potential for the helicopter, which features unparalleled performance, comfort, safety and survivability technology. But we want to do more than that and we are working on a new civil certification to exploit fresh opportunities in other segments, such as further extended range offshore operations.

Meanwhile, the Middle East market response to the AW169 has been very good, particularly for VIP/corporate and parapublic duties. Part of the family of new generation helicopters, the AW169 shares with the AW139 and AW189 the same outstanding capabilities and performance typical of, and requested by, the Middle East operational environment. Operators welcome the AW169 as the perfect fit between the AW109 Power/GrandNew and the AW139.

The Middle East market response to the AW169 has been very good, particularly for VIP/corporate and parapublic duties.

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Relentless progress for Bell in the Middle East

This year promises to be busy for Bell Helicopter, with the first flight of the Bell 525 Relentless and continued development of a third-generation tiltrotor. President and CEO John Garrison talks to **Paul Derby** *about the course the company is navigating.*

Q How important is the Middle East to Bell as a market and how are you working to increase your presence here?
The Middle East is very important for us as we continue to expand our international presence. Bell helicopters currently make up nearly a quarter of the installed fleet base in the Middle East and Africa, and we expect this to grow with product upgrades like the Bell 412EPI and Bell 407GT.

We also anticipate growth in the oil and gas and VIP/corporate segments with the Bell 525 Relentless, scheduled for first flight next year.

Q What are the main messages you are hoping to get out to the Middle East market?
Bell Helicopter's products and services are ideally suited to the environment, geography and diverse mission needs of customers in the Middle East.

We are driving affordable solutions for both our commercial and military customers in the region and are listening closely to their needs.

This is evidenced by our continued progress towards the first flight of the Bell 525, an ideal platform for the oil and gas segment in the Middle East, the introduction of product upgrades like the Bell 412EPI, Bell 407GT and Bell 429, as well as our re-entry into the short light single market.

Q What is the latest status on the Bell 525 Relentless programme in terms of first flight and future deliveries?
It's important to emphasise one of the biggest differentiators of the Bell 525 Relentless is how we're developing the aircraft with our customers. We are working with a global panel of customer advisors who are committed to providing their expertise in all facets of the industry.

Safety, reliability and maintainability are three key areas on which we are focusing. Pilots, operations managers and senior maintainers from our customer advisory panel are helping us build the Relentless with a real-world understanding of how our customers operate. This direct involvement of customers is a tangible example of the culture change we're driving.

We have achieved a number of key milestones recently as we've moved from detailed design to testing, and the development of our maintenance and training programmes.

In August we completed the virtual 'first flight' using our technologically advanced simulators and Systems Integration Lab (SIL). This early testing provides important learning that translates to a far more mature aircraft as we enter flight-testing in 2014.

Q Bell has a long history in the development of tiltrotor technology; can you provide us with an update on the V-280 Valor programme?
Bell Helicopter has more than half-a-century of expertise in combat-proven tiltrotor technology. With almost 200,000 flight hours the V-22, developed with our partner Boeing, is serving both the United States Air Force and Marines well.

We are offering third-generation tiltrotor technology through the Bell V-280 Valor for the joint multi-role technology demonstration (JMR-TD) programme and future vertical lift (FVL) programme of record. We have created a clean sheet design that reduces complexity and also improves total life-cycle costs.

The V-280 is specifically designed to be a true combat manoeuvre platform, with unmatched speed and range and the ability to strategically self-deploy.

In September we welcomed Lockheed Martin as our first investing team member and have since announced that General Electric, Moog, GKN Aerospace, AGC Composites and Aerostructures, and Spirit have joined Team Valor.

The Army recently awarded our team with a technology investment agreement for the JMR-TD programme and we're on track for first flight in 2017.

Q How has the company performed in 2013 and what are the highlights?
It is shaping up to be another good year – commercial and military deliveries remain strong. We have made significant strides in commercial programmes, including beginning assembly of the first Bell 525 Relentless and our re-entry into the short light single market.

On the military side, the V-22 Osprey successfully completed an initial test performing as an aerial refuelling tanker, and we were awarded a second five-year NAVAIR contract to produce and deliver 99 V-22s.


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Inmarsat's I-5 Global Xpress Ka-band satellite launches in Kazakhstan.

First GX Ka-band launch is a Breeze for Inmarsat

Inmarsat's first I-5 Global Xpress Ka-band satellite was launched from Baikonur Cosmodrome in Kazakhstan on December 8 on a Proton Breeze M rocket.

The six-tonne satellite has 89 Ka-band beams and is designed to generate approximately 15 kilowatts of power at the start of service. It has two solar-cell wings with a similar span to a Boeing 737.

By the end of December, the satellite completed deployment of its solar arrays and reflectors. This was followed by the electrical plasma thruster orbit-raising phase, taking the spacecraft to its final geostationary orbit.

This was scheduled to be completed as *Arabian Aerospace* was going to press, with payload testing at the beginning of February.

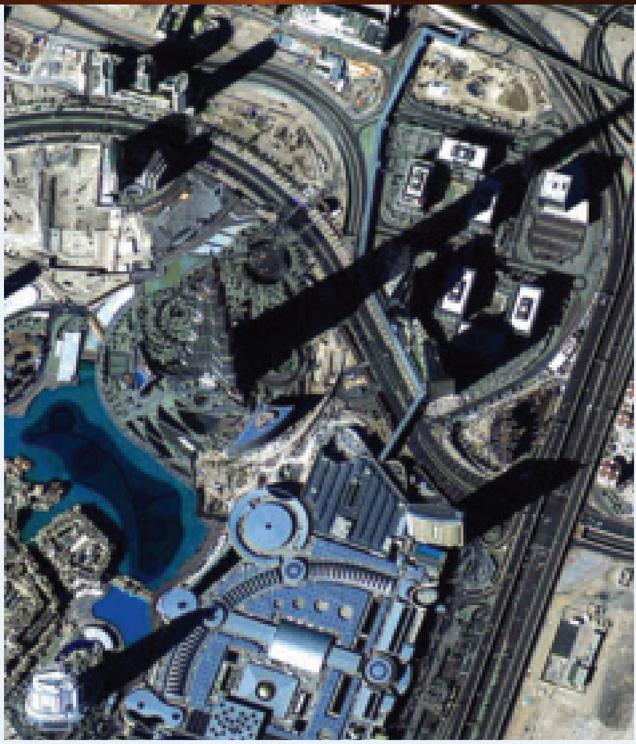
The launch was a milestone in the development of the company's GX Aviation service, which will provide the airlines and aircraft operators with the first global high-speed mobile broadband service.

By the end of 2014, the fleet will comprise three high-throughput satellites and GX Aviation will offer seamless global Ka-band coverage from a single operator, with performance of up to around 40Mbps to an airliner.

In addition to passenger communications, it will support real-time TV and live feeds from the internet.

Miranda Mills, Inmarsat president, aviation said: "We are getting closer and closer to the introduction of GX Aviation. It will revolutionise in-flight connectivity for both passengers and crew. The successful launch of this satellite means that we are well on track to providing the world's first globally available, high speed mobile broadband service in 2015."

The I-5 satellites are built by Boeing and based on the 702HP design. Inmarsat-5 F1 is part of a US$1.6 billion investment by the company into the next generation of global mobile broadband communications.



< Blast off for DubaiSat-2

The Emirates Institution for Advanced Science and Technology (EIAST) successfully launched DubaiSat-2 on November 21.

The two-metre high 300kg Earth observation satellite blasted off from the Yasny Launch Base in Russia, on top of a Russian Dnepr launcher.

According to EIAST, the UAE team of engineers at the ground station was able to communicate directly with DubaiSat-2, which entered orbit 15 minutes and 33 seconds after its launch, and accurately determined the path of the satellite.

The satellite automatically deployed the solar panels that will power it for around five years. DubaiSat-2 makes one full orbit around the Earth every 96 minutes.

The new satellite is moving in a 600km high orbit that will allow comprehensive coverage of the UAE to support better surveys and scientific research.

Innovation award for Thuraya

Thuraya's SatSleeve adaptor for the Apple iPhone won the innovation award at the Lloyd's List Middle East and Indian Subcontinent 2013 Awards in December.

The SatSleeve satellite adaptor for the iPhone enables users to stay connected from remote locations outside of terrestrial networks with their iPhone.

Compatible with iPhone 4/4S and 5/5S, the Thuraya SatSleeve supports voice calls, SMS and basic data connectivity in satellite mode. Users can pre-program an SOS number into the Thuraya SatSleeve to contact a nominated first responder – a feature that works even without the iPhone connected.

The SatSleeve can be used across the Thuraya satellite network, either with a Thuraya SIM card in 140 countries or with a standard GSM SIM card.

Satcom Direct celebrates Dubai router to success

In-flight connectivity specialist Satcom Direct celebrated the first anniversary of the opening of its Dubai office with the introduction of a new router. **Steve Nichols** *reports.*

The Florida-based company opened its UAE office in 2012 to service the growing demand for in-flight connectivity on business aircraft in the Middle East, Africa and Turkey.

The Dubai office is part of Satcom Direct's wider network, which now has offices in Canada, UK (Farnborough), Hong Kong, Brazil, Moscow and Australia. New offices will be opened in Geneva and Nigeria by the end of the year.

Shady Ali, Satcom Direct's business development director in Dubai, said the UAE presence has proved fruitful for the company, which supplies and services Inmarsat SwiftBroadband (L-band), Iridium and Viasat (Ku-band) systems.

"Setting up a MENA-based hub was a good idea. We knew the area had potential but we didn't expect to see the growth we are currently experiencing," he said.

"We already had a large market share but customers wanted more support on the ground, especially when you consider that there is a 12-hour time difference between the Middle East and parts of the US, so we are now better able to support our customers in the region."

Ali added that the company was also seeing big demand in the larger business jet market in the UAE, Bahrain, Oman and Saudi Arabia, notably with Boeing BBJs and Airbus ACJs. "About 65% of our business now revolves around these wide-body business aircraft."

Satcom Direct's Dubai office was originally based in Business Bay, but has since relocated to Dubai World Central, where it now has six staff.

"Twelve months after we arrived we are now servicing nearly all the heads of state, all the presidential flights, plus air forces and VVIPs in the Middle East, Turkey, north and west Africa, and South Africa," said Ali.

The company used the Dubai Air Show in November to give visitors a chance to see the company's new Satcom Direct router (SDR), which can integrate with any satcom system and manage cabin communications, run software apps and connect to 3G/4G cellular networks.

The SDR, which was first previewed at EBACE, weighs less than 10lbs (4.5kg) and meets DO-160G and DO-178B level D standards.

Different constellations

The SDR allows the simultaneous use of different constellations, seamlessly switching between different networks, including L-, Ku-, Ka- and X-band. The company is working on gaining a number of supplemental type certificates (STCs) to allow the router to be fitted by the major business jet manufacturers.

Software apps that can be run on the router include Satcom Direct's own moving map and Flight Tracker iPhone/iPad apps.

It has been a busy year for Satcom Direct. It has also signed an agreement with OnAir to be a value-added reseller for its GSM mobile phone service, Mobile OnAir, on VIP and business aviation aircraft.

By becoming a reseller of Mobile OnAir, Satcom Direct can now enable business and corporate aviation passengers and crew to use their mobile phones just as they do on the ground.

It also launched MYflight, an in-flight moving map service that enables passengers to view real-time flight data and aircraft information through a mobile application.

MYflight is a subscription-based service designed for the iPad and iPad Mini, with additional mobile platforms planned for future releases. It is compatible with all IP-based aviation broadband connectivity solutions, including Inmarsat SwiftBroadband, Viasat Yonder and Gogo Biz (in the USA). It delivers up-to-the-minute position reports, aircraft information, customised in-flight TV channel guides and weather data to aircraft passengers.

Passengers can download the MYflight app from the iTunes store. It doesn't require any special hardware aboard the aircraft, but the aircraft must have an active MYflight subscription, an internet connection and provide location reports from at least one position source.

Satcom Direct has also signed with Honeywell to be a business aviation distribution partner for Inmarsat's GX Aviation ultra-fast Ka-band service when it comes fully online in early 2015.

Honeywell Aerospace says that its next-generation SmartPath ground-based augmentation system (GBAS) could bring great benefits to airports in the MENA region. **Steve Nichols** *finds out how.*

SmartPath can save time and fuel with precise approaches.

SmartPath shows the way forward

SmartPath delivers precision navigation to aircraft, promising to increase airport capacity, decrease air traffic noise and reduce weather-related delays.

By providing precise landing guidance data, Honeywell says that SmartPath enables aircraft to fly either straight in or perform complex approaches that a conventional instrument landing system (ILS) cannot.

"It's also easy to install and offers major cost savings compared with ILS," said Mike Underwood, Honeywell's director of business development. "One SmartPath system installed at a typical airport can yield annual maintenance savings of up to $400,000 compared with using ILS on two runways.

"We have had interesting talks with Dubai International Airport about how SmartPath could help with departure rates and enable more capacity.

"It can do this by eliminating ILS hold short-zones – it is estimated that aircraft will save one to two minutes of taxi-time per flight by not having to hold short.

"It is also more flexible than ILS – one GBAS can broadcast 26 unique approaches, covering all runways at an airport.

"SmartPath can also be used in congested airspace areas with difficult terrain where you can't install ILS, such as at Newark's Liberty International Airport in the US, where its ILS could interfere with LaGuardia."

SmartPath uses differential GPS – the ground station receives a GPS signal, compares its calculated position with its actual position and then broadcasts an additional correction signal, so making it far more accurate.

One GBAS installation can cover all ends of all runways, whereas ILS covers only one end of one runway, requiring additional installations for complete coverage at an airport. And, whereas ILS needs to be calibrated twice a year, a GBAS-based solution just needs to be fight-tested once a year to make sure nothing has changed.

The system is currently certified for Category I operations but Honeywell is targeting certification of SmartPath for Category II and Category III performance in the future.

Bremen Airport in Germany was the first airport in the world to have commercial GBAS flights, using Honeywell's SmartPath system, with a system installed for the nation's air navigation services provider, DFS Deutsche Flugsicherung GmbH.

Operational evaluation

DFS chose Bremen for its GBAS operational evaluation as the airfield offered moderate levels of air traffic in a simple operating environment without high terrain.

The technology has now gained German-type certification as a primary landing system from the Federal Supervisory Authority for Air Navigation Services (BAF) and is now being used independently of the ILS for CAT I precision approaches. It has FAA certification as well.

"There is an ICAO trend to introduce GBAS as a replacement for ILS technology that is more than six decades old," said Jochen Kreher, head of satellite navigation, DFS Deutsche Flugsicherung GmbH.

The FAA NextGen and Eurocontrol's SESAR programmes both identified GBAS as an enabler for improving air traffic capacity.

"We see a lot of potential in this region and SmartPath could bring a lot of benefits," concluded Underwood.

Aviation Partners is busy promoting its revolutionary new split scimitar winglet (SSW) design for the Boeing BBJ which, it says, reduces drag significantly, saving fuel and increasing range. **Steve Nichols** *reports.*

DRAG ARTISTS

Launched for the Boeing Business Jet at last year's NBAA show in Las Vegas, the SSW is a newly patented design that Joe Clark, Aviation Partners' chairman and CEO, says completely redefines the aerodynamics of the existing BBJ extended winglet.

"This is revolutionary," said Clark. "For long-range BBJ operations, the SSW will provide a drag reduction, and corresponding range increase, of between 2.5 and 3.0% over the current blended winglet configuration. This means a range increase of 200 nautical miles or more for long-range operators."

Aviation Partners estimates that blended winglets have saved the industry billions of gallons of jet fuel. In addition to the 5 to 7% improvement in fuel burn, it claims blended winglets have also reduced global CO_2 emissions by almost 42 million tonnes.

So how do blended winglets work?

Simply put, winglets reduce wingtip vortices – the twin mini tornados formed by the difference between the pressure on the upper surface of an aircraft's wing and that on the lower surface. By reducing drag, they can increase fuel efficiency by up to 7% as well as boosting range.

Blended winglets also enhance longitudinal and directional stability, so providing better handling in turbulent atmospheric conditions. Another potential benefit of winglets is that they reduce the strength of the wingtip or wake vortices, which trail behind the plane and pose a hazard to other aircraft.

Minimum spacing requirements between aircraft operations at airports dictate that larger distances are left between departing wide-body aircraft. Anything that can reduce this wake vortex is a bonus.

The new SSW design retrofit consists of adding a scimitar-tipped ventral strake, beefing up the internal winglet structure, and replacing the aluminium winglet tip caps with new aerodynamically shaped scimitar tips.

Clark says that interest in the MENA region, which is known for its wide BBJ ownership, has been "phenomenal".

"We'll have it certified first on the 737-800/BBJ2, with the other 737 NG/BBJ models to follow later this year."

Wing-end plates

But, if you think winglets are a new invention, think again. The initial concept dates back to 1897, when English engineer Frederick W Lanchester patented wing end-plates as a method for controlling wingtip vortices. This was a full six years before the Wright brothers' famous flight at Kittyhawk, North Carolina.

As a result of his research, Lanchester eventually formulated his circulation theory of flight in 1907, laying down the foundations of what we now know as aerodynamics.

In the United States, Scottish-born engineer William E Somerville patented the first functional winglets in 1910, before installing the devices on his early biplane and monoplane designs.

It wasn't until the 1970s that scientific research using wind tunnels became possible.

Richard Whitcomb's research at NASA's Langley Research Center first used the term "winglet" with its modern meaning, referring to near-vertical extension of the wing tips.

Incidentally, Whitcomb's research was undertaken after the cost of fuel rose dramatically during the 1973 oil crisis.

Learjet exhibited the prototype Learjet 28 at the 1977 NBAA event, employing the first winglets ever used on a jet and a production aircraft. Gulfstream soon followed.

Seattle-based Aviation Partners was founded in 1991 by Clark and Dennis Washington. Clark says he brought together an experienced team of aerospace professionals, consisting primarily of retired Boeing and Lockheed engineers and flight test department directors.

Its blended winglet technology made an initial market debut as a performance enhancement programme for the Gulfstream II. This resulted in an unprecedented range boost and fuel efficiency improvement in excess of 7% for the IISP.

In the mid-90s, the Boeing Company adopted blended winglet technology for the Boeing Business Jet and Next Generation Boeing 737. Today, Aviation Partners Boeing, a joint venture between Aviation Partners and The Boeing Company, has supplied blended winglet shipsets to almost 5,000 Boeing aircraft worldwide.

Clark has strong connections with Dubai. "We brought our winglets out to the Dubai Airshow in 1999 to fit to Dubai Air Wing's first BBJ aircraft. Sheik Maktoum came out to the hangar while my team was fitting the prototype winglets to his BBJ.

"These were supposed to be painted once they

Winglet creator Joe Clark: "This is revolutionary." The new SSW design retrofit consists of adding a scimitar-tipped ventral strake, beefing up the internal winglet structure, and replacing the aluminium winglet tip caps with new aerodynamically shaped scimitar tips.

were fitted to match the rest of the colour scheme, but he said, 'no, don't touch them – I want them exactly the way they are', and they remained all white

"He was really the person who introduced BBJ winglets to the whole of Europe and Middle East."

So where does the new split scimitar winglet design for the BBJ come from?

A similar design has been introduced on the Boeing 737 MAX, resembling a three-way hybrid between a blended winglet, a wingtip fence, and a raked wingtip.

Boeing claimed the new design should deliver an additional 1.5% improvement in fuel economy over the 10-12% improvement already expected from the 737 MAX.

For the 737 Next Generation aircraft, Aviation Partners Boeing introduced the SSW design, with United Airlines as the launch customer in early 2013.

So does Aviation Partners use a wind tunnel to design its winglets? Clark says no. "We would not be in business if we used wind tunnel testing. We fly an aircraft over a set distance, fit the new winglets, and then fly the route again. When we did the BBJ tests, the fuel savings were outstanding – if you want real data, test in the real world.

"Our computational fluid dynamics (CFD) results indicated a cruise performance gain of more than 40% above the original blended winglet configuration. Other potential applications for business aircraft are being looked at."

Resale value

The testimonials on Aviation Partners' website back up Clark's winglet claims. Todd Schieck, director of business development, M&N Aviation, said: "If we sold our Hawkers tomorrow we'd get every dime back we paid for the blended winglet systems. Blended winglets look great, improve resale value and pay for themselves."

Brian Ross, director of aviation, Coca-Cola Enterprises, added: "I am very pleased to report I am getting a 8.4% decrease in fuel used on the Hawker 800XPs and 10.1% decrease in the 800. The climb performance is outstanding. All of us are very pleased we went with the winglets."

So is that it for winglet design?

"No, we've got lots of new ideas," said Clark. "We are designing a split scimitar spiral winglet – it's a circular device that goes above and below the wing. We'll be testing that in about a year-and-a-half.

"We are continually looking at new ways to improve an aircraft's performance. We have the digital CFD codes for our winglets, so we can tweak the designs in a computer to see what effects we get.

"But there are a lot of times when CFD isn't effective, especially if it is a design we have never tried before. That's when prototyping something and testing it gives us the best real-life results."

So is Joe Clark a scientist? "No, no, no," he said. "I just hire a lot of smart people. And I'm the implementer – give me something to do and I'll get it done. That's why we have been so successful."

The world's skies are changing and future cockpits on business aircraft must adapt to reflect these changes. **Liz Moscrop** *takes a look from the flight deck.*

A FRESH DECK

There was an interesting newcomer to the private aviation party in Las Vegas last October. Parisian-headquartered manufacturer Thales had slipped quietly into the NBAA exhibition to show off its cockpit of the future.

Dubbed Avionics 2020, the flightdeck is the evolution of the manufacturer's one display for a cockpit interactive solution (ODICIS) demonstrator concept, which illustrates the technologies and innovations that may be needed on commercial aircraft in the next 20 years.

The technologies are manufacturable now and, the OEM said, "can be made flight-ready on commercial aircraft in the next seven years".

The 2020 offering is a large, secure display featuring several reconfigurable means of control; including multi-touchscreen and head-up and head-down capabilities.

The real reason Thales brought its new toy to NBAA was that the cockpit offers scalability to any type of aircraft, from large commercial carriers to business jets. Designed around the operator's needs, Thales said Avionics 2020 "provides a template for how cockpits will need to be designed in the near future".

In the business jet market, this template allows the cockpit to become an instrument that manages many of the requirements, challenges and constraints faced by corporate pilots.

According to Thales, the growing technological complexity in air transportation is driving the evolution of complex cockpits in all types of civil aircraft. Indeed, the OEM says that current flightdeck architecture is fast reaching the limit of the amount of systems that pilots can operate efficiently.

The result is Avionics 2020 – the brainchild of a number of partnerships between Thales and other experts, to refine understanding in the field of human-machine interface. These efforts have ended in a new-generation cockpit, founded on the principles of natural and direct hands-on interaction, and designed to give the pilot all the elements required to make safe critical decisions.

Thales argues that corporate pilots need to think in terms of individual missions. Passenger-owners have needs that are significantly different than those of commercial airline passengers, and require a higher level of flexibility. This places an additional burden on executive aviation pilots, who have less access to on-ground support than those who fly for commercial carriers. As a result, the business jet cockpit of the future will need to adapt quickly to changes to plans, routes and destinations, and generally be a more flexible instrument.

