



ARABIAN AEROSPACE

THE MAGAZINE FOR AEROSPACE PROFESSIONALS IN THE MIDDLE EAST, NORTH AFRICA AND TURKEY

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SEE PAGE 17

FOCUS

Turkey's
boost to
Somalia's
evolution

PAGE 88



DEFENCE

Terror
changes
focus at
IDEX

PAGE 51



BUSINESS AVIATION

MEBA
breaks
new
ground

PAGE 77



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Safest-ever year is still not good enough

The tragic loss of the Indonesian Air Asia A320 into the Java Sea in December sent another chilling message to the aviation industry that, with all of our improvements in technology, in training and in safety management systems, things can still go wrong.

As *Arabian Aerospace* goes to press, the air accident investigation teams are beginning their work of deciphering and analysing every last single component, action or condition that may have led to the crash, in a bid to ensure that it doesn't happen again.

Despite the frenzied speculation and howling by my colleagues in the mainstream press, aviation remains the safest means of public transport and, according to the latest statistics showing one accident in every 2.38 million flights, 2014 will prove to be the 'safest' year in history.

But every single accident, whether it is an airliner, a business jet or a private helicopter, is one too many. Inevitably these things do happen.

In the Middle East, we are still witnessing incredible growth at our hub airports and through our main gateways. From Istanbul to Dubai we are seeing double-digit growth.

Akbar Al Baker, the CEO of Qatar Airways, is often outspoken and controversial but I sensed he was speaking from the heart when, at the Arab Air Carriers Organisation (AACO) annual general meeting, he warned that the lack of flexibility and reform in the region's airspace was "an accident waiting to happen".

The wheels of government do grind slowly and, at the Middle East Business Aviation Association (MEBAA) conference in Dubai, it was warming to



hear leaders from regulators in the UAE and Bahrain talk about greater cooperation.

However, talking is easy. Getting over the hurdles of national security and sovereignty is tougher. But it needs to be done. And it needs to be done quickly.

Then there is also the challenge of a lack of command experience in the industry. Jordan's Ayla Flight Academy CEO, Marwan Atalla, warned that airlines – and business aviation operators – needed to think differently about their approach to training.

There is also a need for the industry to be open and inviting to members of the mainstream media to understand the emergency response processes and the requirements and restrictions of accident investigations. By understanding what happens, there would be less speculation and frenzy.

Accidents do happen and we need to work to reduce risk even more – and be prepared for when the tragic day comes.

Safe landings.

Alan Peaford, editor-in-chief
Arabian Aerospace

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COVER: Kuwait Airways Chair, Rasha Al Roumi. Picture by Billypix

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Airbus	136, 1BC	Fokker Aircraft Services	97	Industries	OBC
AMES	41	GE, Measurement & Control	127	Sikorsky	59
Aviall	2	GoGo	44	Sogerma	116
Aviation Africa 2015	94	Gulfstream	82	Spectrum Aeromed	79
Aviation Home	134	Honeywell	33	Textron Aviation	5, 75
Avtrade	128	Iberia Maintenance	25	The Pocket Guide to Business Aviation	106
Bahrain International Air Show 2016	54	Jeppesen	86	Turkish Aviation Academy	49, 91
Bell Helicopter	70	Jet Support Services, Inc. (JSSI)	80	Virus Guard Ltd	20, 43
Boeing Defense, Space & Security	50	Lufthansa Technik AG	9	Volga-Dnepr Technics	63
Boeing Edge Material Services	38	MSI Aircraft Maintenance Services			
Cabinair Services	106	International	129		
CFM International	6	MTU Aero Engines	131		
Dassault Falcon	76	NEXUS	15		
DhabiJet	56	Pan Am International Flight Academy	133		
Dubai Airshow 2015	73	Pratt & Whitney	16		
Embraer Commercial Jets	IFC	RECARO	31		
Embraer Executive Jets	10	Rockwell Collins' ARINCdirect	13		
Engine Alliance	22	Russian Helicopters, JSC	53		

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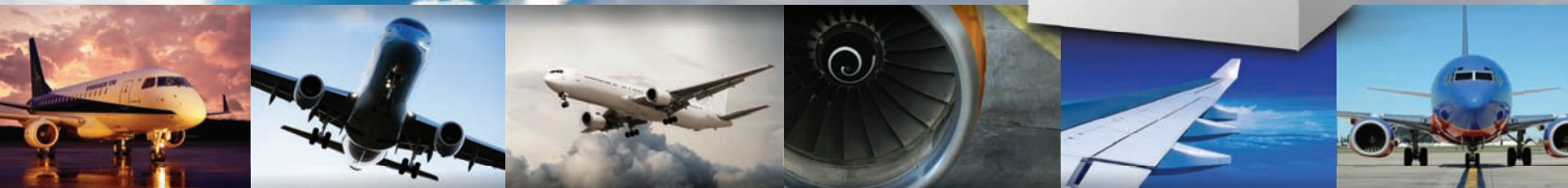


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07 **business brief**

News headlines from across the MENA region.

AIR TRANSPORT

COVER STORY

17 **The Waiting Gain**

KAC's chairwoman Rasha Al-Roumi explains why things are finally looking up for Kuwait Airways.

21 **AACO's concerns**

The Arab Air Carriers Organisation's meeting uncovers concerns and cooperative solutions.

23 **Emirates vintage**

As the region's largest airline starts its 30th year of operations we look behind the success story.

28 **Wide berth**

Qatar Airways takes delivery of the world's first A350-900 and Airbus lays out the red carpet.

34 **Road to hope**

Palestinian Airlines faces more challenges than any other MENA carrier....

36 **Oman stays on course**

As Oman Air CEO Paul Gregorwitsch completes his first year, he tells us of the progress so far.

39 **Boring Flynas set to soar**

Saudi value Flynas chief executive Paul Byrne is ready to steady the roller coaster.

42 **Etihad's Italian Job**

We report on the plans to get European carrier Alitalia out of the doldrums.

45 **RAM forces its way forward**

The Moroccan carrier is growing again.

48 **Rotana's rapid revolution**

From small domestic beginnings Abu Dhabi airline Rotana Jet is expanding to new directions.

DEFENCE

51 **The IDEX Factor**

Preview of the region's largest defence show.

60 **Super Mushshak shake-up**

Iraq boosts the Pakistan-built trainer as other procurement chiefs eye up the lively contender.

64 **Bahrain rebuilds**

We look at the prospects for the RBAF and the F-16 at the core of the air force.

66 **Buoyed by Brazil**

The Embraer Super Tucano finds support in Lebanon and Afghanistan.

68 **Muscat modernizes**

The Jaguars roar out as Oman prepares for the Eurofighter Typhoon.

71 **Jordan graduates to Robinson**

Robinson's Raven beauty R-44 finds new spots.

72 **Doha's defence deliberations**

Qatar's defence force is mulling over upgrades and expansion and Rafale is in its sights

74 **Heli power happening**

Military helicopters' increasing role in the region's defence.

Continued
on Page 4

SPECIAL REPORT

SOMALIA



88 NEW AGE THINKING
Traditional links between the Arab World and Somalia are being reformed. We talk to the Somali minister of transport.

90 TURKEY ROLE
Turkish Airlines acts as the catalyst to change the Somali approach to aviation

92 MOGADISHU MAKEOVER
Mogadishu Airport is undergoing radical change as it drives to become a safer and secure destination.



SPACE

102 What lies ahead for Spaceport

The Virgin Galactic SpaceShipTwo tragedy has cast doubt on plans for Abu Dhabi's spaceport.

SAFETY

104 Good systems are no accident

The air safety summit inspired all in its path.

AIRPORTS

107 Handling with care

Ground handlers come under the spotlight.

110 Central to the strategy

We take a look at the potential for Dubai International's larger sister DWC.

112 Southern Skies

Abu Dhabi International celebrates the new southern runway.

MANUFACTURING

113 Strata's new layers

Mubadala's aerospace business Strata is developing a local supply chain.

AIRCRAFT INTERIORS

117 Taking AIME

The region's top interiors event opens its doors.

118 Germs of concern

What carriers can do to clean up the cabins.

120 The cool call centre

Connectivity – the new business essential.

TECHNOLOGY

122 Track suits

The issues around flight tracking devices.

124 Taking the Direct line

Arinc's takeover by Rockwell Collins is bringing technology benefits to its suite of services.

126 Bulk buying

A novel idea for ticket purchases.

MRO

127 Turbulence for MRO

Opportunities and threats for the region's MROs.

130 AMMROC building

The world's largest purpose built military MRO facility is on its way in Al Ain.

FINANCE

132 Sharia solutions

Sharia compliant aircraft leasing has become big business in the Middle East.

EVENTS

134 Diary Dates

PEOPLE

135 Appointments

BUSINESS AVIATION

77 GROUND BREAKING MEBA

The region's major business aviation event took place in Dubai in December and we look at the major stories from the MEBA show.

84 TAKING A GLOBAL VIEW

Saudi Arabian business Nexus is moving to the next level with global growth – but CEO Abdullah Al Sayed takes a local approach.

81 FIGHTING FOR SPACE

Gulf civil aviation authorities join in the debate about business aviation's needs and rights for air space.

87 WINGS LEVEL

The CEO of Jordan's Arab Wings, Ahmad Abu Ghazaleh explains why Iraq is presenting a major opportunity.



78

GENERAL AVIATION



95 HELICONIA TAKES OFF

Offshore operations and VIP transport has helped Moroccan operator Heliconia to become a major force.

98 HAWKING HELICOPTERS

The Helicopter Show in Dubai introduced many new ideas but Sikorsky's Black Hawk and Sea Hawk set out to impress.

100 PARTNERS IN CLIMB

We look at how Agusta Westland and Abu Dhabi Aviation have joined forces to create helicopter support services.

95



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MORE TO BELIEVE IN

Etihad brings in 40 Alitalia pilots

Alitalia pilots are heading for Etihad as part of the Abu Dhabi airline's target of recruiting up to 60 captains and first officers over the next three years to meet the growth plans.

Etihad acquired 49% of the troubled European carrier during the summer.

Some 40 pilots are expected to transfer to Etihad on a three-year contract.

Qatar receives two B787s and a B777

Qatar Airways took delivery of two Boeing 787 Dreamliners and one Boeing 777 in October.

Group chief executive, Akbar Al Baker, said: "The addition of these aircraft ensures that we are able to continue with our commitment to offer our passengers the most comfortable experience in the sky when travelling with us."

HIA opens two new facilities

Hamad International Airport (HIA) has unveiled two of its latest state-of-the-art facilities – The Airport



Etihad unveils its first B787 and A380

Etihad Airways unveiled its first Airbus A380 and Boeing 787 aircraft in Abu Dhabi last month.

The doors to the airline's two new flagship aircraft – in the distinctive 'Facets of Abu Dhabi' livery – were opened for the first time to reveal the new cabin interiors.

Etihad Airways also unveiled a new cabin crew uniform at a catwalk fashion show. It's the first major uniform re-launch since the airline's formation in 2003 and incorporates the same colours used for the cabin interior and new aircraft livery.

James Hogan, Etihad Airways' president and chief executive officer, said: "As we have done so many times in our short history, we are reshaping the landscape of modern air travel in our own way. With the launch of these aircraft, we usher in a new era of unparalleled luxury, comfort and service. These innovations represent our vision for the future."

Hotel and Vitality Spa.

Located in the south node of the airport, the 100-room Airport Hotel and Vitality Spa offer passengers passing through HIA superb services and great flexibility, depending upon their travel needs and schedules.

Badr Al Meer, HIA chief operating officer, said: "The opening is another important milestone for Hamad International Airport. We are delighted that we can now offer our passengers this sophisticated facility that has been designed with careful

consideration of their requirements while they are our guests in Doha."

Finance firms combine

Abu Dhabi-based Ittihad International Investment and Dublin-based Aviation Finance Company (AFC) have announced the formation of Ittihad/AFC Aviation Consultancy LLC, a UAE joint venture that will bring finance and leasing solutions to the aviation industry in the Middle East, north and east Africa, and Asia.

Madinah deal for IFS Applications

TIBAH Airports Operation Company, a consortium led by TAV Airports and local partners Al Rajhi and Saudi Oger, which manages Prince Mohammad International Airport (PMIA) in Madinah, has selected IFS Applications to

support and manage all service and maintenance operations at PMIA.

MD wins support deal for Afghanistan

MD Helicopters has been awarded a contract for the integration, testing, procurement, modification and installation of a weapon system on to Afghanistan's 17 MD 530F helicopters.

Elseco expands aviation services

Specialist insurance underwriting agency, Elseco, has announced the expansion of its aviation underwriting account.

Elseco's general aviation account was established in 2010, specialising in business within the MENA region. From the start of this year the agency will be expanding its general aviation account to underwrite a worldwide book.



Air Arabia revives Jordan hub plan

Air Arabia has reignited the plans for a hub in Jordan that were shelved more than three years ago following the Arab Spring uprisings.

The Sharjah low-cost carrier announced in January that it has bought a 49% stake in Jordan's Petra Airlines.

Petra will be rebranded as Air Arabia Jordan and operate from a hub at Amman's Queen Alia

International Airport. The airline said operations would begin in the first quarter.

Amman will become Air Arabia's fifth fixed-based operation after Sharjah, Ras Al Khaimah, Casablanca and Alexandria. It will provide direct service to a range of destinations across the Europe and MENA region.

Russians receive 4th Mi-38 prototype

Russian Helicopters' Mil Moscow Helicopter Plant received the fourth prototype of the Mi-38 in order to continue certification flight-testing in November.

The helicopter is built at Kazan Helicopters.

For further flight tests, the fourth Mi-38 prototype will be fitted with the full suite of on-board data acquisition systems.

Starting flight tests on the fourth prototype boosts progress towards the Mi-38's certification, which is scheduled for this year.

Qatar Airways signs security agreement

Qatar Airways has signed an agreement with Interpol to use the world police body's I-Checkit system to screen the passports of its passengers. The documents will be checked against Interpol's stolen and lost travel documents (SLTD) database.

With the agreement, Qatar Airways becomes the first full-service airline to use I-Checkit, joining regional low-cost carrier AirAsia in piloting the Interpol initiative, which allows select partners in the travel, hotel and banking industries to send their clients' travel document information to be screened against the SLTD database.

UAE signs Vietnam agreement

The UAE has signed an air services agreement (ASA) with the Socialist Republic of Vietnam.

The deal was signed by Sultan Bin Saeed Al Mansoori, UAE minister of Economy and chairman of the General Civil Aviation Authority (GCAA), and Dinh La Thang, minister of Transport of Vietnam.



Diamond launch for Algerian flight academy

The newly established Algerian flight academy – Aviation Training School (ATS), part of the Red Med Group, located in Hassi Messaoud (Algeria), has launched its business with a DA40 NG from Diamond Aircraft.

It has options for further expansion during 2015.

ATS chose the DA40 NG for the flourishing Algerian general aviation market, citing unbeatable efficiency and safety, state-of-the-art avionics and outstanding flight characteristics.

The aircraft took off in Wiener Neustadt, Austria (Diamond Aircraft headquarters) to Malta, where it was handed over to the Algerian pilots. The following day the DA40 NG landed at Hassi Messaoud.

The ferry pilots flew 1,747nm (3,235.4km) in 14 hours, while burning only 6.5USGal/hour on average. They flew from Wiener Neustadt via Bari, Italy; Valetta, Malta; Algiers, Algeria; and Hassi Messaoud, Algeria.



UAE signs open skies deal with Sierra Leone

The UAE has signed an open skies memorandum of understanding (MoU) with Sierra Leone.

The agreement was signed by HE Sultan Bin Saeed Al Mansoori, minister of Economy and chairman of the General Civil Aviation Authority (GCAA), and Leonard Balogun Koroma, minister of Transport and Aviation in Sierra Leone.

Saif Mohammed Al Suwaidi, director general of the GCAA, and Laila Hareb Al Muhairi, assistant director general of strategy and international affairs sector, also attended the ceremony.

The MoU allows full flexibility on the routes, capacity, number of frequencies and types of aircraft, in any type of service (passenger or cargo). It also includes the exercise of fifth freedom traffic rights.

In addition, both parties agreed to allow unrestricted non-scheduled/charter operations between the two countries.

Jeppesen's electric idea

Jeppesen has introduced a new electronic flight folder service to enhance airline flight-planning operations.

The service increases situational awareness in flight for pilots and improves ground-to-air communication and integration of digital flight plan information.

Tim Huegel, director, Jeppesen Aviation Portfolio Management said: "The Jeppesen and Boeing electronic flight folder tools work together on the ground and in the air to improve integration of critical flight planning data across a mixed aircraft fleet. They work with multiple configurations to suit unique airline operations."

Aviation boosts Dubai economy

Emirates airline, Dubai Airports and the aviation sector as a whole, contributed \$26.7 billion

to the Dubai economy in 2013, which was almost 27% of the emirate's gross domestic product (GDP). It supported a total of 416,500 jobs, accounting for 21% of total employment.

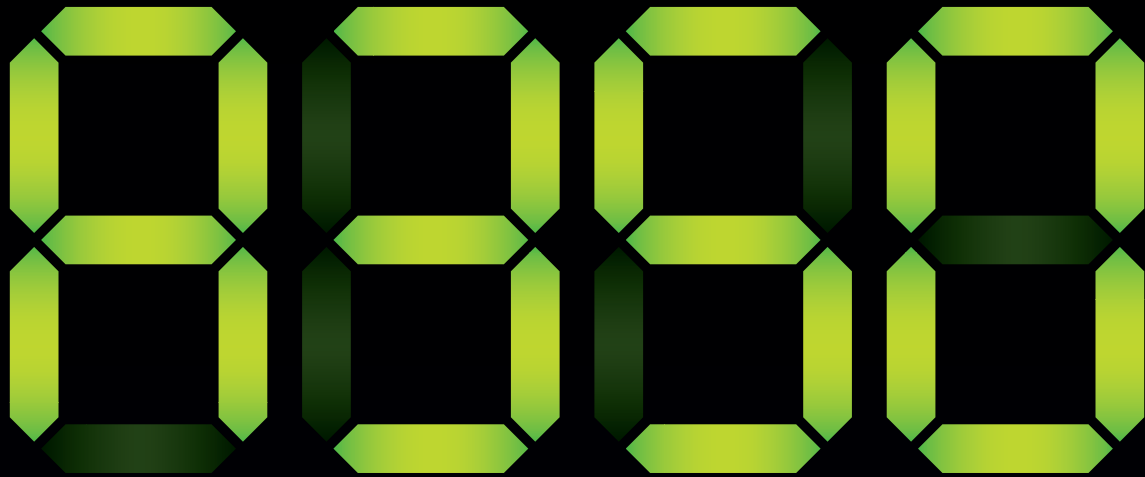
These figures were based on the latest report 'Quantifying the Economic Impact of Aviation in Dubai' conducted by global research firm, Oxford Economics, as a follow-up to a 2011 study completed by the same firm.

FGB/NCB finance Etihad B787-9

Etihad Airways has selected Abu Dhabi-based FGB and The National Commercial Bank (NCB) of Saudi Arabia to provide financing for the purchase of a number of its Boeing 787-9 Dreamliner aircraft.

The financing is provided through Sharia-compliant facilities following a request for proposal issued in May last year, which saw high levels of interest from global banks and leasing companies.

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Emirates completes first A380 C-Check

Emirates Engineering marked another milestone when the team performed its first 3C-Check on an A380, a major overhaul that restores the airline's first A380 aircraft to near pristine condition.

VIP Terminal inaugurated

Abu Dhabi Airports inaugurated the newly constructed, luxury VIP Terminal at Abu Dhabi International Airport, in partnership with National Aviation Services (NAS) in November. The terminal is set to offer a world-class travel experience to all passengers using Abu Dhabi International Airport.

Ali Majed Al Mansoori, chairman of Abu Dhabi Airports, said: "The main objective behind this new proposition is to enhance the service level offered at Abu Dhabi International Airport to passengers from all travelling classes. Through the new VIP Terminal, Abu Dhabi Airports aims to provide the ultimate in privacy, luxury and security through unique personalised services."

IATA fuels Shell partnership

Shell Aviation has received a 20-year strategic partner award from the International Air Transport Association (IATA) for its significant contribution to the industry and strong cooperation with the member airlines of the association since 1994.

Hemant Mistry, director airports and fuel, IATA said: "IATA Fuel Services is proud to work together with our strategic partners in all essential areas of fuel. Shell Aviation has been a well-respected and key



Second year of success for Turkish satellite

Turkey's first high-resolution remote sensing satellite, GÖKTÜRK-2, has completed its second year in space.

The satellite was indigenously designed by Turkish Aerospace Industries (TAI) and TÜBİTAK Space between 2007 and 2012.

It was integrated and tested at TAI's AIT facilities in Ankara

and launched from Jiuquan Satellite Launch Center, China using a LM-2D launcher.

In two years, the satellite has recorded more than 10,000 passes, taken nearly 5,000 images, and covered a ground surface area of 9.8 million sqkm. It operates at 684km altitude under the control of Turkish Air Forces.

player in our industry for 20 years. We look forward to strengthening our cooperation with Shell Aviation."

UAS continues expansion into Asia

Dubai-headquartered UAS International Trip Support has continued its 2014 expansion and growth with the opening of two new offices – an Asia Pacific HQ in Hong Kong and a regional office in Beijing.

Mohammed Husary, UAS executive president said: "The Hong Kong headquarters enables us to have greater coverage in the entire Asia Pacific region. Hong Kong itself is a major global business hub with existing sophisticated infrastructure. It is also a very popular destination for our clients so, by opening our headquarters there, we are able to give them more

support, which has always been our number one priority."

ATR double

The hand-over ceremony of the first new ATR 72-600 to Air Algérie in December doubled up with ATR celebrating its 200th ATR-600 aircraft delivery.

The first of three ATR 72-600s ordered in 2014 will join an existing fleet of 12 ATR 72-500s currently operating at the airline. The deliveries will continue until June 2016.

Freight expectations

Qatar Airways has finalised an order for four Boeing 777 Freighters, valued at \$1.24 billion at current list prices. The airline also has purchase rights for four additional airplanes, which when exercised will bring the combined value to \$2.46 billion.



Food for thought: (from left): Ben Kiff, head of proposition development, NATS Middle East; Catherine Mason; Ahmed Bin Sulayem and John Swift.

NATS adds bite to ME sales

NATS has opened a headquarters for the MENA region in the Jumeirah Lakes Towers (JLT) free zone in Dubai.

To mark the occasion, a number of its senior executives, including Catherine Mason, managing director, NATS Services, and John Swift, director, NATS Middle East, met with Ahmed Bin Sulayem, executive chairman of Dubai Multi Commodities Centre, to discuss some of the most significant aviation opportunities and challenges facing the Gulf countries.

NATS also outlined its long-term commitment to the region and its desire to work in collaboration with local service providers, regulators, airlines and airports, to find appropriate solutions to meet the aviation growth aspirations of the GCC.

NATS' air traffic controllers handled more than two million flights, carrying 220 million passengers, last year and the business generated revenues of over \$1.45 billion.

Airbus develops portable hangar

Airbus Customer Services is offering an inflatable weatherproof turbofan engine maintenance tent, which would allow customers or working parties to perform engine maintenance in adverse weather when there was no conventional hangar available. The solution enables 'indoor' engine maintenance to allow the work to be performed with optimal environmental conditions and is available for all Airbus wide-body aircraft.

AAC wins Middle East A320CJ contract

Associated Air Center (AAC) has signed a contract for a new, green Airbus A320CJ VVIP narrow-body completion project with a Middle Eastern customer.

James Colleary, president of AAC said: "2014 has been a banner year for AAC and we are actively bidding and loading our shop and completion schedules for 2015 and beyond."

Middle East shapes up for supply chain

Airports across the Middle East, particularly in the UAE, are shaping up to become important supply chain hubs for the global aerospace sector, according to industry experts at the Aerospace Supply Chain Summit at Dubai World Central (DWC) in December.

Keynote speaker, Khalifa AlDaboos, managing director of the Dubai Aerospace Enterprise (DAE), said current trends pointed to a tectonic shift in the market, where emerging economies, such as the Middle East, were playing a major role in transforming the global aerospace landscape.



Open house: (from left) Carlo Logli CEO Piaggio Aerospace; Homaid Al Shemmari CEO Mubadala Aerospace; Matteo Renzi Italian Prime Minister; Roberta Pinotti Italian Minister of Defence; Alberto Galassi Chairman, Piaggio Aerospace; and Piero Ferrari Chairman of Ferrari group.

Mubadala investment sees Piaggio in new plant

Mubadala subsidiary, Piaggio Aerospace, officially opened its new manufacturing plant for unmanned aircraft systems, aircraft and aero engines, in the presence of Italian prime minister Matteo Renzi.

The new aerospace centre of excellence is based at Villanova d'Albenga in northern Italy, near the French border. As well as Renzi, minister of Defence Roberta Pinotti, and numerous civilian and military authorities also attended.

The 127,000sqm site hosts a state-of-the-art industrial plant covering 49,000sqm where Piaggio Aerospace designs, develops and manufactures high-performance aircraft for

business aviation and special missions like the Avanti EVO – the third generation of the world's fastest and most efficient turboprop – and the innovative Multirole Patrol Aircraft (MPA).

The site will also offer the technology and ability to build unmanned aircraft systems for surveillance and reconnaissance such as the P.1HH HammerHead.

The construction of the Piaggio Aerospace centre of excellence was made possible by a Mubadala investment of more than €140 million (\$169m) in facilities, processes and research and development technologies dedicated to areas of the industry that have become an international priority.



Emirates Executive shows style

The dedicated team of cabin crew exclusively serving on Emirates Executive's private A319 jet is now wearing this uniform, unveiled at the Middle East Business Aviation show.

The uniform features a sleek red shift dress and a beige cropped jacket. The highly recognisable red pillbox hat remains, but the side veil has been removed and a neckerchief has been added for vintage appeal. The signature Emirates red and beige colour palette was also retained.

LCCs preferred choice on internet

Research by Dubai-based content marketing company, Sekari, shows that in the Middle East, budget flights have become the main priority online. In the UAE, 57% of searches in English are looking for low-cost airfares.

The research also found marked differences in activity of English, Arabic and French searches.

"Low-cost airlines are thriving in the Middle East and our research into online behaviour shows they are gaining altitude over traditional carriers," said Lee Mancini, Sekari's managing director.

Emirates app launches on iPhone

Emirates airline has now increased its mobile presence with the launch of The Emirates App for iPhone on the App Store.

The Emirates App for iPhone has enhanced features, such as the ability to check-in and download a boarding pass directly to Passbook. The app also features push notifications for check-in, flight boarding, gate changes, and baggage belt numbers.

Aerovista steps in to support Afriqiyah

Dubai-based Aerovista has signed an agreement to support Libya's Afriqiyah Airways on international routes with two A320-200 aircraft. The aircraft will operate under the air operator's certificate (AOC) and operational control of Aerovista subsidiary, Vista Georgia.

The aircraft will be used to support Afriqiyah Airways flights with one aircraft operating flights from Turkey and the second from Jordan with the option to expand the network to Europe.

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Footballers star in TV ads

Turkish Airlines has teamed up with international football stars Didier Drogba and Lionel Messi for its new 'widen your world' global advertising campaign, highlighting the worldwide destination network of the award-winning global carrier.

The commercial explores the concept that food is the true way to experience different cultures. It shows how culturally curious both football stars are, with Drogba seeing photos of Messi in restaurants around the world and flying Turkish Airlines to find new places to experience epic food.

Alpha Star signs Satcom 1 deal

Saudi Arabia's Alpha Star Aviation Services has signed a long-term partnership contract with satellite communications service provider, Satcom 1 in order to bring the latest, fastest, and most advanced satcom technologies to the Alpha Star fleet.

The companies said they have enjoyed a successful relationship since 2009, providing high-speed internet, voice, software and consultancy services to Alpha Star's VVIP aircraft.

Pilots change name of club

The Emirates Pilots Club has revealed a new name, identity, membership and partner strategy some 15 years after its original formation.