Avionics 2020 was also conceived with future air traffic management (ATM) policies

The innovative Thales Avionics 2020 cockpit.

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in mind – incorporating thinking from the single European sky ATM research (SESAR), Europe's clean sky project, and the US next generation air traffic management programme (NextGen).

Indeed, the cockpit already has the capability to interface with upgraded airport approach and landing systems and en-route ATM.

Furthermore, the tight space found in a business jet cockpit does not lend itself to additional display units dedicated to individual SESAR/NextGen functions. To counter this Avionics 2020 has these functions already built into its architecture.

While the Thales offering is a concept in development, there are also two new flightdeck technologies that are almost ready to fly.

Dassault Aviation's newest Falcon jet – the $45 million 5X - contains a new flight control system and other advanced technologies, pioneered in the airframer's military programmes.

The 5X's digital flight control system integrates all moving control surfaces for the first time, including an additional control surface called a 'flaperon', that allows steep approaches at slow and safe speeds. Honeywell will provide the jet with a new generation of the Falcon series' EASy all-digital cockpit, as well as its most advanced radar, capable of detecting turbulence at greater distances than current models.

Synthetic vision

The cockpit will also feature head-up display (HUD) technology, provided by Elbit Systems. This new HUD combines enhanced and synthetic vision to create situational awareness, even in total darkness, fog or dense haze.

Enhanced vision uses infrared sensors to display terrain in darkness and reduced visibility. Synthetic vision uses a global terrain database for the same purpose. In the 5X, they will be combined for the first time on the head-up display, providing a high fidelity view of the outside world even when actual visibility is zero.

This kind of technology comes into its own in adverse weather conditions, particularly when landing or taking off – the two most critical phases of flight. Realising this, Embraer Executive Jets has also opted for HUD-style technology on its latest offering. The Brazilian airframer selected Rockwell Collins' head-up guidance system (HGS-3500) and new multi-spectral enhanced vision system (EVS-3000) as options on its mid-light Legacy 450 and mid-size Legacy 500 aircraft.

The HGS-3500 is an all-in-one head-up solution that easily conforms to the flight deck's structure, improving access to airports during low-visibility conditions. It comes standard with synthetic vision for greater situational awareness and optional enhanced vision, enabled by Collins' new EVS-3000. The EVS also uses the first multi-spectral infrared sensor system for commercial aircraft for high-fidelity detection, including ground-based LED lights.

A320 cockpit.

Navigating its way on to the A320

The Thales on-board airport navigation system (OANS) is in production and on track for its maiden flight on the Airbus A320. It is currently being assembled for delivery.

The system has been a success with Airbus since its debut on the A380 in 2007.

While in the air, pilots have access to highly sophisticated navigation and positioning equipment. After landing, however, they often find themselves in unfamiliar airports, relying on cumbersome paper maps and verbal directions from the tower. OANS is said to bridge the technological gap between the air and the ground by giving pilots clear and concise direction to and from the gate. The system integrates the plane's position on a high resolution geo-referenced map using a standardised airport mapping database.

Thales said that by helping pilots to navigate airports more efficiently, they can reduce taxi time, streamline airport handling operations and maximise turnaround times.

Airbus requested the OANS be adapted to new platforms like the A350 XWB and earlier models, including the A320, A330 and A340. Integrating these systems on-board aircraft with earlier generation avionics suites requires significant re-engineering.

"OANS brings a new level of comfort and functionality to pilots, providing them with an excellent visibility of the situation on the ground, as well as helping them to navigate even more efficiently in airports they are totally unfamiliar with; from landing through to arrival at the gate, and vice-versa," said Sébastien Perrignon, programme director for the A320 family at Thales.

Craig Olson, Collins' senior director, HGS said: "The safety and operational benefits that HGS brings, especially when you incorporate high-resolution, reliable synthetic and enhanced vision systems, are immense for aircraft like the Legacy 450/500 that tend to fly into more remote areas."

The compact HGS and EVS systems are fully integrated with the OEM's Pro Line Fusion cockpit, and offered as the Embraer enhanced vision system – E2VS.

If the benefits of HGS were in any doubt, a 2009 Flight Safety Foundation study concluded that the technology would have positively influenced the outcome of hundreds of accidents over a 12-year period.

The study found that 38% of all accidents were likely or highly likely to have been prevented if the pilot had a HGS. It also came to the conclusion that a staggering 69% of landing and take-off accidents and 57% of loss of control could have been avoided if the pilot had access to the information available on a HGS.

This statistic is backed up by International Civil Aviation Organization (ICAO) data, which reveals that runway excursion is the highest accident risk in Middle East.

Mitchell Fox, ICAO's chief, flight operations section, Air Navigation Bureau, said:

"Runway safety accounts for most accidents, although they are less likely to be fatal."

The ICAO believes that by 2028 global air traffic will double. Fox said: "We need to rework the worldwide air navigation infrastructure, otherwise we may see a difficult safety situation."

With this in mind, cockpit development today has to focus on future ATM protocols. These will eventually converge globally but are currently in differing stages of development worldwide, particularly in Europe with the development of SESAR, and in the US NextGen.

Future-proofing

Thales says that it is future-proofing the Avionics 2020 cockpit with inbuilt SESAR and NextGen capabilities, so that pilots can easily use the full range of the new functions required by these programmes.

Its technologies include I4D operations, which give a time constraint to each aircraft converging at a certain point in order to sequence traffic.

Digital-taxi functionalities are also in there. D-Taxi is a real-time uplink of the cleared taxi route via controller-pilot data link communications. There are also airborne separation assistance systems (ASAS) displays. ASAS spacing helps create a regular traffic flow by ensuring an aircraft adjusts its speed so that it can keep its spacing relative to another aircraft, and therefore flies according to the requirement set by the controller.

Lastly, Thales' concept of ECO take-off is available, which is an optimised take-off and climb profile that best manages CO2 emissions and noise reductions.

Denis Bonnet, head of innovation for Thales' Cockpit Competence Centre explained: "In this exercise we took a leaf from the automotive industry. The ever-popular 'concept car' exercise employed by successful car makers is an invaluable process which, over the years, has allowed them to find the innovations and new implementations that have given us the most successful car models ever made."

He continued: "By using this same thought process, we designed the one display for a cockpit interactive solution (ODICIS) to think of the far future, and used this exercise to give us the inspiration to come up with all the practical applications we are outlining."

Airbus and Boeing's order books may be bulging but, asks **Steve Nichols***, can the region's airports and airspace really cope with the number of aircraft set to descend on the Middle East?*

Air flow systems, a sizeable problem

The massive capacity growth in the Middle East combined with technical challenges, such as increased wake vortex issues and space limitations, has led to a call for technical specialists to provide solutions.

Raytheon's Jim McCoy, vice president, air traffic systems, believes that Dubai's twin airports – Dubai International (DXB) and Dubai World Central (DWC) – will soon have a problem that no one has ever had to deal with before.

That is, how do you cope with ever-larger aircraft in ever-growing fleets in airspace that is finite, and getting busier?

"This region is unique," said McCoy. "Emirates, for example, has 50% of the world's Airbus A-380 aircraft and passenger numbers are set to double by 2020. We are going to see a tripling of cargo as well, and this all has to be managed safely and efficiently. We'll see more and more unmanned systems, too, that will need to be integrated into the traffic flow.

Number one concern

"Helping airports in the region with their growth is becoming more and more important and we need to keep safety at our core. Safety is still the number one concern. But if you want to study another region with a similar problem and how they fixed it, you won't find one."

Dubai has been using Raytheon's AutoTrac III (AT3) air traffic management system to control its airspace since it went operational in February 2013. Raytheon has also sold the AT3 system to Delhi, Mumbai and Chennai airports in India, and it has been selected by the Hong Kong Civil Aviation Department as well.

Raytheon also has secondary surveillance radar systems installed across the MENA region, including Saudi Arabia, Lebanon and Oman.

How do you cope with ever-larger aircraft in ever-growing fleets in airspace that is finite, and getting busier?

"We are world leaders in global automation for air traffic and in surveillance with our radar and navigation systems," said McCoy. "Around 60% of the world's air space is controlled by 350 Raytheon air traffic systems installed around the globe."

The Raytheon AT3 system provides air traffic control automation for the Dubai terminal airspace and approach control services for Al Maktoum International, Dubai International, Sharjah International, and Al Minhad Airbase.

It also supports tower operations at Dubai International and Al Maktoum International Airports.

When AT3 was installed, Stephen DuMont, director of international ATM for Raytheon, said: "The system contains some of the most advanced surveillance and flight data processing systems available today.

"The AT3 installed in Dubai includes multi-radar tracking capabilities, advanced flight data processing, safety net functions, online data interchange, arrival and departure management, and electronic flight strips. Its open architecture design is scalable, as future updates are expected as capacity in the region grows."

AT3 is designed to provide automated conflict alerts if it detects a potential problem with two aircraft. The system can also take into account future aircraft movements, using predict-ahead techniques. AT3 even allows controllers to predict conflicts up to 99 minutes into the future during the cruise phase of flight, using information transmitted by the aircraft using automatic dependent surveillance – broadcast (ADS-B) technology.

But Dubai Airports is looking for further enhancements and initiatives to cope with the massive growth heading its way.

"Obviously this region is going to continue to grow – the sales announced at the 2013 Dubai Airshow just underline just how many more aircraft are going to be flying in the region," said McCoy.

Potential solutions

"When Dubai World Central's five runways are all in use, the problem will be compounded. We are talking to Dubai Airports about a number of potential solutions that could be developed to mitigate problems with this growth.

"In reality, it is all about flow management. Finding and using different technologies to allow more landings and take-offs per hour is where the industry is really focused right now."

He said that weather issues still cause the most delays around the world, so forecasting and management of that information was paramount, adding that green issues also came into play. The less time an aircraft spends away from the gate with its engines running the better, he said. "Aircraft are not idling when they are heading towards runways, so we have to find ways to reduce fuel burn while they are on the ground.

Jim McCoy: "It is all about flow management. Finding and using different technologies to allow more landings and take-offs per hour is where the industry is really focused right now."

"I was at the Australian safe skies conference a few weeks ago and the CEO of Airbus said that the aircraft manufacturers were doing their part to make their products more and more efficient, but now it was time for airports and air navigation service providers to step up and play their part too.

"So Raytheon is working with manufacturers to bring in more technology, such as advanced radars, and its joint precision approach landing systems (JPALS) satellite landing system, which uses local area GPS augmentation."

McCoy added that the other aspect to consider was global harmonisation. A lot of countries, like India and Australia, used to have a separate military ATM network as well as a separate domestic civil system, but they are now fusing these together. Australia has its Civil Military Air Traffic Management System (CMats) programme, which aims to field a joint civil and military air traffic management system by 2020.

Airservices Australia says it manages more than four million flights annually. A draft document describing CMats, said: "It will enable Airservices and Defence to manage airspace volumes dynamically, providing improved management and prioritisation of an increasingly complex traffic mix."

McCoy said: "In the United States, Raytheon does that for the FAA with our standard terminal automation replacement systems (STARS), which fuses the DoD requirements with its federal needs. It means you only need one set of systems and one set of air traffic controllers."

People and processes

But Dubai is already doing this, so Raytheon needs to propose other alternatives, looking at technology, people and processes. The flow management of aircraft, both on the ground and in the sky, is a key part of this jigsaw.

One concern in the region is the growing number of larger aircraft that are using the terminals. These can leave a tremendous amount of wake turbulence and vortices behind them when they take off.

Raytheon is developing sophisticated wake vortex-detecting X-band active electronically scanned array (AESA) radars to allow real-time monitoring of both wake vortex and wind shear problems.

"It is a dilemma," admitted McCoy. "You want to decrease the space and time between take-offs but you need to manage the wake vortex problem in real time and, therefore, optimise your traffic flow.

"Vortices and turbulence don't dissipate as quickly in the Middle East, due to the still hot air, and its density characteristics. We need to better know just how closely you can separate take-offs without incident."

Raytheon has also talked to Dubai Airports about the integration of unmanned air vehicles (UAVs) into the airspace.

"This is becoming more and more of an issue. Having 'keep out' zones for UAVs allows them to do their work while keeping civil airliners out of the way is one solution."

At the end of the day, McCoy concluded, Dubai wants its airports and airspace to have an impeccable safety record – its future depends on it.

Squaring the vicious circle...


PICTURE: NASA

A wake vortex – the potentially dangerous turbulence that forms behind an aircraft as it passes through the air – has been implicated as the cause of many crashes. **Steve Nichols** *looks at the Dubai project aiming to combat the problem.*

Avtech Middle East's contract to study the behaviour and effects of wake vortices generated by aircraft arriving at Dubai International Airport has been extended. Three further options to the contract have now been awarded and other extensions are being considered.

It is already known that vortices are particularly hazardous to aircraft during the take-off and landing phases of flight, especially in dense air traffic areas.

During these phases, aircraft operate at high angles of attack, which can maximise the formation of strong vortices. As the high-pressure air moves around the wingtip to the low pressure, the air rotates, or creates a horizontal 'tornado' behind the wings.

In November 2001, an Airbus A300 crashed in the Queens area of New York shortly after take-off from John F Kennedy International Airport. The accident was attributed to pilot error in the presence of wake turbulence from a Boeing 747, which resulted in rudder failure and separation of the aircraft's vertical stabiliser.

And, in November 2008, a Mexican Government Learjet 45 XC-VMC, carrying interior secretary Juan Camilo Mouriño, crashed just before turning for final approach to Mexico City International Airport. The aircraft was flying behind a Boeing 767-300 and above a heavy helicopter.

Avtech's first two contracts, awarded in 2012, aimed to use information from aircraft black boxes to establish the strength of wake vortex encounters. This was the first time that reported wake encounters had been analysed by a commercial product and the main objective of the project was to increase capacity and throughput at airports while maintaining or improving safety levels.

At the time of the first award, Lars Lindberg, Avtech Middle East CEO, said: "This region is in a unique mesometeorological zone that affects wake transport and decay. Our tools will allow for greater insight into the behaviour of wake within the terminal environment."

Ryan Ellison, business unit director, consultancy, at Avtech said: "The objective of this new expansion to the contract is to increase the understanding of wake vortices in a dense traffic environment. The overall purpose is to assist in increasing capacity at the world's second busiest airport, in terms of international traffic. Avtech has assembled a consortium of industry experts to measure and analyse the actual performance of wake vortices, in terms of both intensity and movement."

The project at Dubai International Airport uses LIDAR (an amalgam of the words light and radar) equipment provided by Lockheed Martin. LIDAR uses laser light and sensors to measure the wake vortices, using detailed meteorological data. This data is provided by Panasonic Weather Solutions, formerly AirDat, using information from aircraft flight management system manufacturer Honeywell.

Helen Woodrow, VP forecasting and research at Dubai Airports, added: "We have one of the industry's most proactive growth plans to cater for the estimated 100 million passengers we expect to pass through our airports by 2020. This project is indicative of the initiatives we are taking to optimise the efficiency of our operation and augment safety as well as capacity."

NATS also provides detailed operational analysis of the project data, using experience developed from similar studies at London's Heathrow Airport.

Avtech Sweden provides the wake vortex 'Monte Carlo' simulations, data analysis and technical project management. Monte Carlo simulations involve more than a million simulated flights to determine the wake generation, transportation and decay characteristics of wake vortices, based on a variety of factors, including traffic mix and weather.


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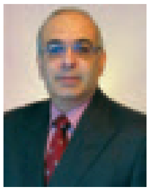
OPENING SKIES FOR GA

Mubadala's Strata is proving successful – but how will it cope with growth?

Engineering a solution to the manpower crisis



The growth of air transport activities in the Middle East has thrown the spotlight on the need for first-class maintenance, repair and overhaul (MRO) activities in the region. But **Rus Sutaria**, *from Avia Intelligence, questions whether a lack of technical training services is a threat or an opportunity?*

If Boeing's financial outlook for 2014 is any indication, then aviation and, more particularly, aircraft maintenance, will be on that inevitable and steady march of growth. The Arabian Peninsula could well be leading the way through countries like the United Arab Emirates, Bahrain and Qatar.

These countries are making every effort to ensure that, as leading aviation states within the region, they are not caught napping. Major operators and maintainers have all been busy in the background positioning themselves as the next best thing in aviation.

But, what of technical training and its effect on manpower planning? Do these countries have sufficient numbers of engineering and maintenance personnel to cope with a rapidly growing influx of business?

Where local commentators are concerned, then the answer is a resounding yes. Not only that… they've been planning this for quite some time!

Bahrain, Dubai, Abu Dhabi and, more recently, Doha have always been noted destinations for business traffic, as well as passenger transfers. However, they also aspire to provide the world's operators with a leading aviation engineering and maintenance alternative.

The introduction of major investment within the region is now highly prevalent, with organisations like Strata, in Al-Ain, now delivering major component assemblies to the world's leading manufacturers of aircraft.

However, the explosion of both line and base maintenance facilities

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throughout the Middle East is of particular importance, with successful examples of this trend including heavy maintenance capability provided by independent MROs, provisioning anything from aircraft hangars and component maintenance workshops to state-of-the-art stores management and distribution.

Even the untrained eye can see that the Middle East is well on its way to becoming the manufacturing and maintenance utopia that it wanted to offer the world.

However, could a potential lack of skilled personnel from across the engineering disciplines either slow or even stall future progress – possibly even compromising the hard-won successes currently being enjoyed by the Middle East's operators and MROs?

Questions might be asked about the availability of maintenance training capacity but there is already a significant presence of high-quality maintenance training establishments within the Arabian Peninsula, all of which have received equally lavish investment in terms of state-of-the-art classrooms, workshops and hangar training facilities. They all boast student capacity in the hundreds.

Achieve its potential

Yet aviation training in the Middle East has, as yet, to achieve its potential with vast numbers of these facilities remaining under-utilised, repurposed or, worse still, dormant!

A great-deal of activity has already been observed on the part of the Emiratis in terms of elevating all members of their community into a wide range of positions, with some assuming senior roles within the General Civil Aviation Authority (GCAA).

Emiratisation of the workforce is fundamental to the on-going success of the UAE, even if it is only a part of the solution. The introduction of training programmes that encourage local Emiratis (including women) to seek careers in aviation engineering and maintenance, as well as the more traditional flight operations disciplines, is now considered key to the national economy, and a significant step forward.

In the past, the problem had appeared to be one of image where aircraft maintenance and engineering was concerned. The younger generation had taken a rather unfortunate viewpoint after receiving little or no response to the question:

The introduction of training programmes that encourage local Emiratis (including women) to seek careers in aviation engineering and maintenance, as well as the more traditional flight operations disciplines, is now considered key to the national economy, and a significant step forward.

"Why should I be an aircraft maintenance engineer, when I can be his boss?"

This has gone some of the way to explaining the general apathy towards considering aircraft maintenance as a serious career option. Happily, the Arabian Peninsula has worked hard to change this attitude.

Nations like the United Arab Emirates have won the hearts and minds of their younger generation by implementing ambitious Emiratisation programmes designed to galvanise people and lead the nation towards greater self-reliance in terms of the country's skills-base.

Maintaining aircraft utilising an experienced indigenous workforce is cheaper than importing expatriate personnel – a fact now well recognised within the Middle East.

Unfortunately, Emiratisation will not entirely solve the problem of manpower shortfalls. The overall demographics of the UAE, as well as other Arabian states, only serve to highlight a far thornier issue. Put simply, there is not enough local indigenous population to create a viable talent pool and make countries like the UAE as self-sufficient as they would like.

After all, where the workforce of the UAE is concerned, expatriates from all-over the globe far outnumber the local Emirati population. Unfortunately, this takes the point of aviation engineering and maintenance training full-circle and emphasises the continued need to import expatriates to make up those shortfalls. Something has got to change.

There is an answer. For years, UK-based colleges and universities have attracted a wide variety of students to their facilities by managing the complexities of visas and work permits on the students' behalf. Now colleges and other technology institutes within the peninsula should be working alongside their key engineering and maintenance counterparts (not least immigration officials) with a singular objective in mind – the creation of a sustainable 'grass-roots' training programme for Middle East aviation.

Ambitious scheme

The immediate demands of planning and implementing such an ambitious scheme would mean a significant preliminary outlay in terms of adapting existing facilities to include the fundamentals, like student accommodation and sustenance, as well as coordinating with local approved maintenance organisations, with a view to developing and delivering on-the-job training.

The benefits to Arabian aviation could be significant and wide reaching, since such all-encompassing 'zero-to-hero' training can be marketed towards young people from less privileged backgrounds and economies.

Arabian aviation trainers could, for example, market their capabilities and further penetrate African and other under-privileged states, on the promise of well-paid work after the completion of training.

From the financial perspective, operators and MROs would then receive a sustainable influx of well-trained students in shorter timescales, and at a fraction of the costs of, say, their European and other more expensive counterparts.

Ultimately, a well-managed, well-marketed and well-integrated programme of training, that is sown into the national fabric of Arabian aviation, will not only fill any manpower shortfalls, but also position the Arabian Peninsula as the leading one-stop-shop for aviation and aircraft maintenance. It will also build the region's reputation as the world's provider of highly qualified engineering and maintenance professionals.

One of the world's best-known aerospace companies – Fokker – has launched an MRO initiative that is causing a great deal of interest. **Geoff Thomas** *reports.*

Fokker on-line foray shakes up the MRO market

Dutch company Fokker's on-line MODStore system (part of Fokker Services) is a web-based modifications trading place applicable for the vast majority of commercial aircraft flying today.

MODStore contains just about all FAA and EASA aircraft supplemental type certificates (STCs) for operators looking for enhancements and is regularly updated. It can be searched by aircraft type; Air Transport Association (ATA) category; or appropriate keywords.

Whether MODStore's users are buyers (airlines or aircraft operators) or sellers (companies involved in offering/fitting modifications to airframes or engines), they enjoy a two-way comprehensive network.

Kees Burger, the man in charge of MODStore, explained: "We launched our new service at the MRO Europe event in London last year and already the site is generating more than 3,500 'hits' and 16,000 page views each month.

Kees Burger: Delighted with response.

"This is far more than we anticipated and we're also delighted that we have already had five 'sellers' (with more in the pipeline) sign-up to the scheme."

Those offering modifications or services have to pay an annual fee to list an unrestricted number of items (currently US$2,995 a year) while buyers have free access to the site.

Once they have joined, MODStore sellers update their own content. The software offers them an easy-to-use, transparent channel to promote modifications and STCs.

"When the service was being researched before launch, both users and suppliers said that they would prefer a system where interactions were conducted directly between sellers and buyers with no MODStore interference – so this is what we have put in place," said Burger.

"Worldwide, more than 20,000 commercial aircraft are used by more than 1,500 operators. To service this huge range of different commercial aircraft, hundreds of sellers offer aircraft modifications. This process involved matching sellers and buyers and was a highly complex business, at least until MODStore was launched.

Certified modifications

"We now list more than 9,500 certified modifications that have been approved for commercial aircraft by both the FAA and EASA and there are also many 'smart modifications' and relevant service bulletins designed to solve operational issues and improve aircraft efficiency."

According to Burger, both suppliers and buyers are delighted that MODStore gives them 24/7 access to the marketplace – a side effect of which is that the system actively promotes new modifications to the global commercial aviation community. These modifications are capable of enhancing aircraft efficiency and also improving operability and reducing maintenance costs.