The organisation will now be called the Aviation Professionals Club as part of a new brand positioning, which will be supported by a new identity and membership proposition, described by the club as "privileged access to the good life".



Scholarship scheme for female pilots

The Arabian section of the female pilots' organisation, the Ninety Nines, held its third annual meeting in Bahrain.

The group announced it is launching a scheme to give scholarships for women in the section to enhance their aviation careers.

Some 36 members from various locations around the Middle East, and the Ninety Nines management from the USA, gathered in Bahrain to celebrate the group's 25th anniversary.

GE Aviation wins 777X contract

GE Aviation has been selected by Boeing to provide the common core system (CCS) and the enhanced airborne flight recorder (EAFR) for the

Boeing 777X aircraft. "This is a critical win for GE, building on the success of our common core system on the 787," said Alan Caslavka, president of avionics & digital systems for GE Aviation.

"With the 787 and now the 777X, we have made future civil and military programmes more affordable by resetting the avionics cost curve and doing away with escalating software development costs."



Tunisia's Giants wave goodbye

The Tunisian Air Force's HH-3E Jolly Green Giant helicopters are set to be replaced by 12 Sikorsky S70 Black Hawks – but it remains unclear whether these will be donated or sold to Tunisia by the USA.

The US Defense Security Cooperation Agency (DSCA) notification for the sale of the 12 Black Hawks to the Government of Tunisia identified these as UH-60M helicopters in standard US Army configuration.

PAS converts to CRJ900

Petroleum Air Services (PAS) of Cairo, Egypt has signed a firm purchase agreement to acquire a Bombardier CRJ900 NextGen regional jet. The order is a conversion of a purchase option that PAS acquired in 2011 with its first firm-ordered CRJ900 NextGen aircraft.

Royal welcome

Royal Jordanian has welcomed its fifth 787 aircraft. The five new airliners are working on medium- and long-range routes, replacing the airline's four Airbus 340s and one Airbus 330.

Gulf Air renewal

Gulf Air has signed a two-year renewal deal with air transport IT specialist, SITA, for network, messaging and voice services.

Speed changing

Etihaad Airways' Technical Maintenance department set a new world record by replacing a GE90 engine on one of its Boeing 777 passenger aircraft in less than seven hours.

Arabsat renews Riyadh satellite hub



Arabsat has announced the successful completion of its project with STC – the leading global system for mobile communications (GSM) operator in MENA region – to renew and upgrade the satellite hub in Riyadh.

Arabsat president & CEO, Khalid BalkhAyour (above) said: "The multi-million dollar renewal allows reliable communications throughout Arabsat Badr-5, the new-state-of-the-art satellite on 26°E, which facilitates the operations of STC with high throughput links. ARABSAT and STC continue to work closely to enhance their presence in domestic and international markets."



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*It's been a long time coming but things are finally looking up for Kuwait Airways. Chairwoman Rasha Al Roumi shows **Martin Rivers** how she is transforming the flag-carrier into a bigger and better company.*

WORTH THE WAIT...

People would have been forgiven for voicing scepticism in May 2013, when Kuwait Airways unveiled a comprehensive fleet renewal programme involving 25 aircraft purchases and 12 interim leases.

That the loss-making flag-carrier sorely needed modernisation was questioned by no-one – most of its existing 18 aircraft dated back to the early 1990s – but Kuwaiti politicians have a long history of meddling with, and ultimately derailing, its plans.

In 2007, most controversially, the government scrapped a newly placed order for 12 Boeing 787 Dreamliners and seven Airbus A320s. Then, in 2013, incumbent chairman Sami Al Nesf was fired for defying parliament's wishes and trying to acquire five aircraft from India's Jet Airways.

With the latest Airbus contract immediately being described as "suspicious" by some MPs, fears of yet more political interference were rife. So it was with no small relief that, in December 2014, Kuwait Airways took delivery of its first new aircraft in 16 years.

The reception of two 2014-build A320s (MSNs 6350 and 6375) kick-started a leasing and acquisition deal that will initially see five more A320s plus five A330s join the fleet this year. These 12 leased units will then be replaced by 10 owned A350-900s and 15 owned A320neos between 2020 and 2023.

With the parallel acquisition of 10 Boeing 777-300ERs due to be fulfilled in 2016 and 2017, chairwoman Rasha Al Roumi is not exaggerating when she says the airline is on the cusp of a "new chapter" in its history.

"We will have the leased [A320 and A330] aircraft for eight years," Al Roumi said during the annual

Continued
on Page 18



Rasha Al Roumi:
"We will have to again grow the workforce. As you add aircraft, scientifically this number of employees has to rise."

CONTINUED FROM PAGE 17

general meeting of the Arab Air Carriers Organisation in Dubai. “We urgently need these new aircraft. When we discussed the deal with Airbus, they told us the earliest delivery slots [for purchased aircraft] would be 2020. So we asked for a bridging solution, and they said they could provide us with these leased aircraft until we get the new fleet [of A350s and A320neos].”

Kuwait Airways will execute a “phase-in, phase out” policy as the leased jets come on stream, gradually retiring its existing three older A320s, three A310s and five A300s.

With all of the ageing Airbuses scheduled to leave the fleet this year, the flag-carrier will then begin replacing its two 777-200ERs and four A340s with the Boeing acquisitions. Six brand new 777-300ERs will arrive in 2016, Al Roumi confirmed, followed by four in 2017. By that stage the fleet will have grown to 22 or possibly 23 aircraft, with the fate of Kuwait Airways’ single 747-400 yet to be determined.

Although the 20-year-old jumbo jet is painted in the airline’s livery, it is also used by Emir Sabah Al Ahmad Al Jaber Al Sabah on official state visits. He will be likely to have the final say on any possible replacement.

Size of the fleet

Longer-term projections about the eventual size of the fleet are still being finalised. By the time the leased Airbuses are replaced by purchased units next decade, the fully owned fleet should stand at 35 aircraft (25 Airbuses and 10 Boeings). But Kuwait Airways has options for another five A350s and five A320neos, and Al Roumi dropped hints they could be firmed up.

Either way, the flag-carrier is confident of notching up significant cost savings with its new metal over the coming years. As well as benefiting from greater fuel efficiency, the aircraft will require less costly and time-consuming maintenance checks than their creaking forbearers.

“Operating old equipment is very expensive,” Al Roumi affirmed. “The A310 is almost obsolete, so there are issues with sourcing spare parts.”

Fleet renewal, however, though undoubtedly a critical component of the turnaround plan, will not lift Kuwait Airways out of its financial quagmire. The flag-carrier has recorded near-consistent losses since 1990, haemorrhaging an estimated \$1.5 billion during just the past five years.

Boosting aircraft utilisation rates and upgrading IT infrastructure must also play a part in making the state-owned company more efficient, the chairwoman insisted.

As for the political hot potato of headcount, it is not yet clear whether the government and management see eye-to-eye on the need for layoffs.

Al Roumi stressed that progress has already been made in streamlining the workforce, with

“We do need to invest in locals. Don’t forget the state of Kuwait owns this airline, so we want to invest in locals. We want to get more Kuwaitis from university, and to give them the best training.”

RASHA AL ROUMI

most Kuwaiti employees agreeing in 2011 to retire or be moved to other government jobs under the flag-carrier’s now-stalled privatisation process.

Plans to retrench 1,000 expatriate workers and 400 Kuwaitis should bring the overall headcount down to about 4,500, she continued, though pinning down a timeframe is difficult. “There was a law passed by parliament and government – a law which was not in Kuwait Airways’ hands – and we are implementing the law,” Al Roumi said opaquely. “That’s why people are leaving.”

Without giving specific figures, the chairwoman emphasised that management needed to raise capacity under the turnaround plan as Kuwait Airways transitions into a larger, hopefully profitable, carrier.

Grow the workforce

Given its long-term aim of deploying up to 45 aircraft, she therefore noted: “We will have to again grow the workforce. As you add aircraft, scientifically this number [of employees] has to rise.”

Asked whether the Government is urging the company to lay off expatriates rather than Kuwaitis – two-thirds of the emirate’s roughly 3.5 million residents are foreigners, and some MPs have called for demographic rebalancing – Al Roumi dodged the question as deftly as any politician. “It’s not an issue of nationality. It’s an issue of quality,” she insisted. “But we do need to invest in locals. Don’t forget the state of Kuwait owns this airline, so we want to invest in locals. We want to get more Kuwaitis from university, and to give them the best training.”

While unanswered questions about the headcount will unsettle some observers, concessions must be made in a country that employs 94% of its citizens in the public sector.

The proven willingness of Kuwait Airways staff to mount industrial action underscores the need for a softly-softly approach to job-cuts. Moreover, while human resourcing issues are addressed behind closed doors, the company is pressing on with an ambitious and now-public expansion programme.

Kuwait’s aviation sector has, in the past, been criticised for not living up to its full potential, with the flag-carrier typically cited as the worst offender.

At first glance, the stars seem perfectly aligned in favour of Kuwaiti aviation. The emirate enjoys the third highest GDP per capita in the world, according to the World Bank, placing air travel well within the reach of most citizens. Its sizable expatriate workforce creates additional demand for visiting-friends-and-relatives (VFR) traffic. And the Gulf’s geographical location is known to fuel sixth-freedom passenger flows, as evidenced by on-going double-digit growth in Dubai, Abu Dhabi and Doha.

Yet Kuwait Airways has historically failed to exploit this good fortune. While Kuwait International Airport processed a respectable 9.4 million passengers in 2013, its flag-carrier accounted for less than 25% of flights. By the end of 2014 that figure had dropped to just 21%.

Modest market share

This modest market share inevitably creates opportunities for other carriers. Thus, Jazeera Airways, the hugely successful private carrier headed by Marwan Boodai, now operates 11% of flights to and from Kuwait.

Emirates Airline and its short-haul affiliate, Flydubai, collectively account for another 15%; Qatar Airways 7%; Gulf Air 5%; and Etihad Airways 4%. Dozens more carriers have a presence at the hub.

It must be stressed that Kuwait deserves praise for promoting such competition. The emirate’s ‘open skies’ policy has set an enviable standard that most Middle Eastern countries are failing to emulate.

But liberalisation comes at a price, especially in neighbourhoods dominated by deep-pocketed rivals and protectionist regulators. Kuwait Airways clearly took its eye off the ball when it came to defending market share, and Al Roumi is now righting that wrong with a wide-ranging network review to complement the fleet programme.

Though evaluations are on-going, new routes in North America, Europe, Asia and the Middle East are all expected. “We have to study this internally to discuss their feasibility,” she cautioned. “But we know we have demand for Toronto, for Los Angeles, for Vienna; according to our business plan, there should be demand for Guangzhou [in China] and Kathmandu [in Nepal].”

Closer to home, network planners are also looking at Sharm El Sheikh in Egypt, Medina in Saudi Arabia, Esfahan in Iran, and potentially



Erbil in Iraq if the political situation stabilises. “Of course we would like to concentrate on the [Middle East] region,” Al Roumi said. “We will have seven A320s, which will give us a good opportunity to expand in this area.”

The global network already comprises five points in Europe (London, Paris, Frankfurt, Geneva and Rome), 13 in Asia, 15 in the Middle East and North Africa, plus a single North American route to New York.

In tandem with the launch of new destinations, frequency hikes on existing services will, therefore, help Kuwait Airways reach its targeted scale. “All our flights should be daily,” the chairwoman insisted, singling out the Lebanese capital Beirut – currently served four-times weekly – for an upgrade. She even suggested that the existing daily service to London could become twice daily, though not until the flag-carrier takes delivery of its upcoming 777-300ERs.✕

As the network matures, New York, Manila in the Philippines, and Jakarta in Indonesia will also transition to non-stop services. At present, four of Kuwait Airways’ seven weekly flights to New York are operated with a fifth-freedom stopover in London; while Manila is connected via the Thai capital Bangkok, and Jakarta via Malaysia’s capital Kuala Lumpur. Fifth-freedom services are also operated from Rome to Paris and from Geneva to Frankfurt.

“We will change our policy,” Al Roumi confirmed, announcing a fundamental shift in the

long-haul strategy. “We want point-to-point flights, no more transit. They will all be direct services.”

With so much talk of expansion, one would be forgiven for thinking that Kuwait dreams of rivalling the mega-hubs in the UAE and Qatar. Asked whether this is the ultimate goal, the chairwoman said that, although she wants to exploit “the same model” as those sixth-freedom operators, it would be on a “smaller scale”.

“At the first stage, yes, we want to expand, but not that significantly,” she clarified, asserting that origin-and-destination traffic would remain the backbone of passenger flows to Kuwait.

If all goes according to plan, a more streamlined, financially viable Kuwait Airways should be well placed to re-ignite its privatisation process.

Strategic investors

The framework of the privatisation is well known, having been widely publicised during two earlier, failed attempts at getting off the ground. It dates back to 2008, when parliament passed a bill calling for 35% of the state-owned flag-carrier to be auctioned off to strategic investors.

Another 40% was earmarked for Kuwaiti citizens through a stock market flotation, while 5% would go to the airline’s employees. Sovereign wealth fund the Kuwait Investment Authority (KIA) would retain a 20% holding.

But the project was put on ice in October 2011 amid reports of muted interest among bidders. A second attempt faltered in June 2012 – when

Kuwait’s parliament was dissolved – and although parliament passed amendments to the bill in June 2013, little has been heard since.

Al Roumi would not be drawn on a timeframe for the on-again, off-again privatisation, insisting it is the Government’s decision and that management have their hands full with the fleet renewal. Asked if the process should have advanced by next year, she simply said: “We need time.”

When it does resume, however, there will be at least two prospective bidders waiting in the wings. Jazeera’s Boodai said in 2013 that he was “definitely interested” in evaluating a stake, and he reserved some harsh words for the KIA, which he accused of “messaging up” the initial privatisation attempt.

Late last year, Kuwaiti logistics firm Agility also threw its hat in the ring. “The door is open,” Al Roumi smiled. “It’s not only them. Many companies are interested.”

Although Kuwait has lost ground to regional hubs in recent years, the emirate’s economic fundamentals remain hugely attractive. Jazeera has proven that there are profits to be made in Kuwaiti aviation, and the Government is acting wisely by restructuring its flag-carrier before going to market again.

“This will be a very difficult year because we will have 12 aircraft out and 12 new aircraft in,” Al Roumi concluded. “It’s a lot of work and you need to manage everything. But, in my view, it will have a positive outcome. It will be worth it.”



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Airspace accident waiting to happen, says Qatar boss

The Arab Air Carriers Organisation (AACO) held its annual meeting in Dubai.
Alan Peaford
reports.

Fragmented airspace management and the failure of Gulf states to harmonise air traffic control has been described as “an accident waiting to happen” by Qatar Airways CEO Akbar Al Baker.

Speaking at a CEO panel at the AACO annual meeting, Al Baker said that the Gulf airlines had been urging governments for years to consolidate their systems to manage air traffic in upper airspace. This had increased as the numbers of flights had grown, particularly through the three main hubs of Doha, Dubai and Abu Dhabi.

He said reform was being held back by concerns over “national security and territorial integrity”.

Several small flight information regions (FIRs) – including Kuwait, Bahrain and the UAE – handle traffic management in the area, and congestion is one of the greatest concerns, especially following the recent need to re-route around the Iraq and Syria conflict zones.

AACO secretary general, Abdul Wahab Tefaha, said: “A successful growth story has resulted in a shortage of airspace capacity.”

Al Baker added that the current situation was “causing congestion and bottlenecks and costing us millions in unnecessary fuel spend”.

Threat to the environment

The other airline leaders on the panel – including Oman Air and Emirates – agreed with Emirates president Tim Clark, saying the system of separate FIRs was a “threat to the environment and a threat to our economics”, but he pointed out that safety remained a number one priority and that airlines would accept “slowing down” rather than taking risks.

Tefaha said that air traffic management was “a weakness” in the region’s aviation success. He called on governments to be more flexible in their use of airspace, for example sourcing space currently used by the military during air force downtime.

Without a true ‘Arabcontrol’ system in place, with modern compatible air traffic management (ATM) technology, the bottleneck problems would just be moved from one place to the other, he said.

IATA senior vice-president, Paul Steele, said he supported a virtual FIR in the Gulf with harmonised separation and regulatory standards. But he warned that the region should “learn from Europe’s mistakes” as far as airspace efficiency was concerned.

There was cooperation among the AACO members regarding the development of a crisis management partnership, with 11 members agreeing cooperation over emergency response planning.

The idea was initially raised by Kuwait Airlines’ director of operational safety and emergency response planning (ERP), Kamil Al-Awadhi. “I realised that, like other airlines in the region, we are prepared for an emergency response at our home base but would be less prepared when trying to handle a crisis at an outstation,” Al-Awadhi said.

He talked to other airlines and then to AACO, which set up a task group. Leader of that group, Gulf Air’s Hala Azam, came to the AGM to outline the new partnership and invite the 11 airlines to sign the agreement.



Akbar Al Baker: reform is being held back.

“In crisis there is no competition,” she said. “We should share information about emergency risk, we should learn from simulation exercises and open up our training sessions and get greater collaboration at the outstations.”

The 11 airlines are: Air Arabia, EgyptAir, Emirates, Etihad, Flydubai, Gulf Air, Kuwait Airlines, MEA, Oman Air, Qatar Airways and Saudia.

Clark urged other AACO airlines that meet all International Air Transport Association (IATA) and International Civil Aviation Organization (ICAO) standards, to join the programme.

Azam said the AACO experience of sharing emergency response planning could create a global aviation centre of best practice as it develops “the roadmap for enhancing crisis management preparedness in the region”.

The airlines were also united in their attack on European countries that allegedly restrict access to their main airports to protect national carriers.

Al Baker accused Air France and Lufthansa of “stirring a protectionist approach” by restricting Paris and Berlin. “Europe is much worse than the US when it comes to protectionism. We have plenty of evidence to prove it,” he said.

Al Baker said the increasingly inefficient European carriers – which the Qatar chief blamed on trades unions – wanted their governments to protect them against the more efficiently run Gulf rivals.

Al Baker named the main culprits as Netherlands, France and Germany.

Oman Air CEO Paul Gregorowitsch, (a former Air France-KLM senior executive) said the French and German flag-carriers were making life difficult for smaller Gulf airlines too. “We are restricted from flying to Charles de Gaulle because they are protecting Air France,” he said.



Kamil Al-Awadhi: “We are prepared for an emergency response at our home base but would be less prepared when trying to handle a crisis at an outstation.”



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Emirates matures, just like a fine wine

*By the time October 2015 rolls around, Dubai-based Emirates Airline will have reached a significant milestone. It will, says **Saj Ahmed**, be like a fine wine, aged 30 years young.*

Unlike many in the airline world, Emirates' growth, expansion and continued investment across its business has made it not just an industry bellwether and pace-setter; it is also a paragon, which its international competitors hope to emulate.

If you hark back to inaugural flight EK600 to Karachi, Pakistan back in October 1985, no one could have predicted how Emirates would now be as it enters the start of its fourth decade of operations.

No one, that is, except the leadership team that today rank as the best in the business for their astute acumen in knowing how to build, devise and execute a strategy.

To understand this, we only have to look at today's whining chorus of unfounded melodies played out by a slew of anti-Emirates airlines, that both fail to adjust to new market competitive realities and are unable to compete head-to-head with, arguably, the world's fastest growing full-service airline.

Emirates' half-year earnings in November 2014 provided a great insight into how the

airline is run, managed, and how it deals with external challenges to its business.

The 80-day runway upgrades at Dubai International Airport put an expected dampener on the true potential of Emirates; approximately 20% of the fleet was stood down as operations were compressed to one runway at a time while other smaller operators took the opportunity to shift flights to Dubai World Central Al-Maktoum International Airport. However, despite this temporary shrinkage, Emirates still managed to turn a robust profit of \$514 million, up 8% on the previous year, and also grow revenue by 11% to \$12 billion on carriage of 23.3 million passengers – again, a rise of around 8% on the previous year. (In its first year of operations, Emirates carried around 255,000 passengers, depending on the source you find).

Emirates also managed to shore up its robust net cash balance to \$4.4 billion – this sizeable war chest is worth more than the net asset value of some of its competitors.

Growth in revenue passenger kilometres (RPK) was up a

Continued
on Page 24

Emirates A380 fleet has helped drive the double digit growth.



CONTINUED FROM PAGE 23

staggering 9.8% and, when you consider the almost non-stop induction of A380s and 777s, for Emirates to sustain near double-digit growth here is beyond remarkable, especially when all this activity was before oil prices started to decline and have any meaningful effect.

In the last 30 years, Emirates' growth has provided it with a hugely successful and loyal customer base, while benefitting from one of the world's most instantaneously recognisable brands. Money cannot buy that!

Not many airlines would have been able to attain the same level of achievement, growth or financial discipline as Emirates has done in 2014, especially when you consider that, as the biggest operator at Dubai International Airport, the runway works caused it the most disruption.

Imagine what the profit margin would be if Emirates wasn't put out by the runway work?

Well, a year from now, we'll find that out.

Load factors bumped up to 81.5%, despite a hike in capacity by 6%, led in large part by further additions to the fleet with more Airbus A380-800s and Boeing 777-300ERs being added.

Emirates was acutely aware of how the runway work would affect its flight operations and worked closely with Dubai International Airport to mitigate against flight disruption and a compression of its regional and international schedules. Between them, the two partners devised a strategy that best utilised Emirates' fleet to full effect, allowing for timely

departures and making use of the extra support and ground staff teams to prep and receive flights, thus improving handling times against a backdrop of important infrastructure upgrading.

One of Emirates' biggest successes has been the international impact of its brand.

Having joined up on Twitter in early 2014, the biggest Gulf Cooperation Council (GCC) airline is keen to leverage its outreach and name strength via more than one social media avenue to get closer to the customers it serves.

In May 2015, Emirates will be releasing its results for the full fiscal year and the airline is poised to benefit from the added capacity efficiencies generated at Dubai International Airport thanks to the new and improved runways – the airline certainly has the propensity to notch up more profit than the \$887 million it made last year.

\$1 billion profit barrier

So, can Emirates break through the \$1 billion (or more) profit barrier?

This is Emirates we're talking about and, in my eyes, it's a threshold it can certainly surmount, given the diligence it has exercised in utilising new generation aircraft that help to increase yields and keep a lid on fixed costs.

And, with oil prices sliding, Emirates will be using its adept fuel hedging policy to reign in fuel costs and further solidify its financial resources as it storms ahead to another year of profitability.

So that's the story so far.

But what lies ahead for the Gulf's biggest and most successful airline?

For me, there are two major challenges for Emirates that are as pertinent as they are somewhat opaque.

No one has a crystal ball to predict the future (hence the opaqueness) but the two big questions surrounding the airline's long-term strategic positioning remain as follows:

■ Should it stay at Dubai International Airport or move to Al Maktoum International Airport at Dubai World Central or, indeed, split operations between both mega-hubs?

■ How will Emirates act and respond to aggressive airline/governmental obstinacy that hinders its access to new markets?

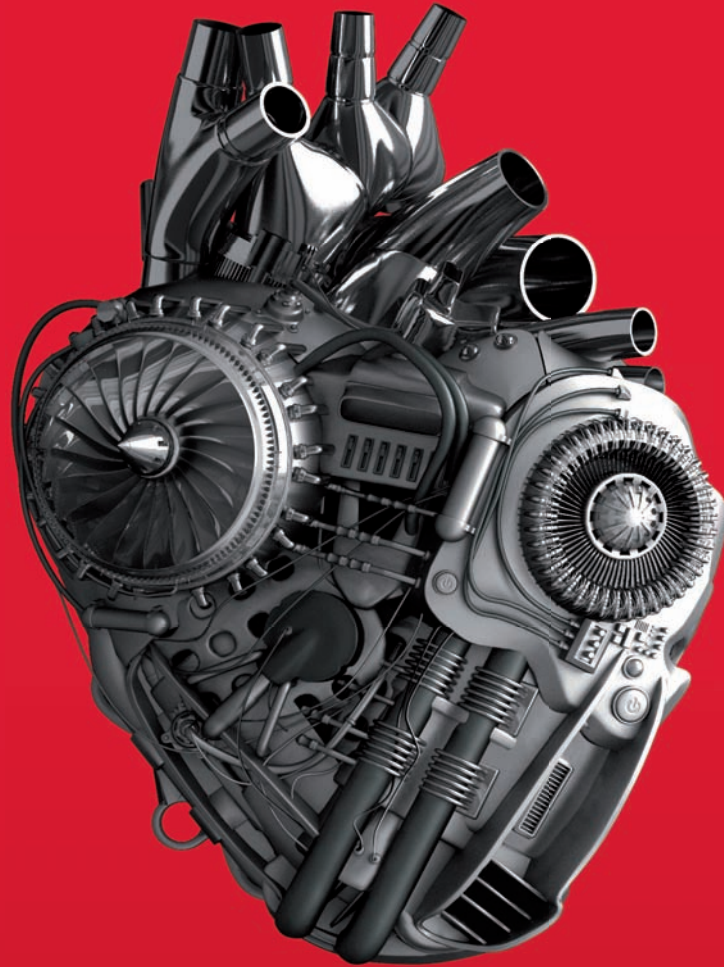
Given the hypothetical nature of the questions, it is not possible to have any definitive answer – yet.

Emirates has made clear on several occasions that any decisions about a potential move will be far from a knee-jerk reaction. One only has to look back to the move that Thai Airways engaged in from the old Don Muang Airport in Bangkok to the new Suvarnabhumi Airport to see that things don't always go to plan.

Many of Emirates' rivals have been unusually vocal about the carrier's growth and, in some cases, have even lobbied against allowing it more slots and flights. However, opponents of the expansion fail to grasp that their own inefficiencies, combined with Emirates' risk-absorbing zeal to open

Continued on Page 26

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CONTINUED FROM PAGE 24

new markets, is directly based on customer demand. This is why the likes of Lufthansa, Air France and others continue to lose traffic to Emirates, because customers want better value for money. And that is precisely what the Arabian carrier delivers.

But, if there is one take-away from these important conundrums for Emirates, it's that it has a leadership team that seldom makes strategic errors.

Under the guidance of His Highness Sheikh Ahmed bin Saeed Al Maktoum, the chairman and chief executive of Emirates Airline and Group, with Sir Tim Clark, president, the management team have the experience and knowledge of how to best extrapolate results from even the most difficult situations.

If anyone wants to bear witness to that, just look at how Emirates navigated through the most recent financial crises. Many thought that the allure of Dubai had vanished and the government would have to sell off Emirates and other national assets to pay off debts.

This sort of panic-induced fear was proven to be unfounded, as there was no Emirates fire sale and Dubai's economy picked up as quickly as it had stumbled.

Emirates still managed to deliver big profits despite the lean years; Dubai managed to show its economic energy and, today, Dubai International Airport is as busy as it ever has been.

Even with the impact of the runway work, the airport will eclipse the 2013 record of handling 66.4 million passengers. By the end of the first quarter next year, it will push Heathrow Airport off the top slot as the world's busiest international airport – and stay there.

Insatiable desire

With almost 500 wide-body aircraft on order and option, comprising A380-800s, 777-300ERs and the 777-8X and 777-9X families, Emirates' insatiable desire to connect people across the globe shows no sign of slowing down.

If the airline moved to Al Maktoum International Airport, the potential capacity of almost 200 million passengers annually would allow it to pretty much expand at will and increase frequencies on many of its money-spinning US and European routes.

That said, the issue of air space usage and management is also going to be a challenge that Emirates and other GCC airlines will have to address in the not-too-distant future.

Aspiring to cater for even more passengers will require opening up of more military air space for commercial usage. The skies over the UAE have never been busier and, in order to facilitate the safe transit of passengers between Dubai International and Al-Maktoum International Airports, commercial air space growth alongside greater intra-GCC traffic management cohesion will be a priority for all regional neighbours.