The 'advertising' sellers and suppliers of STC and OEM modifications and parts can be contacted directly by the airlines and operators.

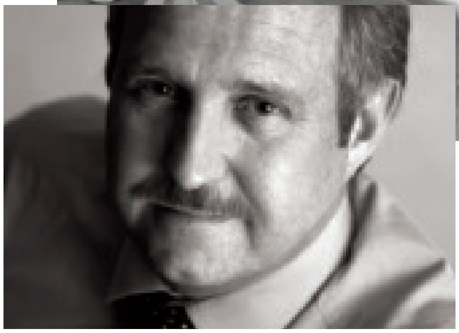
Helping to keep international airline fleets up-to-date and fully certified also means that the industry's 'green credentials' are enhanced, while ensuring that individual airframes are more attractive to buyers and future operators.

■ Fokker Services has been awarded *AvWeek's* MRO of the Year award 2013 for innovative supplier service provider. As an MRO, Fokker Services specialises in its own range of regional jet airliners (Fokker 70 and Fokker 100) along with the Boeing 737 and Airbus A320 families.

This summer sees the scheduled implementation of the software systems for Emirates' new in-house engine overhaul facility in Dubai. The business is quite a coup, worth up to $6 million in licences and services to international software applications company IFS. **Anthony Hall** *looks at the background to the deal.*

The soft sell...

Alastair Sorbie: hoping that the Emirates Aircraft deal will lead to other opportunities.



In March last year, Emirates Airline announced that it had selected the IFS Applications 8 programme to manage the airline's new in-house engine overhaul facility in Dubai.

The growth of the Gulf's civil aviation sector is leading to an increased requirement for support services in maintenance, repair and overhaul (MRO), and corporate performance management (CPM).

IFS Applications will support all operations at the 90,000sqm facility, which will service up to 300 engines per year when fully operational.

Implementation of the software systems should be completed by this summer.

"It's a big piece of business for us," admitted IFS CEO Alastair Sorbie. "If it's on track, as it should be, the opportunities to upsell into the rest of the Emirates business would be good. They seem to be very pleased with what they have found out about us."

Finding out about people is important in the Middle East, as Ian Fleming, IFS managing director Middle East, Africa and South Asia, explained.

"Emirates took up references from a number of our customers, such as GE and Alitalia," he said, going on to explain that being able to demonstrate previous experience was extremely important in winning business.

"The first thing a potential customer will ask you in the Gulf is what customer in the region is running your solution, and if you haven't got one, they probably won't continue the discussion," said Fleming, who added that the key was to demonstrate good credentials by proving you were fit for the job.

"For that reason, every customer IFS has in the region is crucial for us."

IFS has been operating in the Middle East for a number of years but Fleming admitted that the company still came relatively late to the market. "We opened a direct operation in 2000 in Dubai," he said.

There were also some successes in Saudi Arabia, but that was restricted to mid-sized manufacturing companies. "We had nothing across the region in the aviation and defence sector at all," he explained.

That situation changed following UK and Saudi Arabia defence deals for the Tornado and the Eurofighter Typhoon combat aircraft. The most recent came in 2006 when IFS's corporate performance management programme was chosen to support project SALAM, the UK/Saudi Arabia co-operation programme led by BAE Systems, as part of the contract to buy Typhoon.

Graham Grose, global industry director, IFS Defence, explained: "We are running the backbone infrastructure for all the Typhoon and Tornado supply chains."

Applications go straight into the air bases in Saudi Arabia, he added, but are hosted in the UK out of Maidstone in Kent by CSE, a provider company to BAE Systems. "They run the infrastructure for BAE. We provide the application, and that application has been running now for the better part of 10 years."

Now Sorbie is hoping that the Emirates Aircraft deal will lead to other opportunities within the region.

"Clearly if we do really well, then we could look at the airlines that are booming in the region, like Etihad and the others, then maybe there's an opportunity to pull those companies in as well," he said.

Sorbie also sees opportunities in how those airlines have to operate. "The other challenge, obviously, is to fly more economically," he said. "If you burn a lot of fuel you'll want to change to different engines. These are all requiring new MRO systems – systems that IFS could provide."

Step by step, our

Turkish Technic was challenged with the task of installing systems that would enable Turkish Airlines' passengers to be connected around the world. Avionics engineer **Recep Uslu** *shares the process that the Istanbul-based MRO company used, to deliver the right product.*

Today there are several passenger communication systems that can be installed onto modern trans-continental aircraft. These can supply Wi-Fi, GSM and live TV separately, or all together.

Well-known systems include the Panasonic global communications suite (GCS) and Row 44, which use Ku-band satellites, and GoGo, Live TV, and OnAir, which use Ka-band satellites (like ViaSat and Inmarsat's Global Xpress).

The Ku-band satellites currently used by Panasonic cover most of the world but there are still a few gaps. It is planned to increase the capacity and the coverage with the new Intelsat Epic spot beam satellites that will be launched in 2015 and 2016. A significant amount of capacity of these satellites will be dedicated for Panasonic GCS system. All GCS-equipped aircraft under the same coverage will share this capacity, so each will have the maximum available.

Currently there are Viasat Ka-band satellites that cover North America and Eutelsat Ka-band satellites, which cover Europe.

Inmarsat is planning to launch three satellites (I-5) in 2015, which will cover the world. Each will have 12Gbps capacity, which will be shared with all users (aviation and non-aviation alike).

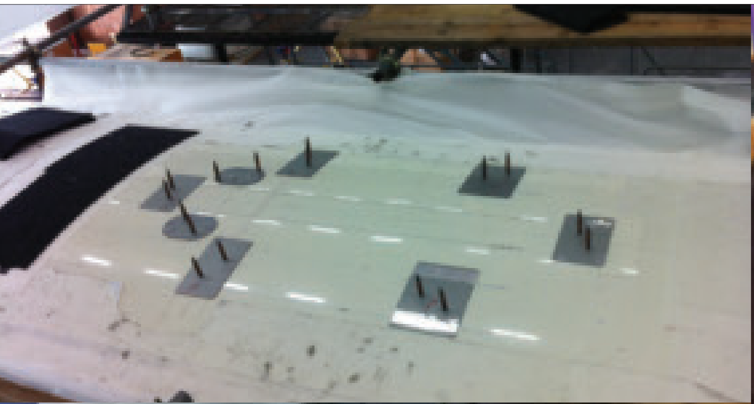
Each I-5 satellite will have 89 spot beams but only 72 will be active at the same time. Each spot beam will have a 40-80Mbps capacity, depending on the user quantity.

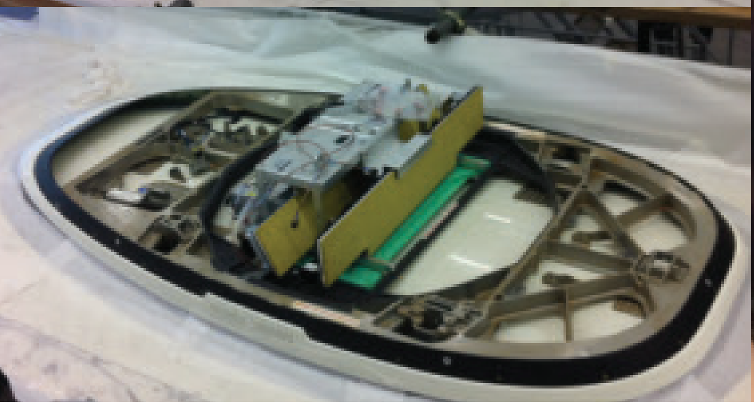
Turkish Airlines selected the Panasonic GCS system on its wide-body aircraft and became the launch customer for GCS on the B777-300ER. Each aircraft provides Wi-Fi internet access to all passengers, four-channel live TV and global system for mobile communications (GSM) capability (eXPhone).

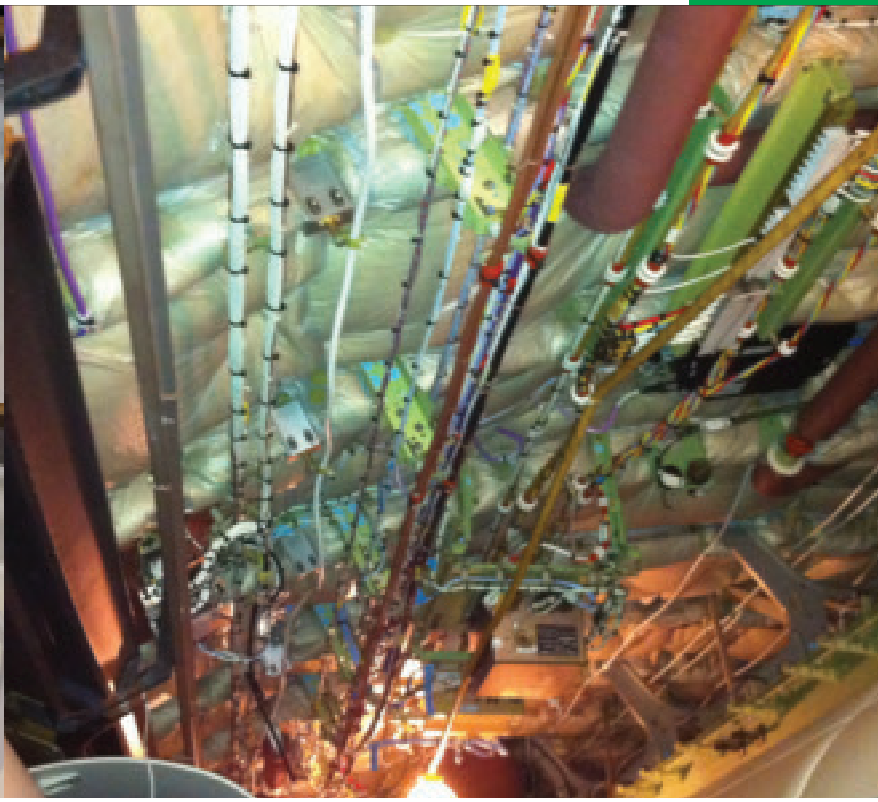
Voice calls

On the Turkish aircraft, GSM functionality enables up to seven simultaneous voice calls and short message service (SMS) operations, as well as general packet radio service (GPRS) data. Currently broadcasting TV channels are BBC, BBC Arabic, Euronews and Sport 24.

The target was to install the GCS system as line-fit for B777-300ER aircraft. Engineers from Turkish Technic's engineering directorate attended all certification tests (which were performed in Panasonic's Lake Forest facility) and water proofing tests (which were performed at the EMS Atlanta facility) and had weekly teleconferences in order to make line-fit







From left: Engineers from Turkish Technik were involved throughout the STC process; Centre: After the installation of external fittings and doublers, the adapter plate and the adapter plate skirt installed. After the application of required preventive compounds the antenna installed on the adapter plate. Right: Leaky feeder cables and data cables were installed for the GSM system through the cabin.

technical triumph

installation possible beginning from the first aircraft.

However, it was not possible to install the GCS system as line-fit for the first 11 B777-300ER aircraft because of some certification and OEM offerability delays.

Turkish Airlines had to carry out the installation with a supplemental type certificate (STC) for these 11 aircraft. Before starting the installation STC, a prerequisite for system activation on transmitting portable electronic devices (T-PED), tests had to be done in order to make sure that system did not affect any aircraft component. All frequencies radiated by the GCS system were swiped all over the aircraft using signal generators, and aircraft systems were observed. Turkish Technic engineers coordinated with Armstrong and completed the T-PED test process successfully for both B777-300ER and A330-300 aircraft.

After completion of the T-PED test, STC installations for both B777-300ER and A330-300 aircraft were prepared by TIMCO and Delta Engineering. However, Turkish Technic engineers participated in all phases of the STC development process and made some contributions, like having the GCS components installed in the avionics bay instead of the aft cargo compartment so as to make the maintenance easier, to protect the components from being damaged by cargo loads, and to keep the cargo volume unchanged.

After the STC development process was completed, Turkish Technic successfully carried out the GCS installation on both A330-300 and B777-300ER aircraft of Turkish Airlines.

Planned workload

Installation of the GCS system took approximately 10 days for A330-300 and less than five days for B777-300ER, which had some provisions already installed. The planned workload for A330-300 was 1,500 man-hours, most of which were structural work. The engineering order was based on the sequenced work steps prepared by TIMCO & Panasonic.

The planning and engineering departments in Turkish Technic created the work steps for the project according to TIMCO and Panasonic instructions as well as their own experience.

The most important part of this installation was the radome for the Ku-band antenna. A special alignment tool was used to determine the exact location of external fittings and doublers.

After the installation of external fittings and doublers, the adapter plate and the adapter plate skirt were installed.

In parallel with the structural work on the aircraft, there were several works performed inside the cabin and avionics bay. Five wireless access points were installed in the different locations of the cabin for internet access. Leaky feeder cables and data cables were installed for the GSM system through the cabin and video control centre (VCC) and the circuit breaker panels were modified to install the GCS system switch and circuit breakers.

After the installation, all tests (ground and electromagnetic interference) were performed without any problem under the supervision of an FAA representative. Turkish Airlines had both FAA and EASA STC, which was not only valid for this installation but also allows future installations.

Turkish Technic has modified 10 B777-300ERs and one A330-300 aircraft of Turkish Airlines and there are two B777-300ERs and nine A330-300 aircraft waiting to be modified.

Now, with its experience, Turkish Technic has set itself a target to complete future installations in less than 10 days for A330-300 aircraft.

Aircraft Interiors Middle East (AIME) returns to Dubai on February 5-6 this year and will be co-located with Maintenance, Repair and Overhaul (MRO) Middle East show. **Marcelle Nethersole** *looks at what is in store.*

Take AIME for a top double

AIME and MRO Middle East run side by side.

The fifth (2014) AIME, taking place in Halls 2 and 3 of the Dubai International Convention & Exhibition Centre at Dubai World Trade Centre, will be co-located with the MRO show.

Last year saw a 34% growth over 2012, with 3,245 attendees from 70 countries over both events.

This year's AIME promises to be bigger. As well as providing the usual platform for interiors suppliers, providers, and buyers to network and establish new relationships in the Middle East, the in-flight entertainment and connectivity (IFEC) pavilion makes its second appearance at the show, along with the introduction of workshops and an awards ceremony.

Cabin comfort will also have a large role at the event.

Striving to develop

F&E CEO, Sharief Fahmy, said: "As show organisers, we are constantly striving to develop and grow all our shows. The return of the IFEC pavilion and the bookings thus far demonstrate how vital a role IFEC plays within an industry that is moving forward at pace."

Mark Howells, managing director at HMG Aerospace, added: "Following the success of the inaugural 2013 IFEC pavilion, HMG Aerospace is delighted to be collaborating once again with organisers F&E Aerospace to enhance the AIME experience. IFE and connectivity specialists continue to evolve their product offerings, complementing the continuing signs of development and growth within the Middle East aviation market. The IFEC pavilion provides an exceptional opportunity for suppliers to engage with airlines from this vibrant region."

This year's pavilion again provides a walled off designated area, where leading IFEC manufacturers and suppliers can show off their innovations and product developments.

Companies showcasing innovations include Rockwell Collins acquisition Arinc. The company offers Cabin Connect, a wireless hotspot in the sky, with four access points per aircraft. Passengers can surf the web and send and receive e-mail via Wi-Fi using their own personal devices, including smartphones, tablets and laptops. The system is now flying on board three long-haul Virgin Atlantic Airbus A330s.

The 2014 pavilion will also see returning exhibitors OnAir, GOGO, and Thales, to name but a few.

Hot topics

In addition to all the booths on site, there is a one-day workshop on February 5 focusing on IFEC. Major industry suppliers, as well as local airlines, have been invited to debate all the hot topics live. Sessions also include 'lightening the load' and 'increasing revenues'.

The increasing importance of maintenance and other MRO facilities in the region is also leading to the growth in the MRO Middle East element of the show.

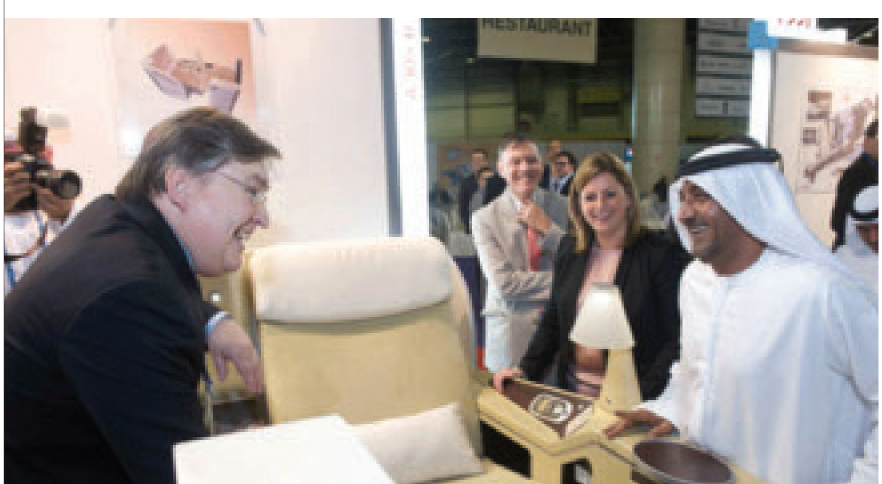
This exhibition and conference is run jointly by Penton's *Aviation Week* along with F&E.

The event is labelled as the 'leading aviation maintenance exhibition in the region' serving as a hub for business growth, knowledge transfer, and technology advancement. It is expected to receive top-level delegates from airlines, maintenance providers, OEMs, suppliers, and key regional players, including Boeing, Airbus, and Lufthansa Technik.

The Middle East is one of the fastest growing regions of the world for aviation, with some of the highest numbers of aircraft on order. This massively boosts the MRO industry, as the UAE invests billions to place the region at the forefront in terms of securing all regional work and also to attract work from other regions.

The event promises to highlight up-to-the-minute information and bring together leading industry experts, who will share their insights on growth opportunities, cost reduction and management strategies that are cutting expenses and maximising efficiency.

Sheikh Ahmed opened last year's co-located event and enjoyed viewing the services and products on offer including seats from EADS Sogerma being shown by Jeffrey Forsbrey the company's vice president of sales and marketing.



MENA airlines are vying with each other to offer the most compelling entertainment, including live sport on TV and sophisticated gaming. Britain's **Liz Moscrop** *plays along.*

GAME ON...

Singapore Airlines has introduced sophisticated gaming, which will doubtless be replicated in the Middle East soon.

Where will you be when Andy Murray wins the US Open again? If you're a tennis fan, there could be far worse places to be than in the air for the final.

As of November 1 last year, Etihad Airways has been offering eight new television programmes broadcasting live news and sport.

Upcoming fixtures will include the Australian Open, French Open and US Open tennis championships, the Winter Olympics, the Masters from Augusta and Ryder Cup golf, plus the FIFA World Cup from Brazil.

Chief commercial officer Peter Baumgartner said: "In-flight entertainment is a key part of the guest travel experience and the introduction of the eight live channels will be a fantastic addition to Etihad Airways' flights."

Actually it would be hard for Etihad not to join the growing group of carriers offering the service. Dubai's Emirates Airline offers four live TV channels on its new Boeing 777 aircraft, including live sport. Indeed, it is specifically promoting its sporting coverage on the back of its sponsorship of Formula 1 and several top-tier European football teams.

Oman Air, meanwhile, has been offering the service since 2009 on its Airbus A330s, streaming live satellite television direct to each seatback screen, as has Bahrain's Gulf Air.

But the real innovator was Qatar Airways, which installed live digital TV in 2006, and was the first airline in the world to do so.

As ever, CEO Akbar Al Baker identified what lies at the heart of airline choices for on-board in-flight entertainment and connectivity (IFEC). He said: "In this day and age of long-haul international travel, passengers are becoming more demanding and are flying in an environment where there is more choice."

And nowhere is this more obvious than in the Middle East, where there is hot competition between carriers to offer the latest technology and entertainment to entice passengers over to their brands.

In addition to live television, all the major Gulf airlines offer a selection of films and music. Travellers can also make on-board telephone calls, as well as watch the latest films, news, business and sports headlines from the BBC. Phone, short message service (SMS) or e-mail technology is also available.

Broadband technology

So where can airlines go next to entertain their guests? With huge strides in broadband technology, the obvious place is adding adrenaline to the cabin itself.

In fact, reports came in recently of a shootout on board a Singapore Airlines (SIA) flight. Brain-hungry robots had invaded the cabin and only seats 22A and 35F could blast them back to outer space.

This came courtesy of ThinkTanks, a 3D multiplayer tank combat game – one of several sophisticated games the carrier offers. Designed for both new and experienced gamers, it provides light-hearted, fast paced pandemonium; either battling against the bots in solo play or going head-to-head against others.

SIA claims to have the "best games available on IFE". But you can bet that won't last for long with the innovative, cash-rich carriers in the Gulf looking to up the ante with their portfolios. At present, SIA is the only airline to offer a 3D gaming experience, with more than 80 titles, including popular strategy adventures like Fallout and Worms.

However, Gulf Air is entering the space to a greater degree with the introduction of six traditional Middle Eastern games on board. These include Tawle, an Arabian-style backgammon game; Basha, a regional card game; and Moosiqar, which offers players the chance to create melodies with one of the Middle East's oldest instruments, the oud.

The new games content, distributed by consumer games IFE specialist, Ensemble Media, contains a sub-set designed by Quirkat, an independent Emirati multiplatform video games developer.

The Quirkat games are intended specifically for regional consumers. Basha, Moosiqar, MENA Speed, Quirkat and two versions of Tawle, along with 14 other new games, are now installed across the airline's entire fleet.

Acting chief commercial officer Ahmed Janahi

said: "Throughout its 63-year history our airline has become renowned for its traditional Arabian hospitality.

"Naturally, when we discovered Quirkat's new games, we were delighted to offer them on board for our passengers to enjoy."

Meanwhile, don't be surprised if SIA's 'red eye collection', which debuted last February on Krisworld, makes its way soon to the Middle East. It is written by Miami-headquartered software specialist GUE Tech, which has a portfolio of 160 games licensed from the PC/game console market.

IFE Services, an England-based subsidiary of the US's Global Eagle Entertainment, formed an alliance with GUE Tech in March to introduce a number of high-quality games built for platforms including PlayStation, Xbox360, Wii, iOS and Android to the in-flight entertainment market.

Genres include action, sport, interactive movie, role-playing, racing, strategy, arcade, shooter, adventure, educational and puzzle.

Popular games such as Warm Up, Fallout, Worms, Redneck Rampage, Gun Metal and Alone in the Dark, which have sold millions of copies, are now available to airlines to license for the first time. The games have been tested on all major embedded systems.

"We're very proud of our in-flight games, which we've sourced from highly respected publishers such as Atari, Interplay, Team17 and Anuman," said Max Lingua, GUE Tech's CEO. "Iconic titles like Broken Sword, Syberia and Myst made history in the terrestrial gaming world, selling millions of copies. Our games catalogue includes a wide variety of genres, so there is truly something for everyone to enjoy during a flight."

The advent of new hardware, such as Panasonic's eX3 and Thales' Avant systems, will mean even more possibilities, such as really sophisticated dual-screen duelling.

This is a no-brainer for an airline. According to Duncan Abell, creative design manager for UK-based 28design, there is increasing interest in second screens as passengers want to use their own personal entertainment devices (PEDs) when they board.

Dual android systems

He said: "In the past people have experienced dubious pixelated graphics on their smartphones. Technically, using dual android systems makes things easier. Ultimately, the ideal is to open up systems so they communicate with each other via shared architecture, accessible by all platforms. There are around 43 people in Panasonic and Thales working together to make this happen now."

He added: "Android does offers a good graphical user interface (GUI) as well as content. It realigns passenger expectations much more closely with what they experience on the ground. However, there is still a big gap between the cabin and the ground, and the synching challenge is to hold on to the magical experience in the air."

That said, many people still use more than one screen to play – especially in an interactive environment. Using a PED as an extra screen lends itself nicely to the cabin in other applications, too.

Second Screen Society chairman Chuck Parker pointed out: "Streaming to seat facilitates discovery. I fly business class regularly and get information that lets me know what's on board. However, it is hard to find what I want to watch. There is no easy way to navigate through the vast library. A tablet with information and reviews on it could make that so much easier."

For those of a more serious demeanour, Turkish Airlines has introduced the Invest On Board programme to its IFE offering. Investors can now browse through video pitches from entrepreneurs, which will be renewed on a monthly basis.

Invest On Board aims to provide investors with a venture capital opportunity in an easy, accessible format; plus offer business start-ups a chance to grow without having to search for the perfect investor.

The project is available online where new businesses can apply to be periodically included in video pitches.

It works for me – I'm thinking of starting a crystal ball company predicting tennis match outcomes. Wonder if I should send it over?

Being bored in the air is just not an option anymore and in-flight entertainment and connectivity (IFEC) is now a crucial component of most airlines' marketing strategies. **Liz Moscrop** *looks at some of the hardware behind the soft sell.*

SKY HIGH TECHNOLOGY

Next time you're on a flight, reaching for your entertainment for the following few hours, for historical reasons it would be worth noting what's on offer at your fingertips.

This is mainly because things are set to change at warp speed over the next couple of years and today's innovation is tomorrow's Sony Walkman.

Although it is unable to keep pace with technology on the ground (regulatory issues put paid to that), your in-flight distraction is rapidly going to morph into something quite different.

IFEC development is what will shape branding, marketing and, indeed, your entire journey in the future. The major hardware suppliers: DigEcor, Lumexis, Lufthansa Systems, Panasonic, Rockwell Collins, Thales and Zodiac Inflight Innovations (ZII – the manufacturer formerly known as IMS) are competing hard to create new products that will include the latest technological wizardry.

What's on offer today is pretty impressive. Stating with wide-bodies, the biggest news in 2013 came from Panasonic, which has the latest iteration of its Android based eX3 IFEC system on Singapore Airlines' new Boeing 777-300ERs.

The aircraft entered service in September and feature liquid-crystal-displays (LCDs) coming in at 24 inches in first class (comparable with what you could have at home in a smaller room). Business class are 18 inches, while economy offers an 11.1-inch variant. The eX3 also offers high-definition and 3D displays, advanced capacitive-touch handsets, and surround sound – again similar to what you might have at home. Since it is based on open platform Android architecture, airlines can customise their own apps and create their own user interfaces for it. According to Panasonic, it also comes in some 30% lighter than its predecessors.

Emirates, too, is to install eX3 on its new Boeing 777 fleet, which will feature 27-inch screens in first, 20-inch in business, and 12.1-inch in economy class. The screens all feature advanced high definition (HD) resolution. The enhanced screens will be introduced on all new Boeing 777s joining the Emirates' fleet and subsequently over the next year on Emirates' A380 aircraft.

Audio and video

For carriers that want something lighter, Panasonic has created eXLite, which offers HD and audio and video on demand (AVOD) at only 3lbs per passenger seat. Last, but not least, Panasonic offers eXW wireless streaming, which allows passengers to access entertainment on their own devices from a server housed on the aircraft.

Thales, meanwhile, has countered with its latest Android-based TopSeries Avant product, which is built on simpler architecture with 30% fewer components than its earlier systems. The OEM says it is 20% lighter, with 30% beefier processing power, yet is fully scalable. Set to enter service in early 2014, Avant fuses the best elements of a seat-centric display with a robust server-based system, featuring solid-state hard drives. The HD screens range from nine to 23 inches, and offer capacitive and multi-touch navigation. The French manufacturer also offers its hand-held touch passenger media unit (TPMU), which acts either as a standalone device or in accord with Avant.

Qatar Airways was launch customer for the TPMU. Passengers can use it to multi-task, much as they do on the ground.

Qatar has also opted to install Avant on its fleet of 80 A350 aircraft. CEO Akbar Al Baker has called the offering "a step beyond what is available in the sky". Passengers will also be able to use their own personal electronic devices (PEDs) with the system, allowing them to enjoy their own content through the in-seat screen. Avant also features 3D audio, which sounds like high fidelity surround sound.

Thales is also working closely with Airbus' A350 programme team to get its TopConnect Ka-band solution offerable on the A350 XWB aircraft.

At the end of last year Chilean LAN Airlines was using Thales' new wireless solution, Ava, during a six-month trial on an Airbus A320. Ava lets passengers access entertainment content and applications on their own wireless PEDs via the TopSeries' head-end server and wireless access points in the cabin.

Not to be outdone, California-based Lumexis has added new brilliant colour HDTV displays to its fibre-to-the-screen (FTTS) system, which is already operating with launch customer Flydubai and Turkish Airlines in the region.

FTTS is fully fibre-optic, with light pulses in optical fibres carrying audio and video data streams from the server to the display screens. Coming in at 2.27kg per seat fully installed, the

Panasonic announced its new eXO overhead offering for narrow-bodies in September last year.

manufacturer says its system is the industry's lightest. The OEM has scored with Boeing, too, which will potentially offer FFTS as a line-fit option on new production 737-800 and 900 Next Generation types.

Germany's Lufthansa Systems has not taken that lying down, and responded by adding a server, four new access points and cabling, totalling about 40-50kgs to its wireless system. Passengers can access entertainment via their own PEDs. BoardConnect works with a regular wireless local area network (LAN) and, depending on aircraft size, needs only two to five access points in the cabin to stream a broad variety of content to every passenger's device. The solution can be used with iOS, Android, and Windows 8, as well as conventional Windows or Apple devices. To assist with building revenues, Lufthansa has also added a shopping module, which can be integrated with high-speed broadband connectivity. EL AL Israel Airlines opted for the system in October last year, which will be installed on 10 Boeing 737s and two Boeing 767s.

According to the OEM, installation doesn't need an extensive downtime like a major overhaul or a cabin refurbishment. This saves costs and allows for a fast roll-out of the product. Additionally, Lufthansa says it is so lightweight, compared with embedded in-seat IFE, that it will save a Boeing 737 about 50tonnes of fuel per aircraft per year.

Californian seat-centric supplier ZII's riposte is Rave – an architecture with no distribution boxes or head-end servers, a slim seat display that stores content locally, and just one line replaceable unit (LRU) in the head-end. The manufacturer says the installed system will weigh in at just 2kg per seat.

Embedded system

And Utah's DigEcor has built on the strengths it learned by developing its portable IFEC and is now offering Glide, another 2kg embedded system, which will enter service with launch customer US charter airline Air Transport International. Australia's Total Aviation Solutions bought the firm last year, which will enable it to grow more quickly.

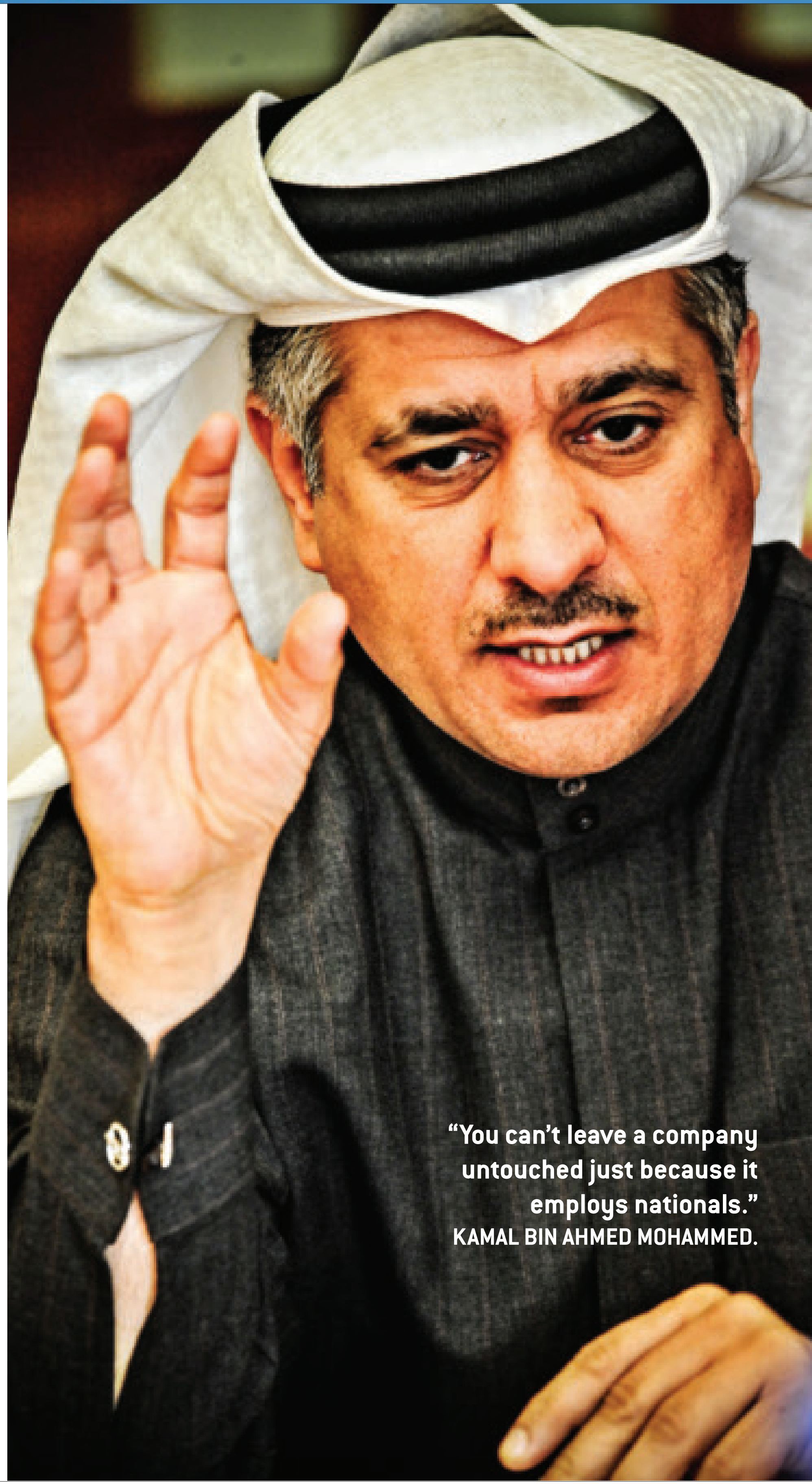
Low fare and regional carriers have plenty to choose from, too. Single-aisle products are increasingly sophisticated. Rockwell Collins announced Paves 3, a scalable HD offering, in late 2011. The system provides customisable cabin configurations, including a variety of overhead and in-seat monitor combinations. Passengers can also access it with their PEDs.

Panasonic's version, launched last year, is the eXO overhead IFE system for narrow-bodies. It, too, supports several configurations, including overhead video and wireless IFE. Based on a new four modular concept unit (4MCU) single server unit head-end that supports HD overhead video, audio-on-demand, and HD AVOD, it features 12.1-inch retractable digital overhead monitors, and smaller capacitive-touch passenger control units.

Other IFEC developments on the drawing board include eye-tracking, gesture control, and voice recognition technologies, and the advent of bigger and better broadband speeds, while more secure encryption means people won't lose the ability to shop and browse the web should they desire. Who knows, flights of the future could be better than their destinations…

Gulf Air is aiming for further reductions in its cost base and negotiating over the future shape of its order book as it reaches the one-year mark in its major restructuring.
Alan Dron *reports.*

SLIM LINE TONIC



"You can't leave a company untouched just because it employs nationals."
KAMAL BIN AHMED MOHAMMED.

Bahrain's national airline has cut its costs by 24% and its losses by more than half in the space of 12 months as it pushes ahead with a survival plan that aims to transform the carrier.

The initial aim was to cut its losses by 45% in the first year of the restructuring. With the company's annual results due to be published by the end of February at the latest, it has surpassed that target, with a 55% drop likely.

Actual monetary figures remain to be seen – as a state-owned company it is not obliged to release them publicly – but the omens seem good.

The last year has also seen it reduce its workforce by a remarkable 27%, from 3,800 to around 2,750.

This has partly been simply because fewer people are required to operate the slimmed-down fleet – down from 38 in autumn 2012 to 26 now – but is also due to the company finally grasping the nettle of cutting staff that had remained as a legacy of its origins as a four-nation airline.

Reducing staff at the island nation's flagship company was a sensitive issue. It was regarded as a major job provider. However, most people left through voluntary redundancy schemes and the small country's low unemployment rate (currently around 3.8%) meant that there were vacancies for many of the trained staff who left the company.

Even after reducing its workforce, the level of its nationals employed by Gulf Air was not only the highest of any of the major airlines in the Gulf but actually reached a new high of 65%.

Although employing Bahraini nationals is an important plank of policy,

Continued on Page 116

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it does not make Gulf Air a sacred cow," said Bahrain's Minister of Transport, Kamal Bin Ahmed Mohammed. "You can't leave a company [untouched] just because it employs nationals."

While slimming down the company obviously caused pain, Mohammed said that the attitude of Bahrainis themselves had helped to deal with the situation.

"In Bahrain, we don't rely on gas and oil because we don't have it – I wish we had! But we rely on our human resources. People in Bahrain know they have to work hard to earn money."

The company's target for 2014 is to reduce its losses by a further 10%, but this will be achieved through greater internal efficiencies, not further job cuts, he said.

Over the past year, some 2000 contracts with suppliers have been reviewed. This was critical because of the extremely competitive nature of the marketplace, with the region's 'big three' – Emirates, Etihad and Qatar Airways – constantly expanding.

Over the past year, eight unprofitable Gulf Air routes (Dhaka, Kathmandu, Copenhagen, Colombo, Rome, Kabul, Aden and Erbil) have been dropped. The first six months of the year had been focused on closing routes, while the second six had seen the company open new ones (Al Maktoum International at Dubai, Mashhad and Trivandrum, with Sialkot and Tehran about to come on-line) or increase frequencies on the type of routes on which it is now focused under its new strategy as an essentially regional carrier, said Mohammed. (Five long-haul destinations remain: London, Paris, Frankfurt, Bangkok and Manila.)

New destinations

There has been a particular concentration of effort on the Indian sub-continent, with several new destinations having been added to the route map to take advantage of the strong flows of workers between the sub-continent and Bahrain.

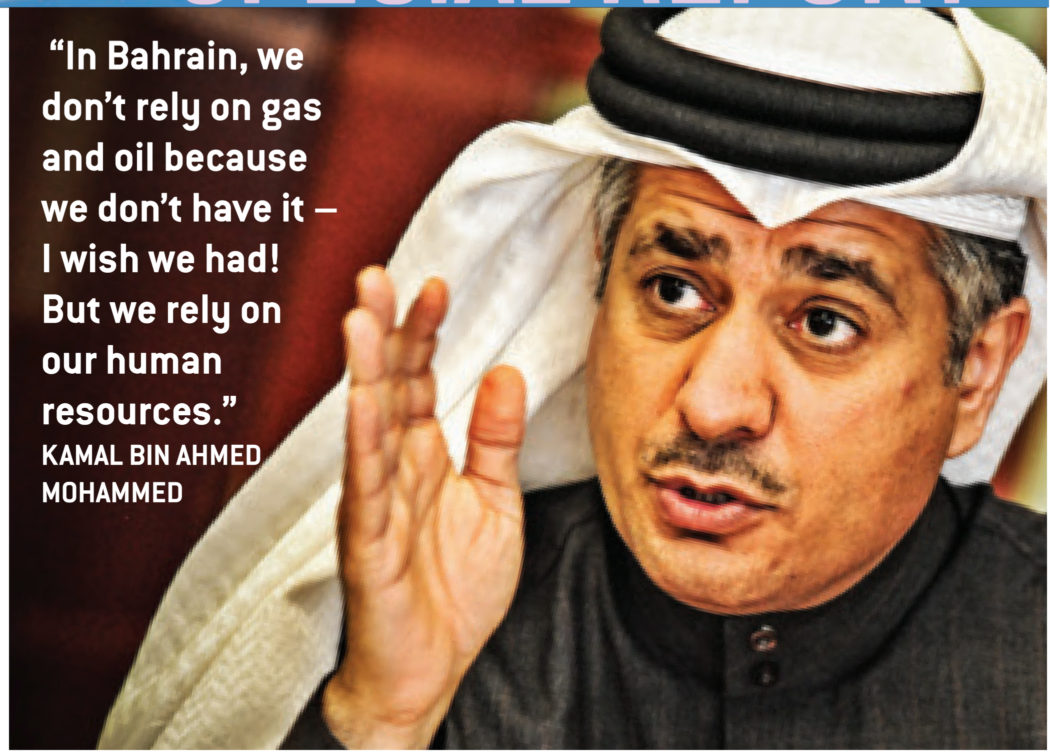
The new concentration on point-to-point services, rather than the previous pattern of using the company's Manama hub for (low-yield) transfer passengers has seen yields increase by 14% over the past year.

Gulf Air is now looking at the possibility of opening up new routes to Africa, Asia and Russia, although Mohammed stressed that these remained at the study stage.

Despite the undoubted impact of the major Gulf carriers, Gulf Air was "still dominant" at its home base, he said and it accounts for 60% of traffic at Bahrain International Airport.

Inevitably, the shrinking of Gulf Air's network has seen long-haul passengers increasingly travelling to Dubai, Abu Dhabi and Doha to make connections. However, the airline is relaxed about this, given its new strategy of concentrating on regional destinations.

Some carriers (both in the region and further afield) have complained about the amount of capacity being generated by the 'big three' and



"In Bahrain, we don't rely on gas and oil because we don't have it – I wish we had! But we rely on our human resources."
KAMAL BIN AHMED MOHAMMED

their huge expansion programmes, but Mohammed is realistic about the situation: "The market is open. You can't stop people creating supply and demand. As long as everyone is playing by the rules I don't think anyone can complain."

Significantly, the company is understood to be considering several new codeshare arrangements and is open to the idea of joining one of the three global alliances.

Bahrain has lagged behind Gulf destinations, such as Dubai and Oman, in tourism and is attempting to increase the number of events likely to draw foreign visitors to the island, such as the Bahrain International Air Show, the Boat Show and cultural festivals.

Ancient society

Mohammed said that with its 3,000-year-old cultural history stretching back to the ancient society of Dilmun, and a second UNESCO World Heritage Site about to be opened on the island, there was a strong base on which to develop an inbound tourist trade: "We're not trying to develop something from nothing."

Gulf Air currently has a fleet of six Airbus A330-200s and 20 A320-family aircraft (11 A320s, five A320ERs and four A321ERs). The carrier has orders outstanding for six further A330s, one A319 and 10 A320neos, plus what is officially described as "12 to 16" Boeing 787 Dreamliners, with the latter due to replace the existing A330s from late in this decade as well as providing expansion of the fleet. This would indicate the gradual build-up once again of long-haul destinations.

However, just how many new aircraft will join the fleet remains open to question: "We are reviewing with our suppliers all the numbers," revealed Mohammed. "The numbers of orders may change and we are currently in negotiations with all the suppliers."

In the interim, the current A330s, which are used primarily on the London, Manila and Bangkok runs, are about to undergo a refurbishment, with new flat-bed seats in business class, new seating in economy and a major upgrade to the in-flight entertainment system. This is due to be completed over this summer, "so we can live with them until we get the Dreamliner".

Youngest in the Gulf

The A320 fleet was "the youngest in the Gulf", and so was good for the foreseeable future.

Looking into the future, Gulf Air continues to assist Saudi Arabia's Al Qahtani Group in its preparations to operate domestic services in the kingdom.

The Bahraini airline has been at pains in recent months to make the point that, despite people popularly referring to it as 'the Gulf Air bid', it is operating in a purely advisory capacity, helping the Al Qahtani Group, which does not have an aviation background, to obtain its air operators certificate and with various areas of documentation.

Progress is still awaited on the dispute with Oman over compensation for Muscat pulling out of Gulf Air some years ago. "We are talking with our friends and brothers in Oman to close this chapter, hopefully soon," was Mohammed's only comment.

Much interest will attend the release of Gulf Air's imminent annual results and its continuing progress over the coming year.

The Bahrain International Airshow grew dramatically this year and built on Bahrain's position as a strategically attractive place to access the massive Gulf market. **Arabian Aerospace** *was there.*

A tale of two

Alan Dron *looks at the new carriers set to battle over*

Qatar wades into battle over Saudi domestic market

Qatar Airways has turned up the heat in the battle for the Saudi domestic market, detailing its plans for its new airline that will take one of the two new licences being granted by the kingdom's civil aviation authority.

Announced at the Bahrain International Airshow, the carrier will be named Al Maha, and should start flying in the third quarter of this year – ahead of the second new entrant, Saudi Gulf Airlines, also announced at the show.

Al Maha will grow to a fleet of at least 50 aircraft.

Speaking at the show, Qatar Airways' CEO, Akbar Al Baker, said that Al Maha would be a full-service carrier and have a mix of single- and twin-aisle aircraft, diverted from the parent airline's huge Boeing and Airbus order book. However, the new airline's initial batch of around 10 aircraft would be leased, to allow rapid service entry.

He declined to specify which types Al Maha would use: "We are looking at several options."

Asked if the marketplace was big enough for both the two new players and existing carriers Saudia and Flynas, he replied: "We think so. If all the carriers are operating efficiently, with very good control of costs, I think there's room."

Qatar Airways logo

Al Maha will use Qatar Airways' existing logo, but in green rather than maroon. The initial base will be in Dammam, Riyadh or Jeddah. Initial destinations will be those three cities plus Dhahran and two others that Al Baker declined to name.

It will operate domestically and to Gulf nations with which Saudi Arabia has traffic rights.

Competitors to national carrier Saudia have complained in the past that Saudi Arabia's price caps on domestic fares make profits from such services almost impossible. Al Baker said the Saudi civil aviation authorities had been "very understanding and co-operative" on this point and a variable cap had been devised.

"For example, if booking a month in advance, there will be a price cap, but not for tickets booked 10 days in advance or less."

Commenting on the news, respected industry analyst Saj Ahmad said Saudia would not be happy at the new market entrants but would have to up its game to keep up with Al Maha.

"That Qatar Airways is earmarking up to 50 jets shows how aggressively it intends to develop in Saudi Arabia. That alone should have Flynas and Saudia worried. But for passengers, it will be a great way to sample something new."

Akbar Al Baker: "If booking a month in advance, there will be a price cap, but not for tickets booked 10 days in advance or less."

start-ups

the Saudi domestic market.