While Emirates in isolation cannot remedy a solution that fits all parties, the UAE's inherent governance and leadership in commercial aviation



His Highness Sheikh Ahmed bin Saeed Al Maktoum, the chairman and chief executive of Emirates Airline and Group, and Sir Tim Clark, president: the management team has the experience and knowledge of how to best extrapolate results from even the most difficult situations.

growth puts it in good stead to help ease congestion and traffic flows as demand for travel to the GCC continues to rise.

A more near-term and pressing decision also awaits Emirates.

With the 2015 edition of the Dubai Airshow just under a year away, Emirates will again be in the spotlight for another major fleet selection.

Notwithstanding the industry record-breaking deal for up to 200 Boeing 777X jets in 2013, Emirates will be looking to make another big splash when it decides on whether it will procure aircraft from either the 787 or A350 camp.

One could argue that Emirates has never reordered an aircraft that it had previously cancelled. The obvious stand-out example here is that the A340-600 was cancelled and Emirates stuck with the 777-300ER. But that's not to suggest that the summer 2014 cancellation of the 50 Airbus A350-900 and 20 A350-1000 orders will go the same way.

With Qatar Airways inducting the first Airbus A350-900, Emirates will be keen to see tangible performance data that it can compare and contrast against the 787-8 and 787-9.

Fine tune its requirements

Using data and modelling from in-service aircraft like the 787-8, 787-9 and A350-900, Emirates will also be able to fine tune its requirements from the A350-1000 and 787-10; both of which are in development and are poised to enter service in 2017 and 2018 respectively.

Emirates is definitely playing its cards close to its chest and the margin for error between which jet it selects is wafer thin.

The importance of Emirates as an industry giant is why both Airbus and Boeing will pull out all the stops to win this contract.

Irrespective of where Emirates' footprint is in October 2025, the year of its 40th anniversary, what we can be assured of is that the airline's growth will be on a higher level than today.

Dubai International Airport will be primed by 2020 with capacity for more than 100 million passengers a year while, down the road at Dubai World Central, Al-Maktoum International Airport, capacity of between 160-210 million passengers will be on tap by 2030.

Emirates is lucky to have such a forward-thinking Government that puts its money where its mouth is and invests in the infrastructure and equipment to provide an economic asset that has strength to realise the vision set out by the Emirates leadership team.

It is not the fault of Emirates if its international rivals are strangled by red tape, as Heathrow Airport embarrassingly highlights, or that some airlines refuse to compete on a head-to-head basis because their products are inferior.

Emirates continues to benefit the people that fly on its aircraft because of its customer-driven focus and investment in its business. Every penny is accounted for – and it shows.

Critics should sit up and take note that Emirates is the industry benchmark today. It will still be the benchmark years from now.

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The first customer delivery of a brand new airliner design is always a major event and Airbus rolled out the red carpet in a big way just before Christmas when it handed over the first A350XWB to Qatar Airways. Alan Dron was at the event.

WIDE CHRISTMAS

Eight years of market research, design, manufacturing and flight-testing came to a conclusion on a brilliantly sunlit apron at Toulouse-Blagnac airport on December 22 as Airbus delivered the first production A350XWB to Qatar Airways.

On what he described as “a truly historic day for Airbus”, the manufacturer’s president and CEO, Fabrice Brégier, handed over the medium-to long-haul twinjet to Qatar Airways’ group chief executive, Akbar Al Baker.

“For us, the delivery of the first A350 is the result of eight years of very, very tough work,” said Brégier. He noted that it was just the fifth completely new design delivered by Airbus in its 45-year existence, after the A300/310, A320, A330 and A380.

Turning to Al Baker, in a reference to Qatar Airways’ considerable influence on the design of the A350XWB (xtra wide body), Brégier added: “You have raised the bar for Airbus and for the entire industry. You were the original driving force behind the A350 almost a decade ago. To meet your expectations, it was clear we had to design a new generation of aircraft. Support from Qatar Airways has been crucial to the development of the A350.”

He noted that the A350 had first flown in June 2013 and had been certificated in the third quarter of 2014, “the shortest certification process in aircraft history”.

Accepting the aircraft during a day of events to mark the handover at Airbus’ Toulouse manufacturing facility, Al Baker noted that the

Trent opportunities flowing

Speaking at the ceremony Tony Wood, Rolls-Royce’s president – aerospace, noted that the A350 – for which the UK-based powerplant manufacturer is sole engine supplier with its Trent XWB – “has given us some incredible opportunities. The Trent XWB accounts for more than 50% of our civil aerospace order book that nears £60 billion. More than 1,500 of the engines have been sold before the aircraft’s entry into service.”

A350 marked “the design of the decade”, as there would not be another brand-new airliner design produced for another 10 years. (Although Canada’s Bombardier, Russia’s Irkut and China’s COMAC might dispute this, given the impending arrival of the CSeries, MC-21 and C-919 respectively.)

He acknowledged the unusually close level of cooperation between the airline and airframer in the A350’s design and development: “This is important because we both benefit from efficiencies of engineering and design that are completely consumer-led; Qatar Airways acts as an advocate for its passengers.”

It was also “dramatically more ‘green’ and sensitive to the environment”, not to mention quieter. With this in mind, it was announced that several days of trials at London’s Heathrow airport would be conducted in January to show residents around the extremely busy airport that more aircraft in the skies did not necessarily mean more noise impact on their lives.

Exterior noise levels will be up to 21 effective perceived noise decibels (EPNdB) below ICAO Chapter 4 requirements. Additionally, CO₂ emissions will be as much as 25% lower than those of current generation aircraft in this size category.

The aircraft entered service in January on the Doha-Frankfurt route. Other sectors due to be served by Qatar Airways’ A350s in coming months will include the US eastern seaboard, Asia and Russia. Answering questions from journalists, Al Baker revealed that he wanted to expand its network in Russia and intended to use the A350 on several routes, including – hopefully – a new service to St Petersburg.

The Qatar Airways CEO is famously demanding, something acknowledged by Brégier in his hand-over speech. “You are a tough customer. You’re very demanding, sometimes perhaps a little too demanding,” he told a grinning Al Baker. “But you were one of the architects of the A350XWB and without those demands we would not be here today with the best aircraft in its category.

“The level of quality you demand means it will make our job much easier for other customers, because we have already achieved excellence from aircraft number one.”

The hand-over of the first aircraft had been postponed by about 10 days after the fastidious Al Baker refused to accept the aircraft before unspecified problems were ironed out. On board the aircraft, on a 45-minute trip around south western

Continued
on Page 30



CONTINUED FROM PAGE 28

France, the Qatar Airways CEO made it clear, however, that responsibility for the last-minute glitch could not be laid at Airbus' door: "We had some issues in the details of the cabin that had nothing to do with Airbus. They related to the supplier of the cabin interior."

Qatar Airways is buying no fewer than 80 A350s, split between 43 of the initial A350-900 model and 37 of the larger A350-1000 variant. It is, to date, the largest customer for the new-generation European airliner. (Another of the Gulf majors, Etihad, is the third-largest customer, with 62. By late November 2014, Airbus had sold 778 to 41 customers.)

Qatar will fly its A350-900s in a two-class configuration, with 36 business-class seats in a 1-2-1 layout and 247 economy-class in a 3-3-3 pattern. The business-class seats convert into an 80inch fully lie-flat bed and all seats have aisle access.

The brief demonstration flight over the Pyrenees showed off the aircraft's light, airy cabin, in pale grey and Qatar's traditional maroon colour scheme. The business-class cabin looked significantly more distinctive than those of some western carriers, which can appear relatively utilitarian in comparison.

Among its features are the particularly large overhead bins, which are designed to accommodate growing hand luggage volume requirements. These can take more than one roller-bag per passenger in all classes – an important point in the Middle East, where passengers traditionally travel 'heavy'.

High-bandwidth fibre-optics

The cabin's in-flight entertainment (IFE) system uses high-bandwidth fibre-optics and high-definition video seatback screens (minimum screen size is 12ins in economy). The aircraft will have full connectivity, allowing passengers to use mobile devices in flight, although airlines are likely to charge for this service.

One irritation that has been removed is the necessity for large under-seat boxes housing the IFE system. These no longer restrict passenger legroom in some seats but are now hidden under the cabin floor.

Airbus is promising fuel savings of 25% compared to current aircraft types, such as the Boeing 777, and 6% over the new 787. It also claims seat-mile costs will be 25% lower than the Boeing big twin and 8% better than the Dreamliner.

More than 70% of the A350's structure is composed of advanced materials – 53% of it composites, plus titanium and advanced aluminium alloys – to cut weight.

The A350 three-member family has a range of up to 8500nm (15,580km), although the smallest version, the -800, has not sold well and is believed to be in danger of being cut, with the re-engined A330neo apparently being lined up to take its place.

Among the benefits being touted to airlines is not only pilot commonality within the A350



Survival of the fittest

Qatar Airways' CEO, Akbar Al Baker, was in his usual combative mood at the A350 delivery ceremony.

Asked about resistance among some Asian airlines to the Doha-based carrier's rapid expansion in the continent, he commented: "If you can't put up with the demands of passengers, you had better shut up."

"Passengers today demand better product, better amenities, value for money and the fastest way to travel from point A to point B. This is not being achieved by a lot of airlines today. They don't have the urge to invest. They don't have the stomach to compete. They want to keep the cake and eat it themselves."

He added that some carriers had been "too laid back" for decades, taking high fares from customers and giving them a "crap product".

"Those days have gone," he said. "Today they have to compete in a global marketplace. It will be survival of the fittest."

family but also with the Airbus A330.

Airbus has recently obtained regulatory approval for a common type rating that will give a 65% reduction in training time for airline pilots, cutting the time required to transition between the two families to just eight days, rather than a standard transition course. This facilitates the creation of a pool of pilots flying both the A330 and A350, conferring increased flexibility on airlines operating both types.

Additional flexibility is conferred by the European Aviation Safety Agency (EASA) decision to give the A350-900 a 370-minute extended range twin operations (ETOPS) certification; the first new aircraft type ever to receive such a level of ETOPS approval prior to entry into service.

Brégier noted that, following its \$10 billion

investment in the A350's development, future incremental improvements to the design could be achieved "at marginal cost".

By the end of 2015 Airbus will be producing three A350s a month; this rate is due to ramp up to 10 a month by 2018.

Answering questions on the degree of customisation that airlines would be able to introduce into their A350s, he made it clear that, like Boeing, Airbus was taking a firmer grip on what would be allowed by way of customers' whims, in order to keep a handle on costs.

"Most of our customers understand the industrial constraints. There will be room for flexibility in customisation, especially in premium, business and first-class cabins, but we need also to have standardised industrial processes."

On the positive side, Airbus had learned useful lessons from customisation on board the A380, he said, which meant that changes to the A350's interior could be made much faster than previously.

Fielding questions from journalists, Al Baker gave a clear indication that Qatar Airways intended to increase its current order for 10 of the A380s.

He said: "Performance of the ultra-large aircraft has exceeded our expectations. Dispatch reliability is 100%. It's been very well received by our passengers. We still have three options to confirm and we will take more aircraft of this type once we've operated it for at least 12 months."

Take-off

As though to emphasise this, the day following the A350 hand-over was marked by the take-off, within minutes of each other, of both the new twinjet and Qatar's fourth A380 on their respective delivery flights to Doha.

Brégier was at pains to lay to rest concerns raised earlier in December by Airbus CFO Harald Wilhelm, who startled his audience at an Airbus Global Investor Forum in London by raising the possibility of discontinuing production of the ultra-large aircraft in 2018.

"We're now fully into the industrial process of this programme," said Brégier. "We've delivered 30 aircraft this year. In 2015, 2016 and 2017 our order book is almost fully filled. Clearly, our challenge is to get more customers. We believe we can do that, because the market trend is towards bigger aircraft and traffic will double every 10-15 years."

It would be "just crazy" to talk about halting production of the A380, he said. "We are about to break even [in 2015]."

Airbus has been under pressure from Emirates Airline – by far the A380's biggest user with 150 in service or on order – to re-engine the aircraft to further improve its economics. Brégier acknowledged that: "One day we will look for incremental improvements in the aircraft. Clearly, re-engining is one option. In the longer term we have the extra potential of a stretch version, when the market requires it."

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Trent engines the driving force behind A350's long-term success

The Airbus A350-900 XWB aircraft, which has just been delivered to launch customer Qatar Airways, will soon be entering into service with a significant engine advantage.

Dave Calderwood reports.

The extended-range twin-engine aircraft operations (ETOPS) performance of the Airbus A350-900 XWB will be the key to its success.

ETOPS is the safety margin that allows twin-engine jets to fly long-range routes, which used to be the preserve of four-engine aircraft. It is measured by how many minutes the aircraft can fly on one engine, in the event of the other having to be shut down.

The Airbus A350-900 is the first two-engine airliner to be certified by the European Aviation Safety Agency (EASA) for more than 180 minutes before entry-into-service (EIS). In fact, it is certified for a maximum of 370 minutes with one engine inoperative, which means it can fly for 2,500 nautical miles – and that means it can take on any route worldwide.

This ETOPS performance will be of particular benefit on new direct southern hemisphere routes, such as between Australia, South Africa and South America. It will also allow more efficient transoceanic routes across the north and mid-Pacific, like those from south-east Asia to the US, or Australasia to the US.

And at the heart of ETOPS is the engine itself, the Rolls-Royce Trent XWB, developed especially for the A350. It's based on the Trent 900 and Trent 1000, which power 67% of new generation wide-body airliners.

The Trent XWB-84 will power the 250-300 seat versions of the A350, the -800 and -900. A higher thrust version, the Trent XWB-97, is already in the early stages of testing for the bigger 350-seat A350-1000. It will also be used in the A350-900 freighter and ultra-long-range A350-900R.

To gain that extraordinary ETOPS performance, Rolls-Royce put the Trent XWB engine through relentless endurance tests to prove its reliability at various specialist

test centres around the world – starting with flat-out bench tests.

“Bench tests give the engine a really good workout at sea level conditions,” said Simon Burr, Rolls-Royce programme director Trent XWB. “The engine is run at full power with the gearbox fully loaded.”

Rolls-Royce was so thorough with the tests – and happy with the results – that it invited the civil aviation authorities to view the test engine in ‘as-stripped’ condition.