Launch date for (from left) John Kassis, Mike Arcamone, Al Qahtani Group chairman Tariq Abdel Hadi Al Qahtani and Samer Majali.

Saudi Gulf launches with £2 billion CSeries order

Saudi Gulf was revealed at the Bahrain Airshow as one of the two new airlines that will take advantage of the liberalisation of the Saudi Arabian domestic market.

The new airline has already placed an order for 16 Bombardier CSeries CS300s, plus 10 options.

At list prices, the 16 aircraft are worth around $2 billion, with the options, if exercised, accounting for a further $1 billion. Deliveries will run from late 2015 into 2016.

The airline, backed by Saudi Arabia's Al Qahtani Group, will be headed by Samer Majali, former CEO of Royal Jordanian and Gulf Air. Since resigning from Gulf Air in late 2012, Majali has been advising the Saudi organisation on setting up the airline.

The Al Qahtani Group, also advised by Gulf Air, was awarded one of two new airline licences in December 2012. The other is held by Qatar Airways.

Saudi Gulf will be based in Dammam and initially focused on domestic services, covering Dammam, Jeddah, Riyadh and secondary Saudi cities, before expanding to regional destinations.

Further aircraft purchases are planned.

Announcing the order at the show yesterday, Majali said that it was intended to make Saudi Gulf a premium product, with the CS300 having a two-class layout with around 135 seats.

John Kassis, Bombardier Commercial Aircraft vice-president sales, Middle East and Africa, said that the new airline had "picked everything on the option list" to provide high levels of passenger comfort, IFE and communications systems.

"It's going to be one of the richest luxury interiors that our customers have ordered," added Mike Arcamone, president, Bombardier Commercial Aircraft.

Majali said that, with the largest population in the region of around 28 million, but only two main airlines (Saudia and Flynas), Saudi Arabia was a contrast to most Gulf states, which had large airlines but small populations.

Independent Saudi airlines such as Flynas, and the now-defunct SAMA, have complained about the problems of operating in the kingdom due to high fuel and airport costs. Asked if Saudi Gulf would face the same difficulties, Majali noted that Saudi regulator GACA was liberalising ground handling, catering and airport operations.

"There's a whole transformation process happening in the Kingdom of Saudi Arabia to offer better services to the travelling public," he said.

Sitting pretty: Gulf Air acting CEO, Maher Salman Al Musallam (seated) with Zodiac's Djamel Bouhas and Avianor's Earl Diamond.

Gulf Air long-haul fleet given $20m make-over

Gulf Air announced a deal worth approximately $20 million to refurbish its long-haul Airbus A330s.

Under the deal, business-class passengers in the Falcon Gold cabin will have new fully flat bed, 1.9 metre-long seats from BE Aerospace, plus a state-of-the-art in-flight entertainment (IFE) system with a 15-inch touch-screen and audio-visual on demand.

Zodiac Seats will provide the new economy-class seats and IFE with nine-inch screens – the first time this pre-certified combination of seats and IFE has been used. A new-generation slim seat design will give passengers an extra inch of leg room, compared to the current 32/33-inch seat pitch.

Avianor will handle the engineering contract for the refurbishment.

The first A330 will enter the refurbishment process in June, with 40 days – hopefully reducing to 30 – allotted for the work. Three further aircraft will follow, with the aim being to reduce the refitting process to two weeks. The target is to have at least two aircraft completed in time for the busy summer holiday period.

The first four aircraft will operate on Gulf Air's premium routes to London, Bangkok and Manila.

The remaining two A330s went through a recent 'soft refurbishment', which did not involve changing the cabin monuments. They may get the full refit at a later date.

The aim of the project, said the airline's acting CEO, Maher Salman Al Musallam, was to "at least match our competitors" in terms of passenger facilities.

The Breitling Wing-Walkers were one of the star attractions at the Bahrain International Airshow. **Marcella Nethersole** *hitched a ride with them.*

My chance to walk on air...

My mother said: "Don't be so ridiculous" when I told her I was invited to go wing-walking in Bahrain with UK-based Breitling team.

I have to admit that I was temped to chicken out, until *Arabian Aerospace* editor Alan Peaford informed me it might be a "career-changing" decision if I did.

But I am so glad I felt brave enough to take the 10-minute flight; after-all the wing-walkers do it as a day job that involves hanging upside and performing stunts on 70-year-old Boeing Stearman biplanes at 150 miles per hour – and they're fine.

Visitors to the Bahrain show saw Danielle Hughes and Freya Paterson in action, performing a range of gymnastic manoeuvres and handstands, while strapped to the top wings of the vintage aircraft.

The Breitling team pilots fly the aircraft through a well-rehearsed and energetic routine of death-defying aerobatics and close-formation flypasts, with manoeuvres including loops, rolls, stall turns and even inverted flight. During all of this, the wing-walkers experience speeds of up to 150mph, and forces of around 4G, while changing position at various points during the display – all of which requires a lot of physical strength.

Of course, my biggest concern was for my safety. It just didn't seem natural to sit on the top of a plane and take-off but Paterson, who was my instructor, assured me I would be "very safe". The team have never had any accidents and they, themselves, have never felt in danger, she said.

I was pleased to hear I was not going to be performing any of the manoeuvres but that I could, according to Peterson, just grip-on for dear life and "enjoy it".

By now it was time for Paterson to strap me tightly on to the harness, which is a small seat-like structure, and talk me through a safety briefing.

The only thing I needed to worry about, she said, was that if I felt scared (or ill) I was to hold

'The first thing I noticed as we climbed into the sky was the pressure on my face and the need to get a breathing rhythm.'

my arms out and point my thumbs down – this would indicate to pilot Martyn Carrington that I wasn't happy and he would immediately land.

Other than that, Paterson told me to enjoy it. And, with that, she left me in the safe hands of Carrington.

With my goggles and earplugs firmly in place and adrenalin pumping, we taxied up the runway, where we had to wait as an F16 landed and passed us – then we were off.

Taking off was a mixture of excitement and exhilaration. The first thing I noticed as we climbed into the sky was the pressure on my face and the need to get a breathing rhythm. But I soon got used to it and was able to really relax and take in the views below.

Although there was a little turbulence, I felt totally safe and overjoyed to be doing it. I even found the confidence to unclasp my hands from the seat and wave at my colleagues below – something I considered a brave manoeuvre.

And, after a smooth landing, I was able to inform my mother that I was glad I took the decision to do something "ridiculous".

Of course, my experience was tiny when compared to the Breitling professionals, who perform at airshows all over the world.

"We have one move where one plane goes upside-down and then the other flies underneath and we can sometimes touch hands," said Hughes, who also has her flying licence.

"My favourite manoeuvre, though, is the 'arabesque', where I stand on the cockpit and face the crowd waving."

This position happens at the end of the show, just as she returns into the aircraft for landing.

Both Paterson and Hughes knew from a young age that they were thrill-seekers.

"I always dreamed of becoming a high-flying aerial acrobat. It's hard to describe the feeling when you're up there. I can only say it's a bit like dancing in the air," said Hughes.

Paterson added: "I first saw the team at my local air show when I was younger. I was in awe of the women on the wing and I realised it was the only job I wanted to do. I contacted the team on several occasions to see if there were any vacancies and eventually, towards the end of 2011, I got my chance. Two interviews and a trial wing-walk later I got my dream job.

"Of course there is always danger involved with flying, but that is exactly what makes us feel more alive. We practise constantly, as we do around 80 shows a year, so it is a highly rehearsed display act.

"The pilots are probably the most experienced Stearman pilots in the world. At all times, when wing-walking, we are attached to the plane by the safety harness, even when we unstrap from the main harness."

Pilot Carrington is a reassuring figure. "I thoroughly enjoy display flying and I generally operate as a wingman in most of the team displays. I like the challenge of keeping the plane in formation," he said.

Carrington's favourite manoeuvre is the 'mirror' formation, as he loves the thrill of hanging upside down in an open cockpit aeroplane – something I was very glad that I didn't have to do.

The Breitling Wing-Walkers performed their amazing display on all three days of the Bahrain Airshow.

Show deals launch BAC $80m upgrade >

Bahrain Airport Company (BAC), owner of Bahrain International Airport, announced a number of deals at the show. They included one order to replace the airbridges at the Muharraq site and another for additional aircraft rescue and fire-fighting vehicles.

The BD1.2 million ($3.2 million) contract for seven airbridges was won by China's Shenzhen CIMC TianDa Airport Support.

"The new bridges will be a considerable advance on the existing links," said BAC CEO Mohamed Yousif Al Binfalah. They will be glass-sided, fully air-conditioned and have improved mechanical reliability over the airbridges they replace.

He added that five companies from Europe, the US and Asia had submitted bids for the contract. "The design selected is something more innovative in terms of providing an experience to passengers that is different to the existing bridges."

The BD1.3 million ($3.4 million) contract for additional aircraft rescue and fire-fighting vehicles at the airport was signed with AMA Motors.

BAC is purchasing two 8x8 rapid intervention vehicles, in addition to technical support, repair and maintenance services.

The airport currently has six fire-fighting vehicles and the new acquisitions will replace two of these. The other equipment and vehicles purchased will be used for training purposes.

Al Binfalah said safety was a key objective to helping establish Bahrain as a world-leading airport.

"This agreement with AMA is testament to our commitment to equip the airport with leading-edge security solutions and implement the globally-required safety measures," he said.

"The airport offers visitors their first and last impression of Bahrain, so it is important that we get it right."

AMA group vice chairman Tawfiq Al-A'ali added: "We have been associated with Bahrain International Airport since 2003. Its first Rosenbauer crash tender was supplied by us, followed by additional units in 2007.

Both orders were part of BAC's wider BD30 million ($80 million) modernisation programme of short-term enhancements. Further orders in the package will follow over the next few months.

Support system: Wei long (left) and Mohamed Yousif Al Binfalah seal the deal for seven new airbridges.

New beginning: Mena's Omah Matar and Ralph Eisenschmid with Julie Frank, VP international sales and marketing for Tempus.

RBAF Major Rakan Ateytalla, flanked by TAI test pilots Gökhan Korkmaztürk (left) and Arif Ates.

< Turkey goes on the ATAK

Turkey's TAI T-129 ATAK attack helicopter made its international debut at the show.

It was far from being a coincidence, as the machine is being heavily promoted as a potential replacement for the Royal Bahrain Air Force's (RBAF) ageing Bell AH-1 Cobra attack helicopters.

Major Rakan Ateytalla, an instructor pilot on the RBAF Cobra, was clearly taken by the T-129, and compared it favourably with the USMC Bell AH-1Z Super Cobra that he had also been taken around before the show.

Major Ateytalla praised the T-129's speed and agility and also highlighted its ability to be started and scrambled very quickly – "in three minutes and with three buttons".

He said: "A rapid response capability like that would be particularly useful in a Bahraini context, but it is invaluable whenever troops on the ground need close air support 'right now'!"

The T-129 is an extensively modernised and upgraded derivative of the AgustaWestland A129 Mangusta, with more powerful LHTEC CTS800-4N engines (from the ill-fated RAH-66 Comanche programme) built under licence by Tussah Engine Industries (TEI) and with indigenous avionics, weapons systems, and self-protection suites.

Under the terms of its agreement with AgustaWestland, Turkey has full intellectual property and marketing rights for the T-129 platform, except to Italy and the United Kingdom.

The Turkish Land Forces have ordered 59 T-129s in total, comprising nine T-129As (lacking the planned advanced anti-tank missiles and ordered under a 2010 urgent operational requirement) and 50 T-129Bs, including three TAI-built prototypes, but excluding the three prototype aircraft built at AgustaWestland's facilities in Vergiate, Italy. The Turkish Land Forces also have an option on 32 further aircraft.

< Mena completes deal on one-stop shop

US company Tempus Jet Centers announced a new joint venture agreement with Mena Aerospace to create Mena Tempus, which will provide maintenance and completions services to clients out of its home base at Bahrain International Airport.

Mena executive director, Ralph Eisenschmid, said: "To the best of my knowledge, this is the first true VIP completions centre offering in the region, as we can also cater for heavy checks, which means our customers do not have to ferry aircraft from one facility to another when the interiors are removed."

Julie Frank, VP international sales and marketing for Tempus explained: "We specialise in Bombardier Global Express, Boeing and Airbus aircraft, and can operate a mobile team that can visit facilities when required."

Eisenschmid added: "With our joint capabilities, we will now be able to offer interiors and maintenance services under the same roof."

History on show as Spitfires fly again

The Bahrain International Airshow played host to not one, but two, examples of the iconic Second World War Spitfire fighter.

Both were painted to commemorate a third Mk I Spitfire – paid for by public subscription in Bahrain and gifted to the Royal Air Force in 1941.

During his speech at the recent Dubai Airshow, British Prime Minister David Cameron had highlighted Britain's long aeronautical heritage, picking out Concorde and the Supermarine Spitfire as examples of great British successes.

In an effort to further emphasise this heritage, BAE Systems and the RAF Museum showcased a photo-reconnaissance variant of the Supermarine Spitfire at the show.

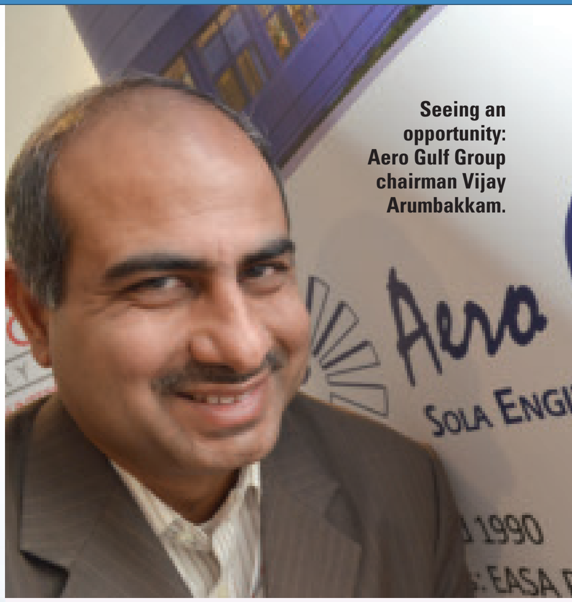
This aircraft (PR.Mk XIX PM651) had been loaned by the Cosford-based museum, where it is normally displayed next to a Battle of Britain-era Spitfire Mk.I.

In Bahrain, the aircraft was painted up with the same inscription as was carried on the original wartime 'Bahrain' presentation Spitfire, and was displayed on a raised dais next to a full-scale replica of the Eurofighter Typhoon – a fighter which BAE Systems hopes will soon be forging its own Bahraini connections.

The other Spitfire, which actually flew at the show, was the Aircraft Restoration Company's rare two-seater, a 1943-vintage LF.Mk IX, PV202/G-CCCA, which was converted to two-seat trainer standards in 1950 for the Irish Air Corps.

The original Bahraini aircraft, W3632, was a rare cannon-armed Spitfire Mk Vb, and first flew from Eastleigh (now Southampton Airport) on July 15 1941. It subsequently joined No. 54 Squadron and became the mount of Squadron Leader (later Air Vice-Marshal) Francis David Stephen Scott-Malden, a veteran of the Battle of Britain.

The aircraft later flew with United States Air Force and Belgian squadrons, before being scrapped in November 1945.



Seeing an opportunity: Aero Gulf Group chairman Vijay Arumbakkam.

Aero Gulf Group snaps up Norwegian MRO

Bahrain-based Aero Gulf Group announced it had completed the acquisition of a former Pratt & Whitney MRO facility in Norway, renaming it the Sola Engine Centre.

Sola specialises in the maintenance, repair and overhaul of CFM 56 engines, as used on the world's narrow-body fleets.

Aero Gulf Group chairman, Vijay Arumbakkam, said: "The phenomenal growth of the Middle East aviation industry offers excellent business opportunities. And, with low-cost carriers being the fastest-growing sector, this was an area we wanted to focus on."

Arumbakkam added that Aero Gulf spent a long time looking at how it could enter the engine MRO market before deciding that acquisition would provide the quickest route.

He said there were strong similarities between the Norwegian and Bahraini economies. "They are both strongly based on the oil industry and the high level of engineering skills that go with it.

DHL's daring debutantes

DHL aircraft come in all shapes and sizes – as this spectacular shot taken high above the kingdom's formula 1 racetrack demonstrates. The show featured a never-seen-before display from the DHL aerobatic team. Featuring a formation flypast from two of the company's Extra 300S types, an Extra 200 and one of its Boeing 757/200 freighters, this was the first time this combination of aircraft has been seen anywhere in the world.

Fork out for a luxury spoon

At 5,000 Euros a pop for this diamond-encrusted spoon, displayed by Lenffer MD Laurenz Lenffer at the show, it's no surprise that clients include people like pop superstar Madonna.

Hamburg-based Lenffer is collaborating with Lufthansa Technik to provide, what it calls, "tabletop couture" to furnish the completions centre's VVIP aircraft.

Company suits the region

Survitec is selling increasing numbers of fighter flight suits in the Middle East. Which is why the company was now considering opening an office in the region said David Forrest (above). "We're making a push into the Middle East. We've picked up a big contract from Saudi and we're making some headway in Qatar, the UAE and Oman, " Forrest said, adding that creating relationships was vital in the region.

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The global distribution systems remain central to the selling strategies of most airlines in the MENA region. **Martin Ferguson** *evaluates the value of the indirect channel…*

Flighty relationship that's just the ticket

A veteran of the travel technology business once told me the airline global distribution system (GDS) relationship was similar to sibling rivalry.

At the time, contract negotiations between British Airways (BA) and Galileo had reached stalemate, and I was writing about the potential consequences for the UK travel industry.

He said: "They posture, argue and sometimes come to blows. But forgiveness and unity are always forthcoming because they understand that for the good of themselves, and everyone close to them, they can't live without each other."

Shortly after, the duo reconciled and announced a renewed, long-term agreement. Since that interview in 2007, advancements in technology have changed the way airlines have to think about selling tickets.

The maturity of the internet, lightning-fast connection speeds and the proliferation of mobile devices, together mean consumers are shopping and booking air travel in different ways.

The sale of ancillary products – baggage, lounge access and on-board food and services – is a lucrative revenue stream for airlines. A recent Ideaworks report predicted the sale of ancillaries would be worth $42 billion globally in 2013, with nearly $3 billion generated in the Middle East and North Africa (MENA).

All of this has driven the evolution of the sales model, where airlines think and act more like retailers than traditional carriers. Marketing and selling fares is no longer just about direct sell, bricks-and-mortar travel agencies and flight consolidators. The growth of online travel agencies (OTAs), meta-search websites and referrals from user-review sites, has made air fare commerce multi-dimensional. But, in the midst of all this change, the GDSs have remained central to doing business, and the love-hate relationship with airlines is as vibrant as ever.

Amadeus, Sabre and Travelport (which is comprised of Galileo and Worldspan platforms, the latter being most common in MENA) are the three GDS competitors in MENA. They help airlines sell tickets through travel agencies. There are subtle differences between their product offerings, but the common USP for airlines is their global reach into travel agencies in marketplaces around the world.

Contracts between airlines and GDSs each have unique elements, but on a fundamental level the airline pays the GDS a fee each time a segment is booked by an agent. Conversely, the GDS pays an incentive fee, based on booking volumes, to its travel agency customers.

Abdul Wahab Teffaha, the secretary general of the Arab Air Carriers Organisation (AACO), said the GDSs have become part and parcel of doing business in the aviation industry. "With one agreement, an airline can display its inventory to a whole network of travel agencies around the world. Previously, airlines had to pick and choose the agents and consolidators that would bring them most business. That required a lot of investment and resource, as the airline would have to install a box (connection) in each office. The GDSs have

Continued on Page 126

CONTINUED FROM PAGE 125

provided a value-added service so airlines can move away from doing their own distribution directly [to intermediaries]. On the other hand, it has created power centres in the aviation value chain."

Teffaha believes the dominance of the GDSs has turned the marketplace into an "oligopoly", and says the power they wield has enabled an overpricing of some services. "They [the GDSs] have been able to exert an overpriced product in order to pay and incentivise travel agents to book on their GDS. The airlines complain, and rightly so, about the expense, but the GDSs insist the cost is a drop in the ocean compared to the revenue they generate," he said.

John Mathew manages GDS relationships and commercial planning for Gulf Air. He revealed around three quarters of all bookings made on Gulf Air flights are made by an agent using a GDS. But does he think his airline is getting value for money? "Overall, yes," he admitted. "The reach of the GDSs is unparalleled to our own distribution channels. We wouldn't be able to access international markets and global customers [without it]. We continue to develop our own website and internet booking engine in order to maximise sales opportunities. The more [bookings] you take online [on the airline's website] the better. That's the ideal. But the GDS also adds a lot of value when it comes to complex bookings. It's much easier, for instance, for a travel agent to book a multi-sector journey on the GDS than it would be for a consumer to attempt the same booking online."

Distribution strategy

Hamish Broom, director of supplier commerce for Sabre in Europe, the Middle East and Africa, says using the GDS should be just one part of a contemporary distribution strategy for a modern airline. "I think what needs to be clearly understood and recognised by the airlines in MENA is the value of a multi-channel distribution strategy. As airlines step up their focus on boosting revenue in an increasingly sophisticated buying environment, they need to be well represented in each channel. The GDS marketplace is similar to Amazon and eBay in the retail sector, except we just retail travel products."

Broom says there is a vast audience of people connected to the GDS that want to buy travel, and believes the platform is now as relevant to major network carriers like Emirates and Etihad as it is to low-cost and hybrid carriers such as Flydubai and Jazeera.

"An airline has brand recognition in its home market. But as they spread further away around the world it diminishes, so they need assistance selling their products. And, of course, they want to get business travellers who tend to spend more on their ticket," he concluded.

There are a number of reasons why the vast majority of large businesses, corporations and organisations use the services of a travel management company (TMC). Arranging a business trip can be complex, so it saves the employee time and their business money. The TMC can manage its customer's travel budget, making sure spend is optimised. An agent can also easily change, amend or cancel arrangements on behalf of travellers. And that's all before you get to traveller tracking and data management. However, one thing all TMCs have in common is their commitment to using one or more of the GDSs.

"It is apparent, therefore, that for airlines looking to enhance their market share, particularly in the higher yield business segments in the MENA region, the GDS is a very efficient channel to expand distribution," said Antoine Medawar, Amadeus' vice-president for MENA.

Sabre's Broom added: "The majority of business travel is purchased through a TMC or a self-booking tool (SBT), both of which ultimately lead back to the GDS for the fulfilment and the issuing in tickets. If you want to get to the business traveller you have to get in the GDS."

Will Owen Hughes, Travelport's senior director for supplier services in the Middle East and Africa, says the Middle East's mega carriers have benefitted greatly from their participation in the GDSs over the last decade. In addition to premium travel originating from or arriving in the regions hubs, the carriers have also profited from the burgeoning number of travellers transiting between North America, western Europe, Africa and the Far East.