“Our customers also came to see the parts,” continued Burr. “We want customers to have confidence, not just in what we say but in what everyone can see.”

“The Trent XWB is actually certified for 420 minutes, a new record for ETOPS,” continued Burr. “We’re proud of that record. It’s been cleared to 370 minutes, which covers every known route, including the South Pacific. That’s a big deal.”

Feed back data

The engine test programme is a significant investment in itself. Each of the engines used for testing is highly instrumented to feed back data to the engineers, which adds considerably to the time taken to build the engine and its cost.

The engines are then taken to specialist test centres all over the world. Cold weather tests were conducted with the engine attached to an A380 flying test-bed and flown to Iqaluit Airport on Baffin Island, Canada. Rolls-Royce engineers said this was the most difficult of all the tests. “It’s not easy to work in minus 25° Centigrade and there’s also the wind chill effect,” said Burr.

Static tests, with the engine mounted on a giant frame, were conducted at the Global Aerospace Centre for Icing and Environmental Research (GLACIER) in Manitoba, northern Canada. Here the engine had to demonstrate it could tolerate a build-up of ice and then shed it without losing power.

Altitude tests took place at the Arnold Engineering Centre, Arnold Air Force Base (AFB), in Tennessee, USA, while bird-strike tests were carried at Rolls-Royce’s HQ in Derby, UK.

Another air force base, Eglin in the USA, used its atmospheric chamber for whole aircraft weather tests, which included the Trent XWB engine.

Now Rolls-Royce is repeating all the tests with the higher-thrust engine, the -97, planned to produce 97,000lb of thrust. The first engine to test (FETT) has already clocked 140 test-bed hours.

Three other -97 engines were all expected to be under test as *Arabian Aerospace* was going to press.



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Landing an executive jet on a road would constitute quite enough excitement in most pilots' lives. But, as Alan Dron discovered, Zeyad Ali El Bada has an even bigger challenge to surmount.

Zeyad on the road to progress...

Zeyad Ali El Bada, director-general of Palestinian Airlines, is fighting for the chance to build a new airport that will become the home base of his airline and to equip it with new aircraft.

Since the Israeli armed forces destroyed the control tower at Palestinian Airlines' original Gaza Airport base in 2001 following the start of the Second Intifada, then ripped up sections of the runway the following year, the small airline has been searching for a permanent residence.

El Bada is concentrating his efforts on transforming the hard-pressed company into a normal airline that can operate without restrictions and with a fully developed route network.

Those efforts are currently focused on developing a new airport in the Jericho area. To do this, El Bada is in negotiations with several Arabian countries, the US and Israel. Given the realities of life in that region, Israeli permission will be required before any airport plan goes ahead.

El Bada is hopeful: negotiations, he said, are in the final stages. Plans to rebuild Gaza Airport (otherwise known as Yasser Arafat International) are included in the same batch of proposals.

At present, Palestinian Airlines, which is wholly owned by the Palestinian Authority, is based in the coastal town of El Arish, some 60km west of the Rafah border crossing from Gaza into Egypt. Although the airport is small and little used, it is a more convenient jumping-off point for Gazans than Cairo, some 350km away.

From El Arish, Palestinian Airlines operates flights to Amman and Jeddah. The Amman service takes considerably longer than would normally be

the case, as the company's aircraft have to fly around Israeli airspace to reach the Jordanian capital. From there, passengers can connect to other destinations.

The airline operates two Fokker F50s (originally a gift from the Netherlands) and El Bada says he is on the lookout for replacements for the 26-year-old turboprops. "We're looking to find two Airbus A320s or Boeing 737s. We are discussing with our Arab brothers if somebody can support us [to acquire] these two aircraft."

He is also hoping for funding from nations in the region for the planned new airport in the West Bank. What he describes as "very serious" discussions with interested parties have taken place, not only in the West Bank but also in Cyprus and Belgium.

Travel problems

The creation of an airport there would relieve some of the travel problems of West Bank residents, who still face long delays crossing the Israeli-controlled border into Jordan.

At one time the airline's fleet included two Bombardier Dash 8-300s and a Boeing 727. But after Gaza Airport was destroyed, roles could not be found for them. Keeping them on the ground was expensive and the Palestinian Authority sold off the Dash 8s, while the 727 was retired.

The airline operates under a series of restrictions. It is, for example, only allowed to carry Palestinians and not Egyptians.

The carrier was set up in 1995, began operations two years later and for a few years flew tens of thousands of passengers from Gaza

Airport. It also had ambitions to begin services to Europe. But the Second Intifada against Israeli rule that began in 2000 saw the destruction of Palestinian Airlines' home base.

It moved to El Arish, but suspended operations in 2005 when the increasingly frequent closure of the Gaza border crossings meant that passengers found it nearly impossible to travel.

Services only restarted in 2012, when El Arish to Amman flights began.

While one of the F50s operates scheduled flights from El Arish, the other is employed on 'wet lease' aircraft, crew, maintenance and insurance (ACMI) services in west Africa, which brings in valuable income.

Palestinian plans to start flights for pilgrims heading for Mecca early in 2015; it carried 19,000 passengers to Jeddah last year and hopes that religious tourism to Islam's holiest shrine will be a good revenue-earner.

Profitability will have to be achieved through its own efforts, said El Bada. "We get no subsidy from the Palestinian Authority; they don't have [any money], anyway."

Matters are further complicated by the fact that Palestinian Airlines' official base is in Hamas-controlled Gaza, while the West Bank is under the control of the Palestinian Authority, with the two organisations not on friendly terms.

Despite these problems, together with the limited destinations that Palestinian Airlines is currently able to serve, the carrier has a built-in marketplace; Palestinians are keen to use the white-painted Fokkers, seeing them as a small symbol of the statehood they have thirsted after

“We’re looking to find two Airbus A320s or Boeing 737s. We are discussing with our Arab brothers if somebody can support us to acquire these two aircraft.”

ZEYAD ALI EL BADA



for so long. If larger, more modern equipment could be acquired, there seems little doubt that it would be well used.

El Bada knows Gaza well, and in a way unfamiliar to other pilots. He lays claim to being the first pilot to land in the territory. But not at Gaza Airport. He tells of how he was woken early one morning by a phone call from Yasser Arafat, president of the Palestinian National Authority.

“What are you doing?” demanded Arafat.

“Sleeping,” replied El Bada, not unreasonably.

“Be in Gaza in three hours,” was Arafat’s crisp reply.

‘Be in Gaza in three hours’ meant El Bada having to land a Lockheed JetStar executive jet – which became Arafat’s personal transport – on a road, at the time, the only ‘landing strip’ available.

El Bada made two low passes over the road before bringing the aircraft in for a textbook landing and was for several years Arafat’s personal pilot, flying him around the world.

A former military pilot, who flew MiG-21s in countries as far-flung as Yemen, Nicaragua, Russia and the former Yugoslavia, he began flying for Palestinian Airlines after his time as Arafat’s personal pilot, only stepping down from flying the Fokker F50 two years ago.

In his current position as director-general, he remains hopeful that the company can grow in the future, although this is likely to depend on financial backing from sympathetic nations. Such backing, he said, would be essential “to keep the Palestinian flag in the sky”.

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New CEO set to continue Oman's expansion plan

*Oman Air's new chief executive, Paul Gregorowitsch, joins the company at a pivotal time and tells **Martin Rivers** he will stay the course with his predecessor's expansion plan.*

The sudden departure of Wayne Pearce as Oman Air's boss caught many observers by surprise last year, with the experienced and well-respected executive having just initiated a critical turnaround plan for the loss-making flag-carrier.

Shortly before stepping down in February 2014, a bullish Pearce said he was on-track to grow the fleet to 50 aircraft within four years – expanding his way out of the company's financial difficulties.

Although his subsequent resignation was unexpected, successor Paul Gregorowitsch wasted no time in vowing to press on with the ambitious growth strategy.

Oman Air's fleet has already inched up to 35 aircraft – 20 Boeing 737NGs, nine Airbus A330s, four Embraer E-175s and two ATR 42s – and 2015 looks set to be another significant year of expansion for the carrier.

"Wayne Pearce guided the company in getting the new aircraft orders in and the same is now taking place," said Gregorowitsch, who formerly served as chief executive of Martinair and a board member of Air Berlin.

"Nothing has changed. Oman Air is very consistent and it doesn't make a difference [to the expansion programme]

who is leading the airline. In terms of how the airline is run day-to-day, yes, there may be a difference. But the overall strategy does not change."

His determination to follow through with the plan inherited from Pearce was affirmed in December 2014, when Oman Air launched thrice-weekly flights to Manila in the Philippines and four times-weekly flights to Jakarta in Indonesia.

The introduction of both services reflects Oman Air's long-standing policy of cherry-picking long-haul destinations from across Asia, Europe and Africa.

It is an approach that sharply contrasts with the airline's larger Gulf rivals, who have styled their home bases as sixth-freedom hubs that connect as many points on the planet as possible.

Rather than targeting the scale of Emirates, Etihad or Qatar Airways, Oman's flag-carrier restricts its wide-body operations to origin-and-destination traffic in high-yielding markets. Thus, the European network is limited to six points – London, Paris, Frankfurt, Munich, Zurich and Milan – while the long-haul Asian network features four cities (Manila, Jakarta, the Thai capital Bangkok and the Malaysian capital Kuala Lumpur).

Its regional network is more developed, encompassing 13 Middle Eastern points to the west, and 17 cities in the Indian subcontinent to the east. Flying times of less than four hours make the 737NG an ideal workhorse for these routes.

Scaling up existing routes

New destinations will always be considered – China is "in the plan", for example – but Gregorowitsch said scaling up existing routes must be the priority. "In the first place we will go for daily frequencies," he insisted, adding that bilateral restrictions have slowed progress in Europe.

The delivery of Oman Air's first 787 Dreamliner later this year should propel growth in some long-haul markets. The flag-carrier has six 787-8s on order and Gregorowitsch is looking at switching some units to the larger 787-9.

Its other orders are for four 737-900ERs, two 737-800s and one A330-300.

While these commitments will bring the airline close to its goal of 50 aircraft by 2018, the parallel retirement of older units means that a sizable new order is still needed.

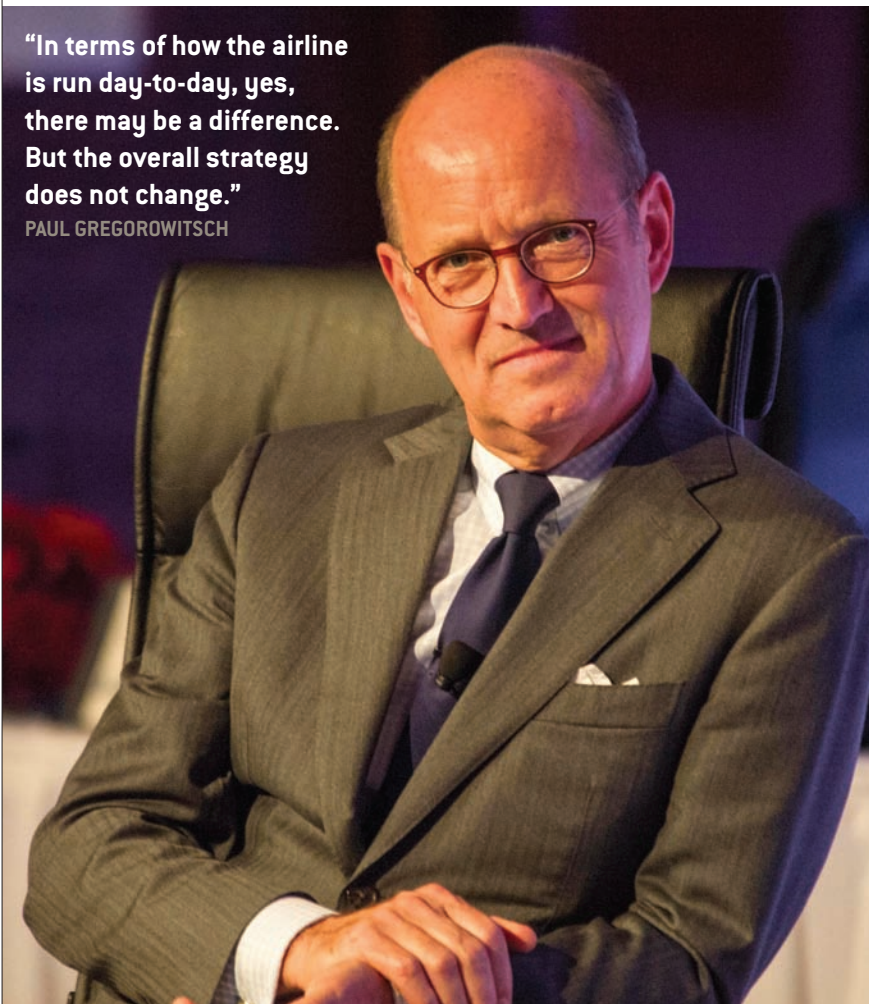
And, having deepened its losses to 113 million Omani Rial (\$295 million) in 2013, the prospect of yet another capital-intensive order raises doubts about the airline's break-even target of 2017.

Nonetheless, Gregorowitsch is confident that the maturation of existing markets, coupled with selective expansion elsewhere, should gradually bear fruit. "Falling jet fuel prices mean that my costs are going down," he noted, despite acknowledging that cheap oil is a double-edged sword for Oman's energy-dependent economy.

With plans for a low-cost subsidiary no longer being entertained, Oman Air is rallying behind its full-service product and betting that judicious growth holds the key to future profitability.

"In terms of how the airline is run day-to-day, yes, there may be a difference. But the overall strategy does not change."

PAUL GREGOROWITSCH





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New CEO Paul Byrne:
 "Just keep doing the simple things well and consistently."

Why boring may keep Flynas soaring!

After its brief foray into European long-haul routes, Saudi Arabian carrier Flynas has decided it is time to go back to what it knows best. Alan Dron reports.

Boring is not normally a word associated with the airline industry, but that is precisely what Flynas's new CEO, Paul Byrne, is aiming for in 2015. With the Riyadh-based airline having experienced the excitement – followed rapidly by disappointment – of starting routes to London Gatwick and Manchester in the UK, only to close them again within months, Byrne believes that the best way for the company to advance is for it to go back to what it does well.