"Everyone knows who Emirates is in Dubai. But it's the Emirates bookings made by agents in

"The reach of the GDSs is unparalleled to our own distribution channels."
JOHN MATHEW

"The GDS marketplace is similar to Amazon and eBay in the retail sector, except we just retail travel products."
HAMISH BROOM

GDS PROFILES

SABRE

■ **Which of the full-service carriers in MENA distribute through your GDS?**
Emirates, Etihad, Oman Air, Qatar Airways, Gulf Air, Middle East Airlines, EgyptAir, Yemenia, Saudi Arabian, Royal Jordanian, Kuwait Airways, Royal Air Maroc, Tunis and Pegasus Airlines.

■ **How many of these carriers have chosen to distribute ancillary products?**
Emirates, Etihad, Oman Air, Qatar Airways, Gulf Air, Middle East Airlines, EgyptAir, Saudi Arabian, Royal Jordanian and Kuwait Airways.

■ **Which hybrid/LCC carriers distribute through your GDS?**
Flydubai, Fly Nas and Royal Falcon.

TRAVELPORT

■ **Which of the full-service carriers distribute through your GDS?**
Emirates, Qatar Airways, Etihad, Jazeera Airlines, RAK Airways, Oman Air, Middle East Airlines, and Pakistan International Airlines.

■ **Which hybrid/LCC carriers distribute through your GDS?**
RAK Airways, Flydubai, NAS Air, Pegasus Airlines, and Jazeera Airways.

"It's the Emirates bookings made by agents in other international marketplaces that bring the value."

WILL OWEN HUGHES

" By providing more travel agents with access to our fares, more passengers are able to Flydubai."

GHAITH AL GHAITH

" It is important to highlight the emerging low-cost model in the region."

AMADEUS MEDAWAR

other international marketplaces that bring the value," he said.

However, Hughes added, a large number of agencies in MENA cater for both business and leisure travellers and are, therefore, attractive conduits for smaller airlines.

"Flydubai is a good example," he said. "It had a successful low-cost model, but then came into the GDS initially because it wanted to realise an interline connection with Emirates. It wanted to expand its reach into the Emirates network, while Emirates stood to benefit from the feeder traffic. Its [bookings through the GDS] have grown five-fold since the start of 2013, and there is still more we can do."

Ghaith Al Ghaith, chief executive of Flydubai, says his airline's decision to participate in all three GDSs has been good for business. "We use the GDSs to reach a wider audience and to promote connecting flights across our network. With this in mind, the global reach of the GDS and its effectiveness in helping travel agents access our fares are the most important criteria for Flydubai when selecting a GDS. By providing more travel agents with access to our fares, more passengers are able to Flydubai."

Al Ghaith said his decision to adopt GDS distribution is made on a per market basis and depends predominantly on the nature of the market and the customer preference to a certain booking method. "While a considerable number of our bookings are made via flydubai.com, our call centres and Flydubai shops, the multiyear deals with all the major GDSs have helped us reach customers through a worldwide network of more than 400,000 travel agents, especially in markets with a high GDS penetration rate," he said. "We evaluate GDSs based on their cost per sale, the reach of their network of travel agents and the cost of integration. We are satisfied with the current GDS model as it complements our overall strategy and makes our fares accessible to a wider and more diverse audience. We are connected to multiple GDSs, which ensures agents are not forced to use a single GDS to access our flight information and other details."

Amadeus Medawar predicts that low-cost and hybrid carriers in the region will increasingly turn to GDS distribution in the years ahead. He said: "It is important to highlight the emerging low-cost model in the region.

Ahead of the game

"Our figures showed us low-cost airline capacity in the Middle East increased by two million seats in the first half of 2013 as compared to the same period in 2012. These carriers have the value of the GDS in expanding their distribution channels and many are realigning their strategies in order to stay ahead of the game."

But AACO's Teffaha does not believe budget carriers in MENA have the same need for GDS distribution as some similar carriers in marketplaces like western Europe. He thinks the real value of the GDSs is their global presence, and isn't sure that will necessarily benefit low-cost carriers (LCCs) in the MENA region.

"The LCC model is very simple. It's point-to-point. Even if they are intra-lining, it's usually a combination of two sectors. The sector fares and pricing structure is not as complex as the network airlines and their alliance partners, who require the full services of the GDSs. Maybe there might be a need if they expand beyond strictly regional routes, perhaps for flights of up to four or five hours."

Teffaha says the situation may also change if LCCs tighten interlining with other carriers. He believes that both LCCs and network carriers are starting to understand the benefits of partnership, such as the case with Emirates and Flydubai. "Those types of relationships will create the complexity that will require the services of a GDS. As long as they rely on a simple business model the full capability of the GDS will not really be required."

From this year the distribution landscape may reach yet another turning point. For the last two years IATA has pushed ahead with the launch of its new distribution capability (NDC), a new industry standard designed to help airlines tailor offers to customers based on their profiles.

At the end of 2013 Air New Zealand, American Airlines, Hainan Air, Swiss, and China Southern were all engaged in pilot schemes. It remains unclear what role the GDSs and TMCs will play in this new scheme, though IATA insists the project is designed to complement existing processes rather than replace the indirect channels. Earlier in 2013, IATA admitted it had not done enough to properly communicate NDC to industry stakeholders. The scheme has, therefore, not gathered as much support as may have been expected. The pilot schemes should provide valuable insight into how the initiative will work in reality, but no one is yet sure whether it will lead to domestic bliss or yet more family feuding.

Kuwait's flag-carrier may be on life support, but the emirate has still produced a major success story for Gulf aviation. **Martin Rivers** *meets Ahmad Alzabin, chief executive of Kuwaiti leasing firm ALAFCO.*

Alzabin points the way to a new lease of life

The announcement by Kuwait Airways that it has signed a contract to purchase 25 aircraft and lease a further 12 was, on the surface, a welcome step forward by the heavily loss-making flag-carrier.

Airbus will deliver 15 A320neos and 10 A350-900s over an unspecified timeframe, Kuwait Airways said in December, while also facilitating 12 short-term leases beginning in the second quarter of 2014.

For an airline whose average aircraft age is 19 years, the long-awaited order would breathe new life into its fuel-guzzling fleet.

But, as is often the case in Kuwait, it was not long before cracks emerged. Airbus has yet to confirm the deal, echoing prevarication, which seemingly unravelled the flag-carrier's previous fleet announcement in May. Within days of the latest news, Kuwaiti MPs were demanding a probe into a contract that, they said, lacked detail and appeared to be "suspicious".

Factor in the sudden dismissal of chairman Sami Al Nesf – who was pushed out in November, immediately after announcing an ill-fated leasing deal with India's Jet Airways – and it seems to be business as usual for the beleaguered airline.

Such chaotic scenes will come as some disappointment to Ahmad Alzabin, chief executive of Kuwaiti leasing firm ALAFCO. Having previously worked at Kuwait Airways for 27 years, he would like nothing more than for the flag-carrier to mimic ALAFCO's own remarkable success.

"On a personal level, I want to serve Kuwait Airways by paying back for all the things that I have learnt from them," he said during November's Arab Air Carriers Organisation (AACO) AGM in Doha. "I was an engineer by profession, and I progressed up to the level of deputy director general technical. Of course, I did a lot of leasing from Kuwait Airways to other airlines, and this is how I got my leasing background."

Whereas the flag-carrier has languished, ALAFCO has grown steadily to become the Middle East's fourth-largest buyer of aeroplanes. Its order book trails behind only Dubai's Emirates, Abu Dhabi's Etihad and Qatar Airways.

The lessor currently owns 47 aircraft, which are leased to 14 airlines spread across the Middle East, Europe, Asia, Africa and Latin America. Another three aircraft are managed for investors.

ALAFCO's clients include major carriers like Turkish Airlines, Ethiopian Airlines and Saudia, along with lesser-known operators such as Caribbean Airlines and China's Okay Airways.

It has outstanding orders for 117 aircraft – 85 A320neos, 12 A350-900s and 20 Boeing 737 MAXs – due to arrive between 2017 and 2022. The only confirmed customer so far is Thai Airways, which will take six of the A350s on 12-year leases. "We are busy placing the rest," Alzabin said. "This will keep us busy for quite a few years."

Talks are under way

Separately, ALAFCO had also signed for 22 787 Dreamliners. Talks are under way with Boeing about placing the last eight units, with Saudia and Oman Air already having taken control of eight and six orders respectively.

Alzabin's target of reaching 100 aircraft has slipped back from 2017 to 2020 under the latest projections. But his willingness to revise the plan underscores ALAFCO's commitment to profitability. The company posted a net profit of 20.6 million Kuwaiti dinars ($73 million) for the 2013 fiscal year, against total assets of KD670 million. Its result was down from KD25.6 million in 2012, but still firmly in the black.

Contrast that with Kuwait Airways, which is estimated to have lost $1.6 billion in the past five years alone. The flag-carrier seems hamstrung by political indecision over its privatisation process, as well as its sorely needed fleet renewal. While Alzabin can only watch from the sidelines, he stressed that ALAFCO remains a willing partner for the airline.

"We talk to Kuwait Airways all the time. We extend all our services to Kuwait Airways all the time," he insisted, noting that the flag-carrier owns 11.47% of ALAFCO. Another 53.69% is held by Kuwait Finance House, with the remainder in the hands of private investors.

Asked whether he expects Kuwait Airways to source its upcoming aircraft from ALAFCO – a logical presumption, given that the lessor's order book includes both of the types named in the Airbus deal – Alzabin cautioned against thinking it was a foregone conclusion.

"I do hope so, because there are many elements that will encourage this decision," he said. "ALAFCO keeps talking to Kuwait Airways, trying to offer solutions that they may need for the composition of their fleet, or for complementing their fleet with newer, younger, more fuel-efficient, more technologically advanced aircraft. But I cannot say that we have already got Kuwait Airways' order. That would be a false statement.

"We keep talking to them. It's only natural that we would keep talking to them, as we are both Kuwaiti companies," he continued. "Kuwait Airways is going through a lot of administrative issues. Once this is settled, probably they will be more ready to make their decision."

Indeed, with or without Kuwait Airways' custom, ALAFCO is more than capable of meeting demand. The lessor continues to tap the bond markets with relative ease, most recently issuing a US Export-Import Bank-guaranteed bond valued at $162 million. That transaction went towards a sale-and-leaseback deal with Garuda Indonesia for two new 777-300ERs.

Alzabin admitted that further mega-orders are unlikely until ALAFCO progresses with placing its upcoming 117 aircraft.

The last such order – for the 737 MAXs – was signed at the 2012 Farnborough Airshow. "But definitely we are in the market for sale-and-leasebacks," he noted.

The company is also working towards a 30% secondary listing on the London Stock Exchange,

"We talk to Kuwait Airways all the time. We extend all our services to Kuwait Airways all the time."
AHMAD ALZABIN

complementing its existing presence on the Kuwait Stock Exchange and broadening ALAFCO's appeal to potential foreign investors.

"We had a general assembly on August 15 2013 and the shareholders approved a listing on a foreign stock exchange," Alzabin confirmed. "We are working now with the consultant [Deutsche Bank] on the listing requirements. We also are talking to the Kuwait Capital Markets Authority to obtain the necessary approval.

"The business we are in is an international business, and we want it to be easier for foreign investors to look at ALAFCO as a global leasing company. Being exposed to these markets gives you more ability to ask for more funds in capital increases, helping whatever expansion plans you have."

Risky business

Although lessors are generally regarded as more stable than airlines, the leasing business is by definition a risky one. The collapse of Turkey's Sky Airlines last year disrupted the sale-and-leaseback of two 737-900ERs. Kuwait's failed Wataniya Airways proved equally troublesome in 2011. Large aircraft orders can also be undone by macroeconomic shocks, as evidenced by DAE Capital's fall from grace after the global financial crisis.

Nonetheless, Alzabin is optimistic about the outlook. "The signs are very clear that the sector is in recovery mode now," he said. "The demand presents itself at these international airshows by the number of aircraft being ordered."

Closer cooperation with stakeholder Kuwait Airways is not essential, but it would certainly do no harm.

While Alzabin works to build his lessor's reputation overseas, the fractured Kuwaiti parliament must now urgently end its bickering and sanction the flag-carrier's reforms. Then, perhaps, a more fuel-efficient fleet and a private-sector mind-set will allow Kuwait Airways to follow in ALAFCO's footsteps.

Khalifa Al Daboos: "DAE is not dead. We are here and you will be seeing a lot more us in the future."

Dubai Aerospace Enterprises (DAE) was founded by the Dubai Government in 2006 with a reported $15 billion capital war chest. Amid reports that the investment business was to become a likely victim of the economic downturn, **Alan Peaford** *visited the company's head office to investigate.*

NEW DAE DAWNS

The statement "tales of my death have been very much exaggerated" could apply just as much to Dubai Aerospace Enterprise (DAE) as it did to Mark Twain.

For several years now there have been persistent reports that the aerospace investment business was close to closure, a victim of the global downturn in general, and of the 2008-2010 malaise that hit Dubai badly.

But, in fact, the company is very much back in business and has been meeting aircraft manufacturers and airlines to help develop a strategy that it believes will significantly grow its asset base.

During that economic downturn, the company cancelled orders for more than $8 billion of Airbus and Boeing jets and there has been much speculation about its appetite for investment.

Khalifa Al Daboos, managing director of DAE and the deputy CEO of the Investment Corporation of Dubai (ICD), said the company now has a clear focus.

When DAE was launched in an uncharacteristic fanfare of attention at the Singapore Airshow eight years ago, it came with plans to lead six different markets – capital investment in aerospace assets; aerospace services; manufacturing; airports; engineering; and a top-level university and training business.

According to Al Daboos, the new lean and agile DAE will be

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investing in just two business divisions – DAE Capital and DAE Engineering.

DAE Capital currently leases 53 aircraft to some 18 airlines in 17 countries.

"These are mainly wide-body aircraft," Al Daboos said. "We have explored the market and believe we have to balance our portfolio and will be looking at smaller aircraft."

Al Daboos said that the growth in passenger traffic alongside the forecast fleet requirements of the Middle Eastern carriers, in particular, led to greater confidence among shareholders.

"In the last year we raised more than a billion dollars of funding and delivered seven Boeing 777-200 freighters to Emirates to help grow their cargo business," Al Daboos said.

Daboos and the management team took the opportunity at the recent Dubai Airshow to look closely at the main manufacturers.

But, primarily, it is Airbus and Boeing that interested them most.

"The aircraft from Boeing and Airbus are well known and well proven," Daboos said.

"As an investor, you see these as being less of a risk.

"We are looking at the other manufacturers as well because we recognise that there is a great benefit from the new technologies if these lead to greater fuel saving and other efficiencies – but we need to see this.

"They may have a chance if they focus on their running costs," he added.

Passenger aircraft

DAE will be looking at more investment in the passenger aircraft, as well as extending its successful freighter lease business.

In the past two years DAE's capital asset base has grown from $2.2billion to more than $3.5billion.

"We are probably the biggest lessor in the region now," Al Daboos said.

"There are others with more aircraft but less value. We see great growth prospects in the passenger business. If you look at the figures, 5% of the orders over the next 20 years are coming from the Middle East; look further forward and 50% of orders come from the Middle East and Asia.

"More people want to travel. Operators are looking for the next generating of aircraft. It is about optimising costs and focusing on making money.

"The low-cost carriers are helping those people who need to travel and they really need fuel-efficient aircraft. So we are looking at narrow-bodies to balance our portfolio."

The second arm of the DAE business is Standard Aero, one of the aerospace industry's largest independent maintenance, repair and overhaul (MRO) providers.

Al Daboos said the 100-year-old American company would become the umbrella brand for the engineering activities.

"You can buy different companies with different strategies but if you can't find synergy between the companies, what is the point?" Al Daboos asked.

"We think there is a different approach. Standard Aero already operates in Australia, Canada, the Netherlands and Singapore.

"We are looking to enhance this. South America has been very interesting and we have been looking at growing our aviation investment in Brazil."

DAE helped back an acquisition in the USA. "It was only small but it fitted straight into Standard Aero and helps that company grow," he said.

Standard Aero already covers a wide range of activities, from VIP completions through subsidiary Associated Air Center (AAC), and its component and small engine repair businesses.

Geographic spread

One large gap in the engineering division's geographic spread is the Middle East and India.

"We are looking at that, of course we are," Al Daboos said.

"We are interested in the idea of Dubai World Central as a hub. Commercial aviation, military and VIP activities are growing in the region. We need to identify which is the strongest sector for us."

"Emirates Engineering does a first class job supporting the Emirates fleet, but there are clear gaps for others in the region. With the growth of Dubai World Central there is no doubt that the sector will grow and we are exploring those opportunities at DWC."

Growth is important and Al Daboos is clear that the return to the shareholder is what matters.

There was speculation last summer that DAE would be teaming with the UK's BBA, which owns flight support and service companies such as Signature, as well as a group of aftermarket companies, including Dallas Airmotive.

"We explored a merger but we could not reach agreement," Al Daboos said.

Al Daboos does not rule out other discussions, nor an initial public offering (IPO) or a private sale of shares.

At the moment the Dubai Government owns more than 50% of the company through ICT, the emirate's sovereign wealth fund.

Other government entities have a further 12% and Dubai Holdings also has a significant 12% of DAE.

Other investors include DIFC Investments, EMAAR, Istithmar World, and Dubai Silicon Oasis Authority (DSOA).

"Investors are investors. At the end of the day they look to get the fruit of what they put in a few years ago."

Al Daboos recognises one of the biggest potential pitfalls. "You get addicted to this industry, but you have to remain focused. You have to know what you are investing in.

"But I am optimistic. DAE is not dead. We are here and you will be seeing a lot more us in the future."

"In the last year we raised more than a billion dollars of funding and delivered seven Boeing 777-200 freighters to Emirates to help grow their cargo business."

KHALIFA AL DABOOS

Ed Davidson, *director of the Gulf Aviation Training Event (GATE), takes a personal look at the most recent conference in Dubai.*

With the multi-billion US dollar aircraft orders and the recent Asiana B777 crash as background, I had the great opportunity to lead the second incarnation of the Gulf Aviation Training Event (GATE) on the margins of the Dubai Airshow in mid-November.

To say it was both informative and controversial would be an understatement. The air of urgency was palpable.

It is clear from the comments of the GATE delegates, as well as the speakers and panel members drawn from across the region's airlines, that two issues remain critically important as the Gulf ratchets-up its now legendary double-digit growth in revenue passenger kilometres (RPKs). They are:

- The need for new pilots to crew the rapidly expanding fleets is out-pacing the capabilities of the air carriers to carefully recruit and manage their training internally, and;
- Significant concern – and no small amount of controversy – surrounding the amount of and process of ensuring that the use of flight deck automation doesn't denigrate inherent piloting skills.

The urgency stems from the fact that, as industry leaders, we have minimal time remaining to react to and plan for these two potentially cataclysmic issues.

Recruitment and training

Decisions made today on how best to manage the recruitment and training of thousands of new pilots, while at the same time ensuring they don't lose the "hands and feet" skills needed during automation failures, will likely define the eventual levels of safety in our industry for many years to come. To make matters worse, there is no level of agreement on how best to solve either issue.

The orders announced at the Dubai Airshow represent 2,520 new wide-body aircraft to be delivered over the next 15 years and the consequent need for approximately 36,000 pilots to operate them – that's 2,400 pilots a year in a region that today struggles to acquire a fraction of that number.

Unfortunately for the Gulf, demographics are working against capturing and training local pilots.

To provide some context to the pilot need, a March 2013 study by the Qatar Foundation showed the population in the Gulf Cooperation Council nations is, on average, only 30-35% nationals by birth, with the remaining being non-national, mainly short-term contract workers. That same study also showed that GCC birth rates

Pilots and skills are key to the future

have been declining for the past five years, while migrant population growth has been rapidly increasing. Therefore, it is clear the GCC carriers will need to acquire an ever-larger segment of their pilot need from abroad.

While 'cadet pilot' programmes principally composed of GCC nationals may be politically agreeable to their governments, limiting them to nationals is not operationally feasible going forward.

Today, the region is essentially "stealing" pilot resources from western competitors and has been able to live off that process mainly because of the recent slow-down in the global economy and it's impact on the airline industry, which has rendered many pilots redundant.

Siphoning off

With IATA forecasting the 2016 top ten passenger markets (by RPK growth) all being in North America and Europe, those days of siphoning off the excess pilots from those regions is rapidly drawing to a close. As an example, in North America itself, demand for pilot resources is set to grow by 15-18% by 2020. Add to that the equally strong growth in Asian markets and one of two things will happen to Gulf carriers; compensation levels will have to dramatically increase to continue to attract non-nationals away from their now expanding home carriers, or Gulf airline pilot experience levels will necessarily decline. Neither are attractive options, with the latter being the focus of substantial concern during the GATE conference.

The solution, frankly, is fairly obvious, as was demonstrated by the support voiced by a number of speakers and delegates alike during GATE.

The expansion of local recruitment and cadet programmes to include non-national student pilots from outside the GCC is the best answer to the above challenges of safety and financial responsibility that the carriers seek. The safety and manpower benefits of a well-regulated and professionally developed multi-crew pilot licence (MPL)-type programme have been fully established over the last several years in both Asia and Europe, where those programmes have demonstrated significant success with no reduction in safety.

In many cases, as discussed by GATE participants, the experience is that the MPL licence holders do as well, and sometimes better, during training and checking than their contemporaries, who acquired most of their experience outside the multi-crew operating environment found in the airline industry.

The manual handling debate, however, appears more intractable.

Based on recent well-publicised accidents and heightened regulatory concern, the automation versus manual handling challenge is clearly just as important to our industry as the supply-demand challenge. But it is likely to be more difficult to resolve as it requires a major paradigm shift in what has been a long-held and well-accepted theory in air carrier flight operation departments – the machine flies better, and more efficiently, than the pilot.

The debate, and panel members' individual positions, on this issue was one of the most acerbic and controversial of the GATE conference.

It's difficult to argue that automation is not more efficient than pilots manually flying the aircraft. Significant operational evidence and quantitative data supports that contention. However, based on recent aircraft accident analysis, the questions now being asked are: is it just as effective in all operational contexts or are there times when manual flying should be, or at least allowed to be, a substitute for the flight management guidance system (FMGS) doing all the work?

Essentially, the concern being expressed is not only one of effectiveness, but also the maintenance of the individual pilots' professional competence.

At GATE, while the audience was in support of the hand-flying increase, the controversy centred over how best to train that aspect and when to allow it in line operations. Clearly, no one answer will best fit all situations and the GATE participants came down on the side of providing broad operational guidance to crews rather than a set of inflexible regulations.

However, one aspect of the debate not being discussed, is the significant potential for flight operational quality assurance (FOQA) data to be used as the likely check and balance to the lack of specific manual handling guidance that was favoured by many of the GATE delegates, flight operations executives and union representatives, who were in attendance.

Recruitment and training

Flight data monitoring (FDM) information, when carefully aggregated and used as a trend analysis tool, provides the means to quickly spot manual handling 'outliers' (those pilots who, for instance, desire to hand fly from take-off to cruise level) and negative safety trends in the application of manual handling that could, without close scrutiny, create both safety and inefficiency.

The use of data for that purpose will require the agreement of both unions and management to the careful application and control of the information and assurances to line pilots that it will not be used as a tool for individual discipline. Without the back-up provided by FOQA, the modifications to the use of automation being off-handedly proposed by some industry observers, unions and regulators, may represent just as serious a safety threat as the lack of them may today.