"The way forward is to go back to the nitty-gritty; we'll stay within flights of three to three-and-a-half hours, with the exception to that probably being Istanbul. We'll use the Airbus A320s and behave like a normal budget airline," he said.

"People are very guilty in the airline industry of over-complicating things. I've told my guys, 'I'm going to make your lives a little bit more boring. I just want you to keep doing the simple things – doing them right and doing them consistently.' This year will be a relatively risk-free in terms of what we will be doing."

Byrne may not get his wish of a boring life. More 'excitement' for Flynas is on the cards in the coming year as Saudi Arabia opens up its domestic market to new carriers. Saudi Gulf Airlines and Qatar Airways' subsidiary, Al Maha, will be contesting routes with both Flynas and Saudia.

Continued
on Page 40

CONTINUED FROM PAGE 39

Al Maha's first Airbus A320s were being fitted out at Airbus's Hamburg factory in late November and are believed to be starting services in early 2015, although Qatar Airways declines to give details.

Given its Qatari roots, Byrne believes Al Maha will have to do a lot of flying inside the kingdom before the population starts to regard it as a Saudi carrier. In addition: "If history is anything to go by, the [Saudi] government will insist that they do some public sector obligation-type flights."

Long-haul services

Flynas believes that Al Maha will be more interested in siphoning Saudi traffic to its Doha hub to feed on to its long-haul services than operating internal Saudi flights but if, as expected, it comes on to the extremely busy Jeddah-Riyadh sector, "That will obviously have an effect on us and Saudia".

Byrne is very conscious that some dilution of Flynas's traffic is inevitable. "They will damage us," he admitted. "They will bring the yields down. But most of our traffic is point-to-point. That's where we think we have a better set-up, whereas Saudia... is trying to be all things to all people."



Paul Byrne: "One of my tasks is to bring more science and analytics to the business and start flying smarter. We may well chop and change a number of routes."

However, he believes that the domestic market will grow; offsetting any losses it suffers by the arrival of the newcomers. Many people still drive relatively long distances within the kingdom and getting them out of their cars is likely to be a priority for the new entrants. This suggests that low prices will be used to tempt them on to their aircraft.

Byrne's association with Flynas only began in

July 2014, when he was brought in as a consultant to look at the airline's commercial activities.

A little over three months later, he was propelled into the CEO's chair, with the previous CEO, Raja Azmi, becoming advisor to the board.

Byrne was a veteran with Ireland's national airline, Aer Lingus, for more than two decades. Since becoming a consultant around 11 years ago, he has worked in Central America, Asia and Africa, particularly in the revenue management field.

In his new CEO role, he will lean on the experience of his predecessor. "He will be a very large part of my tenure. I'll certainly be seeking his advice. The whole point of me being in there will be to continue what he started."

A major reason behind continuing on the course set by Azmi and his team is that Byrne believes that Flynas has had a problem with a succession of CEOs in recent years, with each one naturally wanting to bring his own direction to the carrier. A period of stability is now necessary, Byrne believes.

"One of my tasks is to bring more science and analytics to the business and start flying smarter. We may well chop and change a number of routes."

The carrier is on the lookout for viable new

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sectors and has recently added Sharjah to its route network.

One route high on the priority list is Riyadh-Cairo. Flynas already operates to seven Egyptian destinations, but a direct link between the Egyptian and Saudi capitals would be a major prize: "It's a massive market," said Byrne.

Last March, Flynas announced its new UK routes in a flurry of publicity in London. The aim was primarily to tap into the large Muslim populations of many towns and cities of the north of England, as well as those around London. Pilgrims heading for Mecca to perform the Haj and Umrah were the major market.

Services to Manchester began in May. However, before Flynas could get its twice-weekly flights off the ground, Saudi Arabia's national airline had restarted its previously suspended service between Manchester and Jeddah, effectively sucking up most of the available traffic.

"Saudia got in ahead of us," admitted Byrne "Umrah traffic was wrapped up by them." Although the decision to cancel Flynas's Manchester flights was announced some three months after they began, Byrne said he understood that only around eight flights had actually got off the ground.

The London Gatwick flight "was supposed to be based on the same premise, but it never really developed. It wasn't really busy outside the holiday periods". Although flights between London and Jeddah were "packed" on either side of the Eid Al-Fitr holiday, this was insufficient to keep the route going.

"The long-haul [plan] was based on Umrah traffic and the idea behind it was, and still is, sound." Umrah traffic is good business, as passengers tend to plan their trips several months ahead, usually pay well in advance and the aircraft are filled.

Good proportion

Travel agents – for example, in Turkey – have been known to approach Flynas offering to provide anything up to 100,000 passengers a year. Realistically, said Byrne, a good proportion of those were likely to be taken by Turkish Airlines or Atlas Jet. "Nevertheless, if you can get the right costs and the right partner agencies, you can do very well.

"We are still actively looking for business like that. If there's traffic we can carry, we will wet-lease aircraft in and take it."

The airline has a separate division – Flynas Haj & Umrah – that looks after this market segment.

For this reason, Flynas will be continuing its 'scheduled chartered' pilgrim flights from Malaysia, Indonesia, Pakistan and India, using flights operated by Air Asia X (Airbus A330s) and Eaglexpress (Boeing 747-400s). However, the A330s leased from Portuguese carrier Hi-Fly for the European services have been returned.

Another destination to be launched, then dropped in 2014, was Casablanca. "It was the same [as the UK destinations]," said Byrne. "It's one of the destinations that Saudi Arabians like to go to, but it's very well serviced by Saudia and Royal Air Maroc."

Currently, around 60% of Flynas's flights are domestic and 40% regional. For 2015, it expects to retain a fleet of 24 A320s. "Our plan will be to have 22 operating, one on standby and one in maintenance over the 12-month period."

It has on order 20 A320ceo, plus a further 18 options. Under its 'low-cost carrier-plus' business model, launched in 2013, it is installing business-class cabins in the fleet.

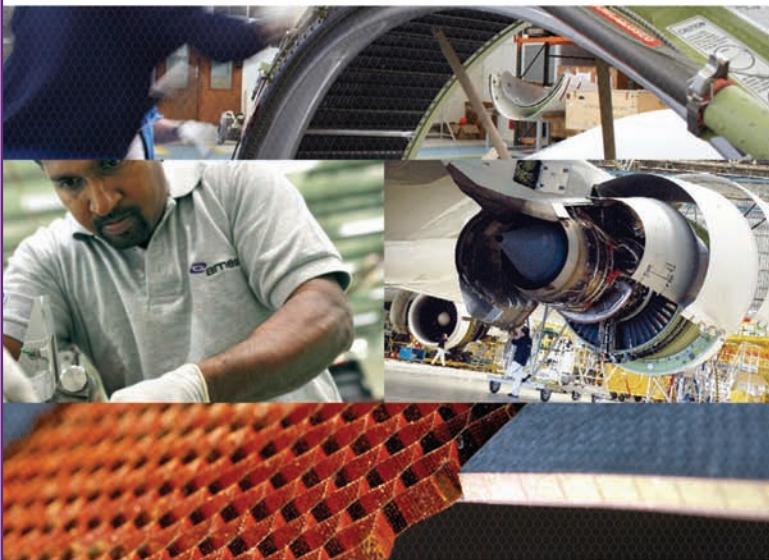
This is designed to boost revenue through improved yields, as the Saudi Government's domestic fare caps do not apply to premium cabins.

Byrne may well achieve his aim of stability in 2015. But life at Flynas is unlikely to be boring.

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Details have started to emerge of Etihad's plans to pull Italian flag-carrier Alitalia out of the doldrums. Alan Dron reports.

Etihad gets to work on the Italian job

Etihad Airways believes that the Alitalia brand will be a powerful factor in reviving the Italian flag-carrier's fortunes, as the Abu Dhabi airline takes on its role as a 49% shareholder.

The deal to install Etihad as a major stakeholder achieved European Union regulatory approvals in November.

After the first board meeting on January 19th, Etihad president and CEO said he believed the financially troubled Italian operator had good prospects. Italy possessed strong markets for both inbound and outbound traffic and he described Alitalia as having "huge potential". But he said "We are not a bank. We need to see a return on our investment. Alitalia is one of the great innovators of aviation but has been a poor business," he said.

Hogan was asked what virtues Etihad had seen in the perennially loss-making Alitalia.

"Don't mix up brand and business," he noted. "Alitalia is a well-known brand, even if the business is in bad shape. We believe that the brand can be revitalised."

Revitalising the brand is one thing, but hard decisions have had to be taken to get the business back in to shape. One of the most obvious early moves has been to cut the number of Alitalia staff; the Italian unions have agreed to around 2,600 personnel leaving, an indicator of just how serious they realised the financial situation had become.

One tranche of just fewer than 1000 personnel – mostly ground staff but including 61 pilots and 54 cabin crew – started to receive redundancy notices on October 31.

On the plus side, Hogan said several times in Milan that he had been impressed with the quality of Alitalia staff he had met during a series of meetings to explain the technicalities of its investment deal. He added that once the "shackles of the past" – notably the mountain of debt that overhangs the airline at present – were removed from Alitalia management, they would have the freedom of action to fulfil the company's potential.

Commercial activities

Speaking at the January conference Hogan said that the airline should be back in profit by 2017 as it took advantage of the cost benefits of working with the Etihad equity partners.

As analyst Saj Ahmed noted in the last issue of *Arabian Aerospace*, Etihad sees Alitalia's role in its network of equity partners as providing extra capacity over the Atlantic. Etihad will not follow Emirates' stance of itself operating routes from Italy to the US. "We have no intention of flying transatlantic [from Italy]," said Hogan.

But they have also supported moves east with the January announcement that Alitalia will be launching direct flights to Venice from Shanghai.

Milan Malpensa (together with Rome Fiumicino) will be the main two hubs for the

new Alitalia, but Milan Linate, which is closer to the city centre and focuses mainly on domestic and short-haul international services, will also figure in the airline's plans. "We've modelled Malpensa and Linate and we believe both will work," said Hogan. The two carriers said they plan to develop Malpensa as a major global cargo hub.

Services to Milan's two airports are likely to get a considerable boost in 2015. The EXPO event runs from May to the end of October. Some 20 million people are expected to visit it and one-third of them will arrive by aircraft.

The new-look Alitalia's greater emphasis on long-haul routes will mean changes to the fleet. Some of its existing Airbus A320s are believed to be destined for Airberlin, another of Etihad's equity alliance partners.

The future shape of the fleet will be a matter for Alitalia's management, said Hogan, but he hinted heavily that aircraft from Etihad's current order book may find their way to the Italian carrier: "Within our deals with Airbus and Boeing we have the flexibility to move aircraft between our partners."

At 2013's Dubai Airshow, Etihad placed orders for 87 Airbus and 56 Boeing aircraft, with a further 56 options and purchase rights. Among those totals were 25 Boeing 777X, 30 Boeing 787-10 and 50 Airbus A350 XWBs. Given Hogan's comments, it would seem likely that some will be transferred to Italy.



Brighter future ahead? Etihad president and CEO, James Hogan (sixth from right), and Alitalia's outgoing CEO, Gabriele del Torchio (fifth from right), greet the Alitalia Airbus A330 carrying its colourful EXPO Milano 2015 scheme at Milan Malpensa.

Connections are already being formed between Alitalia and other members of the Etihad equity partners' alliance. In October, it signed a codeshare agreement with Airberlin that will see the two carriers cooperating on more than 400 flights weekly between Germany, Italy, Switzerland and Austria.

They also agreed that members of their respective frequent flyer schemes would be able to earn and redeem points throughout each other's networks.

Alitalia was widely believed to have been close to collapse when Etihad announced its long-awaited deal to step in with financial backing last August.

It paid €387.5 million (\$493m) for its 49% stake in Alitalia. However, this was just a small part of the overall cost of its involvement.

Etihad's investment will be provided through a combination of equity injections, asset purchases

and other financing facilities, and funding arrangements to restructure Alitalia's balance sheet.

Etihad is paying €112.5 million (\$134m) for a 75% share in Alitalia Loyalty, which operates MilleMiglia, the airline's frequent flyer programme, and a further €60 million (\$71.5 million) for five pairs of slots at London Heathrow Airport. These will be leased back to Alitalia.

Etihad's financial input will be complemented by a further equity investment of €300 million (\$357 million) from existing Alitalia shareholders, including Intesa San Paolo (€88m), Poste Italiane (€75m), UniCredit (€63.5m), Atlantia (€51m), IMMSI (€10m), Pirelli (€10m) and Gavio (€2.5m).

Beyond this direct investment, there will be up to €598 million (\$711.5m) in financial restructuring of short- and medium-term debt by

financial institutions and existing bank shareholders. Italian financial institutions have extended €300 million (\$357m) of new loan facilities.

In Milan, Hogan stressed that in making its investments: "We are here for the long term." The beneficial effects of its influence among its existing equity partners could be seen clearly: "Aer Lingus and Air Seychelles will make money this year. Air Serbia and Etihad Regional [formerly Switzerland's Darwin Airline] will get close."

Airberlin, in which Etihad holds a 29% stake, is still losing money and has, perhaps, taken longer to turn around that Hogan and Etihad had envisaged. However, he is on record as saying he believes the German carrier can be successfully restructured.

Alitalia, however, may prove to be the biggest challenge of all.