The famous management guru, Peter Drucker, once said: "The greatest danger in times of turbulence isn't the turbulence – it is to continue to fly through it using yesterday's logic."

We, as those who guard and support the professionalism and reputation of our industry, are well advised to take that bit of advice to heart as we seek answers to both the pilot supply and our long-term operational challenges in the context of a rapidly expanding market.

■ Ed Davidson, formerly senior vice president - fleet at Emirates Airline, is currently VP of flight operations at Canada's third-largest airline, Porter Airlines.

Unfortunately for the Gulf, demographics are working against capturing and training local pilots.

The 99s had the chance to see how Seawings impresses tourists to the UAE.

Abu Dhabi 'unique experience' is hailed by the 99s

The Arabian section of the 99s, the international organisation of women pilots, held its second annual event in Abu Dhabi in December.

The section has around 40 members and 20 were in attendance at the three-day event.

The get-together saw participants arriving from countries including Jordan, Bahrain, Saudi Arabia, Lebanon and Spain. Members experienced various aviation activities in both Abu Dhabi and Dubai, including a 20-minute flight over Dubai in a sea wings Cessna 208 Caravan.

The governor of the 99s' Arabian section, Alia Twal, said: "The objective of our meetings is to create a stronger bond between the female pilots and encourage women in the Arab world to crack their shell and go out and achieve.

"This meeting was a unique opportunity to introduce ourselves and share our aims and goals in order to attract female pilots from the UAE to join us so we can learn from and support each other."

Amelia Earhart, who was the first female pilot to fly solo across the Atlantic, initiated the organisation in 1929. Formed by 99 female pilots, today it has more than 5,350 members around the world.

"The realisation of the need to fly is what defines us as an organisation and it is what we share together, not only as Arabian section women pilots, but as pilots from all over the world transcending prejudices," said Twal.

"The Arabian section is fast growing and houses members with diverse backgrounds. Each of these women, in her own right, is contributing to the advancement of Arab women empowerment at both local and international arenas, by engaging into a career path that is very challenging and demanding, and until not long ago was deemed as gender biased."

> "The realisation of the need to fly is what defines us as an organisation."
> ALIA TWAL

The women pilots had a series of visits across the UAE's aviation scene.

In collaboration with Ayla Aviation Academy, the Arabian section created a calendar that showcased members flying different aircraft. This calendar was sold back to the members for five dollars each, and proceeds were donated to charity, which marks the section's first step in participating in charitable activities.

Twal said: "One of the goals of the Arabian section is to be able to provide educational scholarships to its members and other career-seeking women in the aviation field.

"Our members want to grant others the same opportunities and support they themselves have received in order to expand people's horizons. Ultimately they want to share what they have learned, as well as how they continue to excel in their career."

On their last day at the Abu Dhabi event the women thanked their sponsors, which include DHL Aviation Services, Falcon Aviation, Ayla Flight Academy, Seawings, Gulf Air, Royal Jordanian Airlines, and *Arabian Aerospace*.

The UAE's second air show in a month drew the crowds to the oasis city of Al Ain in the emirate of Abu Dhabi. **Paul Merritt** *was there to see what was in store and capture the mood and the images.*

Al Ain displays an aerobatic master class

Hot on the heels of the 2013 Dubai Airshow, the Abu Dhabi Tourism and Cultural Authority successfully ran the 10th anniversary edition of the Al Ain Aerobatic Show. This ever-increasingly popular event, coinciding with the UAE's 42nd National Day weekend, was blessed with the clearest of blue skies and warm temperatures.

Al Ain International Airport, surrounded by large sand dunes of pinkish/orange hues, lies on the outskirts of Al Ain city, roughly 140kms inland from Dubai and 160kms from Abu Dhabi.

The event had been eagerly anticipated as the previous show was held in early 2011. And those aviation enthusiasts who had the patience to wait were not disappointed, as it was one of the best so far. The timing of the event was perfect, as both the Red Arrows and the Eurofighter Typhoon that displayed at the Dubai Airshow, were still in the region and their participation proved to be a huge crowd-puller over the three-day event.

The daily flying display took up all of the afternoon and extended into the evening, which kept the huge grandstand packed with spectators to the very end of the show, thanks to a diverse mix of aircraft performing in the cobalt skies.

Joining the impressive aerobatics of the Red Arrows (Hawks x9), the viewing public were entertained by three other international military display teams – the impressive UAE team, Al Fursan (MB339 x7); the Saudi Hawks (Hawks x6); and the Royal Jordanian Falcons (Extra 300 x4).

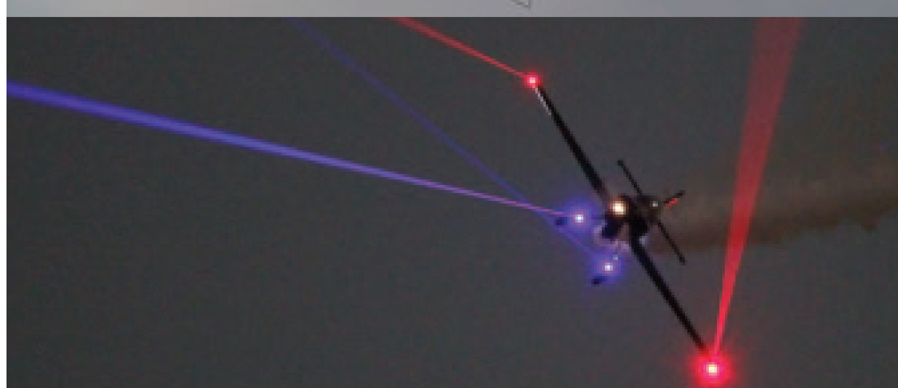
Not to be outdone, there were four civilian aerobatic teams – the Goodyear Eagles (Pitts x4), the Matadors (Xtreme XA41 x2), Breitling Wingwalkers (Boeing Stearman x2), and the Twister Duo (Twister x2).

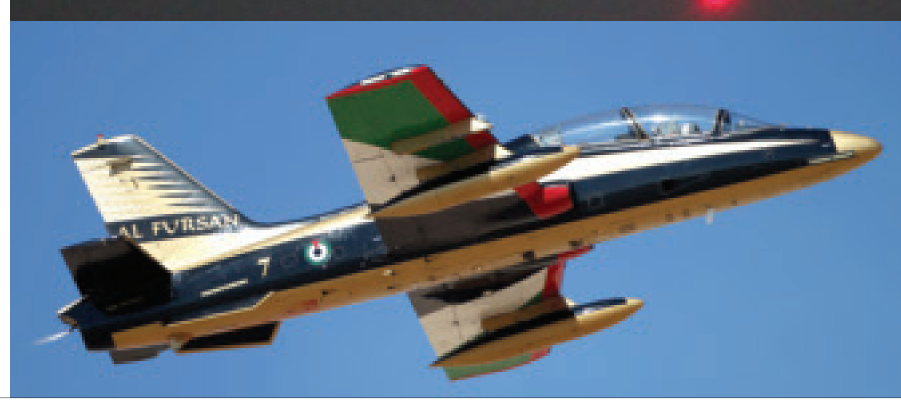
Scheduled between the formations were solo displays of the Typhoon, UAE F-16, UAE Mirage 2000, and Miss Demeanour, the brightly painted Hawker Hunter.

Other crowd-pleasers were several radio-controlled aircraft, including a quarter-scale Hawk in the UAE's desert camouflage paint scheme, and a beautiful scaled model of an Al Fursan MB339.

The Mercedes AMG demo team showed off their driving skills with two very expensive gullwing high-performance cars and, perhaps the most deafening of all performers, was a school bus powered by a jet engine from a F4 Phantom capable of 400kmph.

A short dusk-into-evening display consisting of afterburner passes by UAE F-16 and Mirage 2000 aircraft, as well as the Twister Duo fitted with LED lights with pyros. Zoltan Veres closed the show performing solo aerobatics in his Giles 2002, fitted with LED lights and lasers.





Clockwise from top left: The Matadors, Breitling wing walk, Jordanian Falcons, Goodyear Eagles, Al Fursan, and the Zoltan Veres night show.

Airport Show of growing strength

The 2014 edition of the Airport Show will take place at the Dubai International Convention and Exhibition Centre from May 11 to 13, with the support of DCAA, Dubai Airports and Dubai Aviation Engineering Projects (DAEP) among others.

International security companies like ARINC, CEM Systems and Smiths Detection are due to participate.

In 2013, the event gathered 6,581 aviation professionals who networked, sourced their product requirements and created more than US$20 billion worth of regional business possibilities.

The show will again feature the Airport Passenger Experience – a dedicated platform for the latest technologies and solutions that enhance airport-passenger interaction and aid increasing non-aeronautical revenue.

Daniyal Qureshi: "The show is growing stronger in all parameters."

The Global Airport Leaders' Forum will return for its second edition as a co-located event after its success in 2013. It will gather top decision-makers from aviation regulators, airports, airlines, manufacturers, academia and other aviation stakeholders from around the world in order to explore best practices, collaborate and establish clear legislative frameworks, policy priorities, transparent governance systems, and effective funding strategies to accommodate the region's aviation growth.

The event will also see the launch edition of the Airline Travel Catering Expo, positioned as the Middle East's dedicated exhibition for the products, services and technologies required for the airline catering industry.

Daniyal Qureshi, director, Airport Show, said: "The show is growing stronger in all parameters, with wider global interest in the region as it pursues its ambitious airport expansion programmes and positions itself as the new travel hub of this century. When one thinks of global aviation investments, the Arabian Gulf states are among the first that come to mind."

Qureshi added: "Exhibitors are enthusiastic and confident about getting more business from the region.

"There is a strong resurgence in the aviation industry and this is reflected in terms of investments and developments. The show is a vital link connecting suppliers and buyers, while showcasing the best of the global industry's solutions and services."

Al Bateen set for hat-trick success

Abu Dhabi Airports will host the general aviation exhibition for the third consecutive year at the business-dedicated Al Bateen Executive Airport from February 25-27 2014.

Leading manufacturers, including Cessna, Dassault Aviation, Embraer Executive Jets, Bombardier, Gulfstream, and Daher Socata, have already committed to the event.

The organisers anticipate a display of more than 100 aircraft that will feature a range of models, from ultra light to heavy business jets, including the VIP Airbus corporate jet, to the fastest single engine in the world – the TBM 850.

The total value of sales at the 2013 air expo reached in excess of AED five billion. The show also saw a 30% increase in attendance compared to the previous year, with 13,000 visitors and 160 exhibitors from local, regional and international companies participating.

Yousif Hassan Al Hammadi, chairman of the organising committee for Abu Dhabi Air Expo and general manager of Al Bateen Executive Airport, said: "Abu Dhabi Airports is proud to be hosting the Abu Dhabi Air Expo for the third year in a row. The size of the event in 2013, compared with the previous year, demonstrates the significant growth in the general aviation industry in Abu Dhabi. The success is also a testament to Abu Dhabi's position as an international aviation hub."

CANSO Jordan date

The Civil Air Navigation Services Organisation (CANSO) is hosting its fifth Middle East conference at the Le Royal Amman Hotel, Jordan, from February 3-5. Speakers from across the industry and ICAO will provide their insights into the challenges of transforming air traffic management performance in the Middle East, including future traffic demands and capacity, fragmentation versus restructuring of airspace, infrastructure requirements and political will.

■ For more information go to: wwwcanso.org/middleeastconference2014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The Global Aerospace Summit advisory board is now on the final stages for this year's top strategic event.

GAS will be the power supply for aviation strategy

The final touches are being put on the agenda and the arrangements for the top-level Global Aerospace Summit (GAS) which is being held in Abu Dhabi for the second time.

Marillyn Hewson, president and chief executive of Lockheed Martin, and Tony Douglas, CEO of Abu Dhabi Airports Company, are among the opening speakers at the invitation-only strategic forum aimed at senior international industry leaders in aviation, aerospace, defence and space.

The event is hosted by Mubadala and organised by the Streamline Marketing Group.

The Summit will run from 7-8 April 2014 at the St. Regis Hotel, Saadiyat Island and is expected to attract 1,000 senior executives from across the world, making it one of the most important industry forums of the year.

The summit will focus on the challenges of driving industrialisation and growth while adapting to global socio-economic change

James Hogan, the chief executive of Abu Dhabi's award-winning airline Etihad, will speak on the summit's opening panel, and will cover how partnerships and collaboration offer a new and effective route for the industries to deliver improved returns.

New strategy

Etihad has introduced a unique new strategy in aviation, in which its industry-leading organic growth has been boosted further still by minority equity investment in airlines in key markets around the world

"This will be one of the most significant gatherings of aviation and aerospace senior executives anywhere in the world this year," Hogan said. "I am delighted to have the opportunity to share with them the Etihad Airways story on partnership and collaboration."

Badr Al-Olama, CEO of Strata, the composite aerostructures manufacturing facility owned by Mubadala, is a member of the GAS advisory board and said this second summit will be building on the experience of the highly successful first event

"Our first Summit in 2012 welcomed more than 900 senior executives to Abu Dhabi and the agenda for the upcoming event has been built around the outcomes from the first edition," he said.

"Abu Dhabi is progressing towards becoming a truly international hub for the aerospace, defence and space sectors. This is reflected by the fact that at 2014's summit, we are expecting a greater representation from emerging markets and we will drive industry-shaping initiatives that will make a difference globally. The summit will give us a chance to share some of our learning with emerging and mature markets, as well as hearing from world-leading companies on their best practice."

Keynote speakers

Laila Ali bin Hareb Al Muhairi, the assistant director general – strategy & international affairs, UAE's civil aviation authority, said the announcement of the keynote speakers marked only the first step.

"Over the next few months, we will be announcing speakers and participants across the full, wide-ranging programme covered by the summit. They will represent leading businesses and organisations from all the key sectors, as well as from other industries that can offer lessons for our areas," she said

The themes covered by the Summit will include Workforce and Industrialisation together with dedicated, sector-specific strategy seminars including, defence industry closed door briefings; an Abu Dhabi suppliers forum and a military, satellite and communications session. It will bring industry experts together to answer the challenges faced by the sector and shape future growth strategies

> **"This will be one of the most significant gatherings of aviation and aerospace senior executives anywhere in the world this year."**
> JAMES HOGAN

Leaders from companies in both established and emerging markets will share their experiences of supporting industrialisation, improving supply chain standards and creating value-added jobs for highly skilled individuals

The summit will also see an initiative designed to inspire the next generation of industry leadership, with the launch of the 'Global Aerospace Ambassadors' programme. This programme is designed to support education professionals in the delivery of a successful curriculum in science, technology, engineering and mathematics. It aims both to inspire students and to provide parents with sufficient information to guide informed educational choices.

Arabian Aerospace editor **Alan Peaford** *reports on why a series of announcements by Abu Dhabi's Mubadala will give the 2013 Dubai Airshow a lasting legacy.*

TIERS FOR SOUVENIRS

Of course, the gigantic orders that dwarfed all previous shows captured headlines around the world and rightly so. The billion dollar deals showed confidence from the Gulf's 'big three' airlines that the strategy that has made them household names will continue to achieve growth beyond the wildest of dreams of many other legacy carriers.

And, of course, once these new aircraft begin arriving in the Gulf states there will be spin-off benefits in terms of employment at the airports, the MROs and training academies – and in the wider region in terms of hotels, restaurants, shops etc needed to feed and entertain the millions of people that these new aircraft will carry.

Low-key announcements

But, in a series of more low-key announcements, fed through on a daily basis at the Dubai show, there was a bigger story emerging.

The central point on this story was Mubadala, the Abu Dhabi sovereign wealth investment fund, which has aerospace as one its core industry sectors.

Mubadala has been on a learning curve. Not one of those steep curves but a very calculated and well-planned series of investments, fed by organic growth, and at this Dubai Airshow it all came together.

Homaid Shemmari, the executive director of Mubadala's aerospace division, has long been a passionate champion of Emiratisation and of channelling the undoubtedly well-educated youth of the UAE towards careers – rather than just jobs – in the aerospace sector.

It's all academic: Khalifa University Professor Tod Laursen (left) and Homaid Al Shemmari (right) sign the aerospace research agreement watched by Sheikh Hamed bin Zayed Al Nahyan, chairman of the Abu Dhabi Crown Prince's Court and vice chairman of the Khalifa University.

At the show, his dreams were realised as the company became established as a Tier One supplier in the manufacturing sector and enhanced its position in the MRO world as well.

Over three days Mubadala secured a total of more than $11.8 billion of deals for the UAE's aerospace and defence sector.

More than half of this came from aerostructures and engine parts manufacturing work packages secured with global OEMs Airbus and Boeing.

For the American manufacturer, Mubadala will be supplying advanced composites and machined metals to Boeing commercial programmes, including the 787 and 777X.

At the same time, the two companies have set the ground for development of a raw-materials ecosystem, beginning with pre-preg manufacturing.

Ray Conner, Boeing Commercial Airplanes president and CEO said: "We support our customers by leveraging the world's talent and resources in ways that build a more capable, competitive supply chain for our products."

The manufacturing of the raw carbon fibre materials opens new opportunities for Mubadala's aerostructure subsidiary, Strata, as composites become a key element of aircraft manufacture.

Raw materials

Airbus also committed to buying the raw materials from Abu Dhabi and, at the same time, awarded more work packages to Strata, which already provides flap track fairings for the manufacturer's fleet of A330, A340, A350 XWB and A380 aircraft.

In February 2013, the first four fully assembled Airbus A330 ailerons to be put together by Strata Manufacturing in Al Ain were delivered to Airbus's factory in Germany, and fitted on an Etihad Airlines aircraft.

For the next stage of development, Mubadala followed its success in the aerostructures sector by signing two deals that will see it move into the engine supply-chain, with the launch of a component manufacturing business.

"This is an important part of our long-term strategy," Abdulla Mohamed Shadid, Mubadala's senior vice president, aerospace, said.

"Like in aerostructures, we began with

Staging post: Abdulla Mohamed Shadid – engine component manufacture is a vital stage for Mubadala.

MRO and then started manufacturing with Strata. The engine OEMs have seen the success in that part of the business and now have the confidence to work with us in the same way as Airbus and Boeing have," he said.

The MRO business was also celebrating with multi-agreements with major engine manufacturers GE and Rolls-Royce.

The joint venture with GE Aviation is to further enhance its GEnx MRO relationship.

Mubadala's MRO subsidiary, ADAT, became the world's first independent MRO quick-turn operation for the GEnx engine – General Electric's (GE) latest turbofan engine, built to be the 'workhorse' of the 21st century for medium-capacity, long-range aircraft.

GE and Rolls-Royce are also working with Mubadala to develop engine component manufacturing capabilities within the Emirate and committing $1 billion in work packages between them.

Rolls-Royce is establishing Abu Dhabi as a key member of its global network for maintenance and manufacturing to become an approved Trent XWB engine MRO provider. It also committed to helping establish, and become a founding member of, the first advanced manufacturing research centre in the region.

The company became established as a Tier One supplier in the manufacturing sector and enhanced its position in the MRO world as well. Over three days Mubadala secured a total of more than $11.8 billion of deals for the UAE's aerospace and defence sector.

And research becomes the final piece in the Mubadala jigsaw. The aerospace research centre is primarily a joint venture between Mubadala and the Khalifa University.

The new $15.7 million Aerospace Research and Innovation Centre (ARIC) will invest in research and development (R&D) projects that are directly related to the needs of the aerospace industry in the UAE.

Al Shemmari summed it up: "To make the aerospace industry in Abu Dhabi truly viable, competitive, and sustainable on a global scale, two fundamental elements need to be addressed: building local 'know-how' and creating a R&D ecosystem.

"The signing of this agreement marks an important step on both these fronts as enablers for development and to grow the aerospace industry in UAE. Not only will the research centre develop essential future technologies, but it will also fill the skills gap in providing young Emiratis with essential training in aerospace and empower future talent."

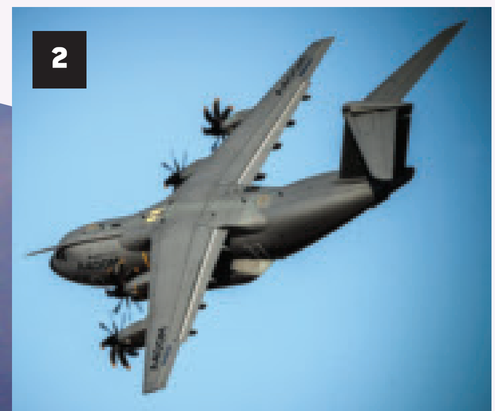
So when the multi-billion dollar aircraft deals are surpassed at shows in the future, for me the 2013 Dubai show heritage will be the time when UAE moved from being a centre for aviation to become a centre for aerospace.

High society

The new Dubai Airshow site at Dubai World Central allowed for greater opportunities for the world's ace pilots – but just in case the residents of Dubai missed out on the show's first-ever public grandstand area, a number of the display teams and individual pilots gave spectacular fly-pasts, like the UK's Red Arrows display team, which demonstrated its skills alongside the emirate's landmarks such as the Burj Khalifa and the Burj Al Arab.

Although marred by unseasonable bad weather, there were still plenty of chances at the showground for photographers to capture the aerobatic marvels.

Picured are:
Main picture: UK's Red Arrows roar past the iconic Burj Khalifa.
1: Eurofighter's Typhoon, impressing the UAE defence staff despite not winning the country's fighter contract.
2: Airbus's A400M Atlas is entering service with France and could be on the shopping list for several Gulf states.
3: Come back, we want to talk… the UAE Al Fursan aerobatic team pursues the A380.
4: The Rockwell B-1 Lancer makes a low pass.
5: The UAE Air Force's F-16 Block 60 shows off its conformal tanks.




Together we reach new **horizons** in business aviation

Travel across Somalia, the world's most failed state, is slow and dangerous. A plucky local fleet is changing all that. **Sean Williams** *travels with Jubba, the country's 'unofficial national carrier'.*

MISSION IMPASSABLE

The car whacks a pothole, lurches sideways and turns 360 degrees, spits and hops on to two wheels before landing, with a gasp, on all fours. This is the "best road in Somalia", my driver tells me. "But," he adds, "roads in this place are like the moon."

It's of little surprise that Somalis are turning to the skies to traverse their embattled nation. There are very few paved roads in the country (Hargeisa, the second-largest city and capital of northern breakaway state Somaliland, has just one tarmacked street) and dusty tracks are a tangle of hatchbacks, giant 4x4s and donkey-drawn carts.

Only around 10% of all roads in Somalia are paved. Drivers must also travel with a police escort to pass through countless checkpoints, manned by the nation's underpaid and overzealous patrolmen.

Roadside bombs have also become a favoured tool of death for Al-Shabaab, the Al Qaeda-affiliated group that controls vast swathes of Somalia, as its campaign has been reduced to civilian-targeted guerrilla attacks. Somalia, it's safe to say, has earned its title as the world's most failed state.

Impassable roads, though, are good business for Abdullahi Warsame, managing director of Jubba Airways. Under his stewardship, the small firm has become known as Somalia's 'unofficial national carrier', and Warsame is already looking to expand a destination list that spans all of the major cities in Somalia, as well as Djibouti, Dubai, Jeddah and Nairobi.

It is the latter, Kenya's sprawling capital, where Jubba is registered. Moving the firm's registration from Somalia to Kenya was one of Warsame's first tasks – "a very difficult one" – after he assumed the role in 2003.

Following the collapse of Mohamed Siad Barre's brutal regime in 1991, and a subsequent civil conflict that lingers to this day, airlines registered in the country were not permitted to land anywhere else.

Now, though, Jubba is thriving. Its flights are booked at 85% capacity and, Warsame claims; the company is turning a small profit – not too shabby in a region overrun by terrorists and corruption.

The company, which still does not own a single plane (Warsame plans to add his first this year), runs a fleet of four Boeing 737s and three Antonov AN24s, the latter of whose ancient Soviet controls are best handled by Jubba's high number of Russian and Ukrainian pilots.

Tough planes

Leases for the Antonovs run at $80,000 a month; the Boeings $400,000 a month. "They are tough planes," Warsame said; alluding to their deference at diving into Mogadishu, Somalia's war-zone capital city, at perilously steep angles owing to the locals' penchant for rocket-propelled grenades and the use of AK47s.

High lease costs – and high costs overall – are not uniquely a Somali problem. Were Warsame chief of a European carrier, his Boeings would set him back just $180,000 a month. Open skies treaties, though official, are (like so much legislation in east Africa) scantly followed.

In fact, Kenya's Civil Aviation Authority, in particular, has backed government support of struggling national carriers. African Express, also headquartered in Nairobi, is one of Jubba's regional competitors – as are Daallo and Ethiopian Airlines. Once Jubba, braving wartime Somalia, had a monopoly on its routes. No more.

Somalia may not be 'safe' in the truest sense of the word, in our lifetime. But a safer Horn of Africa is drawing people back to business in the region, as well as the hundreds of thousands who fled to all corners of the world. And most of them are using Jubba to get home, trusting it as 'their' airline.

On a flight from Nairobi to Berbera, a northern port town a three-hour drive from Hargeisa – via Mogadishu – I meet a Kenya-based trader called Mohamoud Allarte. "This is home to me now," he said as seats quickly fill around us. "Jubba has been there from the start. That was tough to do."

African demand for international travel has risen 7.5% this past year, well above the global average of 6%. Africa's GDP is set to rise another 6% this year, too: the need to cross Somalia's ravaged but rebuilding regions is growing steadily.

Success, though, does not preclude a customer experience of note. The trip costs me $450 return and is packed, it transpires, beyond capacity. A gaggle of gregarious religious speakers, on their way to an Islamic conference in Hargeisa, does not help: most want to sit next to and debate with a new friend. Chaos ensues.

Eventually, with the plane's small staff of Kenyans (staff nationality is mandated by Kenyan authorities) looking slightly worse for wear, we're off. The seats are old and small but service is prompt. Schedules, however, are next-to-useless. My trip from Kenya to Somaliland is set to take four hours. In reality it takes six. The ribbon of military vehicles around Mogadishu's Aden Adde Airport is a big clue as to why.

The return leg, because of Kenyan security fears, must touch down at Wajir, an ochre-soaked settlement just west of the Somali border, where

our old Boeing sits beside copters and jet fighters ready to be scrambled at a moment's notice. Every passenger must endure a full security check, sat in queues for most of the time in the soggy humidity of the Kenyan scrub. In total the trip lasts ten hours. It should have been four-and-a-half.

That doesn't stop Kenya's 400,000 Somali expats from preferring to ride with Jubba. "It's the easiest way to get from A to B, then C and maybe even D (flights stop off at several points before reaching Saudi and the UAE – it's as close to a 'sky bus' as I've encountered)," said Nur Hassan, a Somali journalist exiled after repeated death threats from Al-Shabaab.

Easy, however, is not a word common to Warsame, who has found the stigma of his nationality difficult to overcome. It has been "impossible" to get loans, he said, and destinations are loath to allow anything Somali into their territory, such is public and private antipathy to the country.

There have also been setbacks. Despite Jubba's assertion that it has a 'zero accident credential' one of its planes did crash last April, the pilot flipping his charge on the strip at Galkayo, a city in the central north of Somalia, after avoiding a goat. No one, miraculously, was killed. Still, it's a little rich to claim that a flipped plane does not constitute an accident – and the pilot is no longer a Jubba employee.

Fading security

Médecins Sans Frontières has left the country because of its fading security, and the African Union is beefing up its numbers in anticipation of further bloodshed. Landing in Mogadishu still feels like landing in the theatre of war.

The city's airport, many analysts agree, is Shabaab's biggest target: a gateway through which Somalia's flailing government receives military, monetary and edible aid. The UN compound in which 15 perished in June sits almost next door to the runway. War carries other risks, too: recently an Ethiopian cargo plane full of ammunition exploded on the runway. Four died.

Kismayo, a big city near the Kenyan border (and part of the perilous Jubbaland region for which Jubba is named), has recently deteriorated into all-out conflict, too: Somalia is a nation, it seems, by name only.

Jubba, thankfully, escaped the giant fire, which tore through Nairobi's Jomo Kenyatta Airport late last year. And Warsame, buoyed by Jubba's many recent successes, is keen to expand the company's profile. He already has Uganda's capital city Kampala in his sights, and the Ethiopian metropolis of Addis Ababa – a move which would pit Jubba directly against its bigger competitor, Ethiopian Airlines.

But why be bothered about competition when you've been flying over a war-torn nation for more than 15 years? Jubba might not be the definitive 'happy way to fly', as its baby-blue motto suggests. But it's probably the happiest way of getting across a country where sadness still reigns.

Djibouti: The gateway to Africa?

Djibouti has high hopes of leveraging its airport and sea port to take advantage of recent trends in multi-modal cargo shipping. **Tom Pleasant** *reports.*

Djibouti may be small – fewer than one million people – but the Horn of Africa country has plans to develop itself into a sea-air cargo hub for landlocked countries in the region, such as neighbouring Ethiopia.

"We can connect the Far East to Africa and the rest of the world," said Moussa Houssein Doualeh, cargo manager at Djibouti-Ambouli International Airport. "This is our dream."

The key to the plan is exploiting Djibouti's fortunate location and the rising use of mixed-mode transportation of cargo. Air cargo is much faster than sea, but it is correspondingly more expensive. With manufacturers eager to cut costs during the global recession, they have discovered increasingly sophisticated techniques for sending cargo either in waves of air first then sea, or mixing it so that it goes only part of the way by sea and then the rest by air. The solution is rapidly gaining advocates and that makes places with both good sea and air access suddenly very useful.

Djibouti sits at the mouth of the Red Sea, with approximately 65% of the world's commercial shipping fleet using its territorial waters. This makes its sea ports a vital outlet for regional trans-shipment. With the growing use of air as part of that, the airport is seeing some growth, but wants to develop that far more.

Professional logistics

"Sea-air is our target," said Doualeh. "We are already working on ensuring incoming trans-shipments between the seaports to the airport take [fewer] than 48 hours, but we need some professional logistics people to help us."

The airport's air cargo operations are small – only 3,000tonnes per year – but it has some heavy hitters flying freighters into it: Etihad and Emirates. Etihad flies in twice a week with an A330 for both Djibouti and Somalia, while Emirates flies a 777 every Saturday.

The next big operator will be Ethiopian Airlines, which is already planning on exploiting the sea-air model through Djibouti.

"Everything going to Ethiopia comes through Djibouti," said Doualeh. "Eighty million people are being fed by road. We are a very small country, but our seaport is one of the best in the region. We are trying to save time for the shippers, the transporters and the customers. We are working with the seaport to see how we can bring things along with this sea and air movement."

In April last year, Ethiopian Airlines signed a memorandum of understanding (MoU) with the airport to do exactly that.

"As the largest air cargo service provider in Africa, we are a serious player in moving trade, commerce and investment, which are the engines of fast economic development in the continent," said Tewolde Gebremariam, CEO of Ethiopian, in a statement at the time. "The cooperation framework with our long-time partner, Djibouti Airport, will enable us to offer a new menu of choice, sea-air multimodal transport services, to our shippers, forwarders, and logistics providers in Africa."

Expand connections

To encourage more airlines to do the same, the Djibouti Ports and Free Zones Authority has plans for a US$5.88 billion investment to expand connections between the airport and the Doraleh Container Terminal, which itself will have its capacity boosted up to three million containers per year by 2015, double its current capability.

Already the fifth-largest container port in Africa by capacity, this expansion would make it the largest on the continent, leapfrogging Port Said and Damietta in Egypt, Tangiers in Morocco and Durban in South Africa, which is already moving forward its own ambitious sea-air projects.

On top of that development, Aboubaker Omar Hadi, chairman of the Djibouti Ports & Free Zones Authority, says the country will start building a new airport later this year, to open in 2016.

"The airport will be 25km from our capital… and have a state-of-the-art air cargo village to prepare ourselves for the expected increased demand.

"We need to develop the sea-air cargo business to serve landlocked east African countries and far away west African countries. These currently have to endure unreasonable transit times," he explained. "This has been handicapping the business community for many years and the development of sea-air cargo services, especially for high-value goods, will be a great solution."

Currently, a container shipped from Shanghai to Abuja, Nigeria, can take up to three months while a sea-air option transshipped in Djibouti takes a maximum of 18 days. With the recent advances in cool-chain containers, this also allows for certain perishables – fresh food – to be sent this way.

"Trade to and from African countries is increasing rapidly," added Hadi. "All [those] involved in air cargo logistics should take advantage of this untouched, yet vast, potential for growth."

The final approach to Djibouti Airport.

Left: More than 2000 US troops are in Djibouti and American transporters are frequent visitors Right: A Pilatus PC-12/U-28A receives attention at Niamey, the capital of Niger, site of a small US military detachment. Although it carries a civilian paint scheme, it carries a military-style serial on the fin. Its civilian appearance allows it to move around African airports without attracting undue attention.

Why the US needs to pull the strings

US military involvement in the Horn of Africa is growing, and its main base in Djibouti is fulfilling a role that stretches across the Red Sea as well as into North Africa. **Alan Dron** *reports.*

A decade ago, Djibouti was a largely overlooked corner of the world. The tiny, former French colony with an arid landscape and few natural resources, had been further impoverished by four years of civil war between the rival Afar and Issa tribes in the early 1990s.

To keep the two sides apart, France had installed peacekeeping troops in 1992. From as long ago as 1948, the most important military installation in the country was the Armée de l'Air's Base Aérienne 188 (BA 188), on the site of what is now Djibouti's Ambouli International Airport.

For many years, it became the place where old French military aircraft spent the declining years of their operational lives; it was the last outpost of the North American F-100 Super Sabre (which finally ended its front-line service in 1978) and the Mirage III, a decade later.

Radar screen

All that changed after the September 11 2001 attacks on the US, although the 1998 bombings of the US embassies in Nairobi and Dar es Salaam had already brought the Horn of Africa onto the US radar screen.

In September 2002, some 900 US troops set up camp in support of the US-led war on terror. Their initially temporary base grew into what is today known as Camp Lemonnier, with around 2,000 personnel, the largest single US military presence in Africa and the main operating base for US Africa Command (AFRICOM).

Djibouti's attraction for the US lies in its strategic location. To the south lies Somalia, a failed state where Islamic militants of Al-Shabaab have been trying to establish a Sharia-based state and from where pirates prey on international shipping in the Indian Ocean. African troops, with support from western nations, have been pushing them slowly back south from the capital, Mogadishu, but the country remains fragile.

To the northeast, less than 30km from the Djibouti coast at its closest point across the straits at the southern exit to the Red Sea, lies Yemen, heartland of Al Qaeda in the Arabian Peninsula (AQAP), which is waging a campaign against the central government in Sana'a.

At loggerheads

To the north, beyond Eritrea, lies Sudan, with whose government the US has been at loggerheads for years and which, allegedly, acts as a conduit for Iranian weaponry.

So, geographic position alone makes Djibouti a location of interest for the US.

France also maintains a sizeable military presence in the small nation, with some 1,900 military personnel and (as of spring 2013) seven Mirage 2000s, a Transall C160 medium transport aircraft and a handful of Puma and Gazelle helicopters. Missions include anti-piracy sorties, co-operation with regional militaries and the African Union.

The curtain on US operations was briefly pulled aside last year following the crash, some 9km southwest of Djibouti-Ambouli Airport, of a US Air Force U-28A aircraft, killing all four crew members.

The little-known U-28A is a militarised version of the Pilatus PC-12 turboprop, more commonly used in civilian service as a small executive or freight aircraft carrying up to nine people. The UC-28A operates in support of special operations forces, providing tactical airborne intelligence, surveillance and reconnaissance (ISR) capabilities. Examples tend to operate with minimal markings, apart from a small US flag on the fin.

The U-28A is a regular resident at Camp Lemonnier, usually attached to the 34th Expeditionary Special Operations Squadron. Go to Google maps on the internet and choose

**Left: US Marines remain well equipped for helicopter operations.
Right: Memorial to the U28-A crash.**

'satellite' view of Djibouti's airport. Camp Lemonnier lies to the south of the main runway. Below the westerly end of the main runway, barely noticeable against a U-shaped expanse of paler concrete hard-standing, can be seen three UC-28s.

Further evidence of the scale of the US involvement in Djibouti is close by. Three CH-53 heavy-lift helicopters and three C-130 Hercules, of various versions, can also be seen, together with a single example of a Beech King Air 350 – almost certainly an MC-12 from the 'project liberty' fleet of 30-plus intelligence-gathering aircraft.

The US Air Force describes the MC-12 as a medium- to low-altitude platform that supplies ISR information directly to ground forces.

The MC-12W is not just an aircraft, but also a complete collection, processing, analysis and dissemination system. A fully operational system consists of a modified aircraft with sensors, a ground exploitation cell, line-of-sight and satellite communications datalinks, along with a robust voice communications suite.

The aircraft is equipped with an electro-optical infrared (EO/IR) sensor and other sensors as the mission requires. The EO/IR sensor also includes a laser illuminator and designator in a single sensor package.

The MC-12 capability supports all aspects of the air force irregular warfare mission (counter insurgency, foreign internal defence and building partnership capacity).

Move further east, to the apron at the far end of Camp Lemonnier, and heavier military hardware can be found. Apart from a further C-130 and two P-3 Orions, stand eight F-15 Eagles.

According to Italian aviation analyst and blogger David Cenciotti, the USAF has been deploying the F-15E Strike Eagle to Djibouti for several years now. The obvious question is what exactly the type is doing there. Djibouti is not impossibly distant from Iran, especially if air-to-air refuelling is available, but there are far more convenient friendly airfields on the western side of the Arabian Gulf from which to base aircraft that might be required to fly missions against Iran.

There have been reports that the Strike Eagles have complemented armed MQ-9 Reaper UAVs in conducting strikes against Al-Shabaab in Somalia and AQAP in Yemen.

Evidence for this remains circumstantial. Cenciotti points out, for example, that strikes by aircraft on Yemeni insurgents in 2012 took place when Yemen's own air force was grounded through an industrial dispute involving its pilots and ground crews.

Conducted strikes

Yemeni officials also told CNN last year that the US had conducted strikes in their country. The respected *Washington Post* carried a report in June 2012 that both drones and F-15s had been in action over Yemen and Somalia.

And Wikileaks has published US diplomatic cables quoting Yemen's former president, Ali Abdullah Saleh, as agreeing to a proposal that: "US fixed-wing bombers circle out of sight outside Yemeni territory ready to engage AQAP targets should actionable intelligence become available".

However, US military involvement does not always carry 'stars and bars' on its wings. In April, the US Transportation Command (US TRANSCOM) published an invitation for civilian operators to provide aircraft to operate out of Ouagadougou, the capital of Burkina Faso.

Under the title 'Trans Sahara Short Take-Off & Landing Airlift Support' the tender made instructive reading. Among the duties required were casualty evacuation, personnel airlift ('passengers will possibly travel with personal weapons and small amounts of ammunition'), the ability to para-drop personnel and cargo and be capable of delivering up to 1000 flight hours per month.

The aircraft had to be multi-engine, capable of carrying a minimum of six passengers and supervision of various aspects of the service would be undertaken by Special Operations Command Africa. Personnel had to be US citizens.

The aircraft had to be capable of using austere forward operating locations. "While the US Government does not anticipate a change of base location, events could arise that would require a rapid relocation to a new base of operations," said the document. "The contractor shall be prepared to relocate all contractor-provided assets and personnel in theatre associated with this contract within 40 days of notice."

The geographic area that these flights were to cover was huge. "The primary operating area includes, but is not limited to, the recognised political boundaries of Algeria, Burkina Faso, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sudan, South Sudan, Tunisia, and Uganda, as dictated by operational requirements," said the document.

One additional requirement was that the aircraft had to be capable of landing and taking off from short, unlit airstrips at night, using night vision equipment.

The contract award was due to be made in August and last up to the end of 2017, if various options to extend the initial 10.5 month contract were taken up.

LAILA AL MUHAIRI WINS SILVER AT STEVIE AWARDS

Laila Ali Hareb Al Muhairi, the assistant director general at the UAE's General Civil Aviation Authority (GCAA), won the silver trophy in the female innovator category at the 10th annual Stevie Awards for Women in Business.

The awards honour women executives, entrepreneurs, employees and the companies they run worldwide. The Stevie Awards have been hailed as the world's premier business awards.

Hareb was recognised as a game-changer in the local and regional aviation strategies.

New MD for Rockwell Collins

Rockwell Collins has appointed Chafik Hilal as managing director, Middle East, Turkey and Africa.

Hilal will be responsible for leading and developing the company's commercial and government systems business interests in the region. He succeeds Yves Gallety, who retired at the end of December.

"I'm honoured to be the ambassador for Rockwell Collins in the Middle East, Turkey and Africa, and look forward to strengthening our long-term commitment and expanding our local presence," said Hilal.

IATA crucial safety job for Hiatt

The International Air Transport Association (IATA) has appointed Kevin Hiatt as senior vice president, safety and flight operations.

Hiatt will join IATA on February 17 and be based at the headquarters in Montreal. He will succeed Guenther Matschnigg, who is retiring.

Hiatt joins IATA from the Flight Safety Foundation (FSF), where he has been president and CEO since January 1 2013, having joined FSF in 2010 as executive vice president.

"Kevin will lead IATA's work on our top priority – safety. He brings to this position a proven track record of both leadership and innovation at FSF and within the airline industry," said Tony Tyler, IATA's director general and CEO.

Chafik Hilal, Rockwell Collins

Walid Abukhaled, Northrop Grumman

Northrop Grumman Saudi chief

Walid Abukhaled, has been appointed chief executive of Northrop Grumman's Saudi business.

Abukhaled will be responsible for leading the company's operations in the kingdom, accelerating growth and exploring opportunities for public-private partnerships. This will include coordinating the company's relationship with Saudi Arabia and providing strategic support to its Middle East business activities.

Bütschi lands Jet Aviation FBO role

Jet Aviation has appointed Hardy Bütschi as new vice president and general manager of the company's maintenance and FBO operations in Dubai.

Bütschi will be responsible for overseeing the company's maintenance and FBO operations at Dubai International Airport and Dubai World Central's Al Maktoum International Airport, as well as at Al Bateen Executive Airport in Abu Dhabi.

Sener moves on to ACI world board

TAV Airports CEO and president, Dr Sani Sener, has been unanimously selected by the board of ACI Europe to represent the region on the world board.

"As the voice of the world's airports, ACI is responsible for articulating and advocating forward policies related to airport development, economics, safety and security, and environmental issues as well as training and information sharing, which enables its members to meet collective industry challenges," said Sener.

Development task for Henderson

Bahrain-based operator Chisholm Enterprises has appointed Neil Henderson as business development manager. Henderson is tasked with developing and growing the logistics activities of the company, principally its air freighter network within the Middle East, its aircraft servicing and aircraft hangar facilities in Bahrain, and to identify new areas of business opportunities.

Arise Sir Tim

Tim Clark, the president of Emirates Airline, is now Sir Tim Clark, having been knighted by Queen Elizabeth II of Great Britain in her New Year honours list. Clark, who has been with Emirates since it was launched in 1985, was recognised for his services to the British economy and to aviation.

HANNA STEPS UP FOR AIR CHARTER SERVICE

Air Charter Service has announced the promotion of Elie Hanna to director of private jets at its Dubai office.

Justin Bowman, deputy managing director, said: "Over the past few years, Elie has built on his existing industry reputation as a knowledgeable and service-oriented professional and developed into an exemplary candidate for a directorial role."

Hanna started his aviation career as a flight dispatcher for EAS and instantly "fell in love with the industry". Having been promoted to head of dispatch, he went to New York to obtain his FAA dispatcher's licence before eventually trying his hand in operations management.

David Stockton

Marcella Nethersole *speaks to the director, global aviation solutions, G4S.*

"Threat levels at Baghdad continue to be high and passengers will go through 13 checkpoints before boarding the plane."

1

G4S has recently retained a contract at Baghdad International Airport (BIAP). What does the role include?

The G4S team provides all aspects of security at BIAP. This includes project management, operational, logistical and administrative support, as well as physical security at the airport's main gateway.

We have a good relationship with the Iraqi Civil Aviation Authority and the Iraqi Government, and have been working together since early 2010 to develop the Iraqi Civil Aviation's capability and international credibility.

We also provide quick reaction force (QRF), response to any threats in typically less than 15 minutes.

At the Nineveh and Babylon terminals, 24-hour security services are also part of our mandate.

2

Does the security differ at BIAP compared to other airports in the region?

Baghdad International Airport is the largest in Iraq, welcoming close to one million visitors every year.

However, this number is set to increase significantly as, in May 2010, BIAP announced plans to increase its capacity to 15 million passengers per year. Indeed, BIAP has the highest percentage of passenger growth globally.

Threat levels at Baghdad continue to be high and passengers will go through 13 checkpoints before boarding the plane.

3

What other Middle East airports and airlines do G4S control and do they all differ?

As you would expect, all our airports across the Middle East are different, both in terms of structure and operations.

We are very proud of our service offerings at airports in Abu Dhabi, Bahrain, Doha, Dubai, Kuwait, and KSA airports. It is a great of example of where G4S is providing a full and varied service from catering, facilities management and passenger screening to perimeter security.

Security and customer service morph together at Dubai, where G4S implement the 'May I Help You?' programme. This was introduced in 2011 to position the airport as a leader in customer service. We have more than 1,100 of our staff assisting over 158,000 passengers a day, helping to ensure that the experience of passengers transiting in Dubai was a great one.

4

How does G4S see aviation security changing for the better?

G4S is optimistic about the future of aviation security. We foresee a stronger blend of manpower and technology, and we are fully committed to ensuring that our service continues to add value to the process as it develops. We believe that safety and security should never be compromised.

It is now more widely accepted that investment in staff training must be a priority. We believe that the entire process of aviation security should and will become more robust, and solutions will become more customer-driven.

5

What does a typical day involve for you?

For me, no two days are the same. I am based in Dubai but travel is a big part of the job.

I look at a range of issues on any given day, for example analysing the change in relevant technologies and discussing new outsourcing opportunities.

The key element of my job is innovation and our differentiation in people, process and technology, constantly looking for new ideas to improve our service offering and coming up with new concepts that can help monetise the airport.

Overall, I need to review our operations and the way in which I do this, the areas that I look at, and the solutions I generate, all vary depending on the region, the airport itself and our service contract.


10/0.25
160/0.17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