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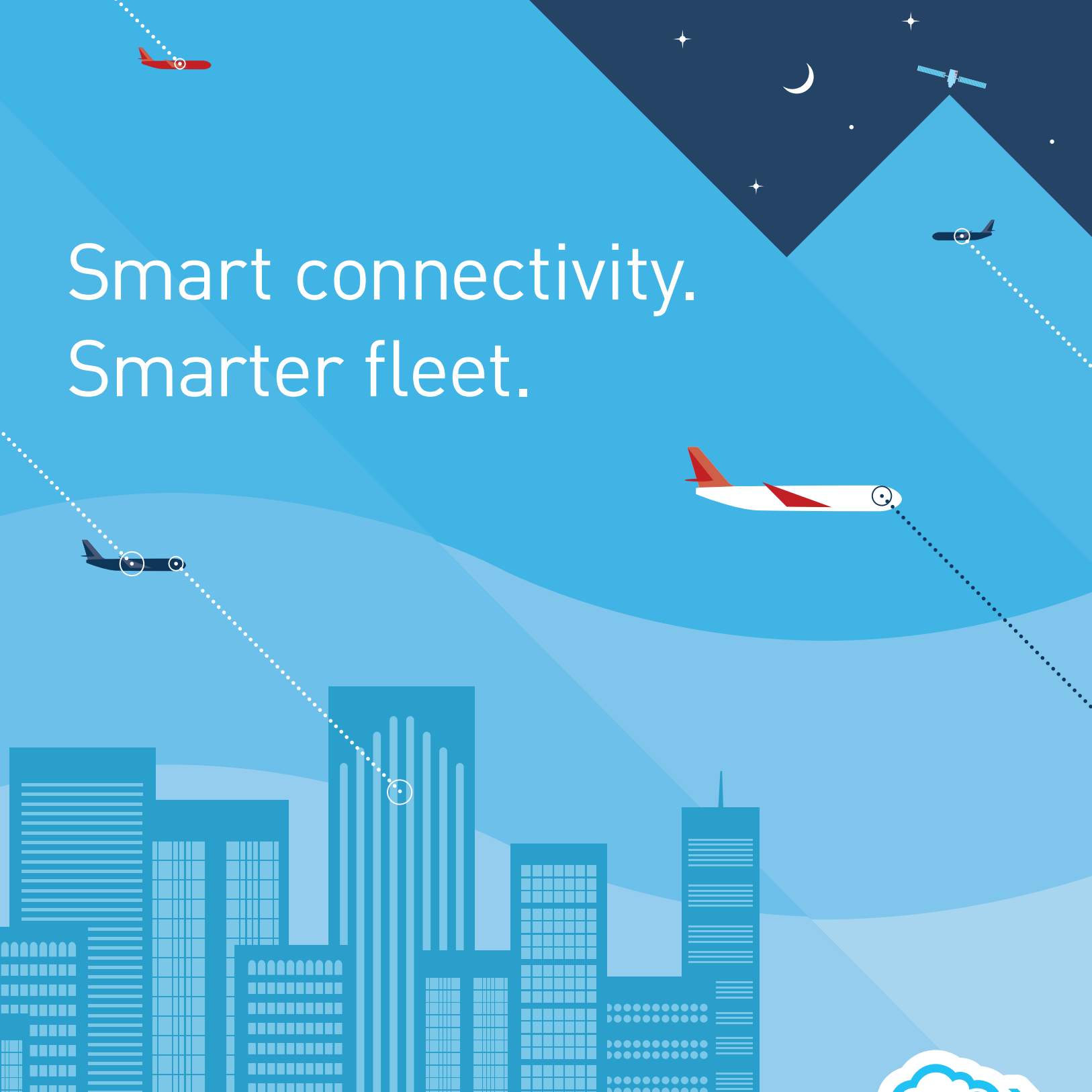
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*Having returned to profit under a successful restructuring programme, flag-carrier Royal Air Maroc is shrugging off regional challenges and embarking on a new era of expansion. **Martin Rivers** meets deputy chief executive **Habiba Laklalech**.*

Maroc raises the standard

News that Royal Air Maroc grew its African traffic by 16% over the 12 months to October 2014 – transporting 1.3 million passengers across the continent – might seem perplexing against a backdrop of both the Ebola outbreak in west Africa and regional instability in north Africa.

There is no denying that Morocco's flag-carrier is heavily exposed to the Ebola crisis, serving about 30 west African destinations, including the worst-affected countries of Guinea, Sierra Leone and Liberia. Its home base in the Maghreb region of north Africa also places the airline in a volatile neighbourhood wracked first by the Arab Spring and now by a series of deepening Islamist insurgencies.

Yet, despite the turmoil engulfing both sub-regions, Royal Air Maroc is not only expanding on the continent but, more remarkably, it is doing so while turning over a profit.

Casablanca's geographical location allows the flag-carrier to offer a unique hub-and-spoke

Continued
on Page 46
→



CONTINUED FROM PAGE 45

network that connects most major western European cities with west Africa. It is a model that has delivered positive financial results in eight of the past 10 years – also weathering the 2006 ‘open skies’ agreement between Morocco and the European Union (EU) – and management are only growing in confidence, unveiling plans to double the fleet to 100 aircraft over the coming decade.

While Ebola undoubtedly presents a challenge to the business plan, the World Health Organisation has urged airlines to continue flying to the sub-region in order to facilitate the flow of humanitarian relief and medical supplies.

And Royal Air Maroc is doing just that, preserving its connections at a time when Air France, British Airways and Emirates Airline have all suspended routes. Though it is still early days, the results, so far, are encouraging.

“We have transported more than 30,000 passengers from these three [Ebola-hit] countries during the past six months,” noted Habiba Laklalech, Royal Air Maroc’s deputy chief executive. “And there has not been one single case [of the disease on our flights]. So the measures that were put in place are sufficient to reduce the risk of contamination.”

Passenger temperatures

Those measures include recording passenger temperatures at both the airport of origin and at Casablanca, as well as carrying Ebola isolation kits on every aircraft. Because Ebola is not an airborne disease and sufferers only become contagious after the onset of symptoms, these seemingly basic steps are all that is needed to stop the virus crossing borders.

“The nature of [inbound] traffic going to these countries has changed,” Laklalech admitted. “We are seeing more medical staff, more humanitarian workers. But [outbound] traffic from these countries to the rest of the world hasn’t decreased. People are still flying.”

With Ebola not seen as posing a long-term threat to African traffic flows, Royal Air Maroc is determined to strengthen its market share on the continent. New routes to central and east Africa continue to be evaluated, Laklalech confirmed, citing the addition of Chad’s capital N’Djamena in June 2014, although straying too far from its west African stronghold is considered risky.

“We are looking at the possibilities but we know that we will not necessarily be the strongest airline [in central and eastern markets],” she explained. “Geographically, there are other routes to Europe that might be more attractive to passengers in east Africa.”

Further developing the north-to-south hub proposition, therefore, remains the priority, with Royal Air Maroc leveraging its “unique expertise” in serving remote, difficult-to-reach destinations that other carriers might shy away from. “We have very well trained pilots,” Laklalech noted. “We have specific courses for

“We have transported more than 30,000 passengers from these three Ebola-hit countries during the past six months. And there has not been one single case of the disease on our flights. So the measures that were put in place are sufficient to reduce the risk of contamination.”

HABIBA LAKLALECH

[flying in] Africa. So even when we lease aircraft for the peak period, we prefer to use our own pilots.”

This expertise saw Royal Air Maroc become one of the first carriers to resume serving Tripoli after the overthrow of Libyan dictator Muammar Gaddafi in 2011. The airline launched thrice-weekly flights just one month after the no-fly zone over Libya was lifted, but worsening security in the country has since forced it to withdraw, along with every other international operator.

“We are following the progress of the political situation and, as soon as the environment is safer, we’ll probably go back,” Laklalech said. “Our agencies are still open in Libya.”

Growing security concerns in Algeria, Tunisia and Egypt have put further pressure on north African demand, though Royal Air Maroc has limited exposure to these markets. Only the capital cities of Algiers, Tunis and Cairo feature in its network. The Algerian and Egyptian routes have both remained stable, while frequencies to Tunisia’s capital actually doubled last year, according to Innovata scheduling data.

Safe reputation

As for Morocco itself, despite having a safe reputation, the country is by no means immune to jihadist violence. Bombings in 2003 and 2011 claimed 50 innocent lives, and the growing influence of the Islamic State (IS) in Iraq and Syria has renewed fears of lone-wolf attacks.

Such concerns reached fever-pitch in November 2014, when three masked Islamists released a video swearing allegiance to IS and threatening violence in Morocco. The video echoed pledges by other, better-established Islamist groups in north Africa, many of which stepped up attacks last year in an apparent effort to curry favour with IS.

Within a week, however, Moroccan police had tracked down and arrested the three ‘wannabe’ jihadists. The country remains on high alert.

Indeed, while the crises to the south and east of Morocco are undoubtedly causes for concern, its flag-carrier has a proven track-record of overcoming difficult circumstances.

The biggest such obstacle came in 2006, when the Moroccan Government signed an ‘open skies’ treaty with the EU as part of efforts to expand its tourism sector. The liberalisation programme had an immediate impact on visitor numbers – up 60% to 9.3 million by 2010 – but Royal Air Maroc was not the main beneficiary. Although its passenger numbers grew in tandem with the country’s tourism growth, its yields plummeted.

A price war between European low-cost carriers (LCCs) Ryanair and EasyJet was largely to blame, with the newcomers vying for dominance in the now-unprotected marketplace. Air Arabia Maroc also launched operations in 2009. To date, Laklalech said 44 airlines have entered Moroccan skies since liberalisation.

For Royal Air Maroc, the cost of defending market share in this environment was two consecutive years of operating losses in 2010 and 2011, each time sinking nearly 500 million Moroccan dirham (\$60 million) into the red.

Convinced that a permanent, structural change had occurred in the competitive landscape – LCC penetration had by this stage reached 40%, four times higher than before ‘open skies’ – management hit back with an immediate restructuring programme.

“First, we reduced our headcount from 5,100 to 2,900,” Laklalech recalled. “This led to a significant improvement in productivity. Today, we have about 60 employees per aircraft, which is one of the best ratios in the industry. In fact, it is better than many of the low-cost airlines, which do not even have a dedicated sales force. We also decided to cut all the unprofitable point-to-point routes, where low-cost competition was very strong. And we relocated that capacity to Casablanca.”

“So today we have 20% of our capacity in point-to-point markets – for example Marrakech, Tangier, Agadir – while 65% is [deployed on international routes from] Casablanca, and 15% domestic through Casablanca.”

Having relinquished about 20 secondary routes to LCC rivals, the flag-carrier rallied behind a hub-and-spoke network that its new competitors had neither the strategic intent, nor the traffic rights, to replicate. It now operates almost three out of every four flights at Casablanca’s Mohammed V International Airport.

The success of the strategy was confirmed in 2012, when Royal Air Maroc posted an operating profit of 718 million Moroccan dirham (\$77.5m). It achieved the result despite processing 6.1% fewer passengers than the year before, and suffering a 2.3% reduction in load factor.

While reverting to its network-carrier roots and streamlining operations allowed Royal Air Maroc to withstand the LCC influx, it was no silver bullet

RAM's first Dreamliner is in action - with the second due in March 2015.



for the wider difficulties facing the airline. Protectionism elsewhere on the continent remains a concern. "The main challenge we face in Africa is traffic rights," Laklalech complained. "Morocco is unique in Africa for signing an 'open skies' agreement with the European Union. Other countries still have limitations.

"Look at Mauritania: we used to have [a weekly allocation of] 14 flights. Then the state reduced them to 11, to nine, to seven and now five."

Bilateral frequency constraints will probably continue to be a bugbear for many years to come, with few African countries displaying much enthusiasm for implementing the 1988 Yamoussoukro Declaration, the continent's roadmap for cross-border liberalisation. In spite of this anti-competitive landscape, however, Royal Air Maroc has fully emerged from its restructuring programme and is once again entering a growth phase.

Five new aircraft were received in the last two months of 2014: four Embraer E-190s and one Boeing 787 Dreamliner (MSN 43817), the first of the type to be operated by a Mediterranean carrier.

These arrivals have lifted the mainline unit's fleet to 47 aircraft, also comprising 36 737 NGs, one converted 737 freighter, four 767-300ERs and one 747-400. Another four Dreamliners are on order, with the next delivery scheduled for March 2015.

The composite jets will initially be used to boost Royal Air Maroc's New York route to twice-daily.

But with the 767-300ERs also remaining in service, it will not be long before new markets are sought. China is already under review, Laklalech confirmed, with Beijing considered the most attractive market.

At present, Royal Air Maroc serves just three cities outside of Africa, the Middle East and Europe: New York, Montreal and Sao Paolo.

Fully-owned subsidiary Royal Air Maroc Express also deploys five ATR 72-600s on mostly domestic services, although its parent maintains a presence on internal trunk routes such as Casablanca-Tangier and Casablanca-Agadir.

"We are currently finalising our fleet plan for the 2015-2025 period," Laklalech continued. "We will probably be launching a tender in 2015."

Government's target

By the end of that period, Royal Air Maroc expects to deploy 100 aircraft, with the focus remaining on short-to-medium-haul types. Its expansion is designed to support the government's target of attracting 20 million tourists to Morocco each year.

About 85 of the projected 100-strong fleet will be narrow-bodies, Laklalech said, including about 20 100-seater jets used for developing thinner routes. "The 100-seaters will facilitate the penetration of new markets," she explained. "We will initially use these jets on new routes, as they are less expensive to operate. Then, as load factors rise, we can switch to larger aircraft."

Introducing E-190s has allowed Royal Air Maroc to begin testing this strategy but the flag-carrier is not yet throwing its weight behind Embraer. "It could be E-190s, or Bombardier CSeries, or maybe Sukhoi [Superjets]," she said of the upcoming 20-unit order. "We don't know yet."

Likewise, despite the preponderance of Boeing aircraft in the fleet, Laklalech would not rule out turning to Airbus for the larger narrow-bodies. "It will be either the Boeing 737NG MAX or the Airbus A320neo [that we order]," she said.

With a period of rapid and costly fleet expansion looming, management has one final priority weighing on their minds: the long-running search for a strategic investor.

The Morocco Government currently owns 96% of the flag-carrier, while Air France and Spain's Iberia also hold small stakes. Those minority shareholders are unlikely to buy more equity, Laklalech admitted, but she believes Royal Air Maroc's track-record for profitability should be appealing to other groups. Asked if Abu Dhabi's Etihad Airways is among the preferred suitors, she shrugged: "Maybe. If there are synergies, why not?"

Alternatively, joining one of the big alliances might also bring benefits.

All three groupings – Star Alliance, SkyTeam and Oneworld – are under evaluation, though Laklalech said she is mindful of the associated costs of membership.

From small, domestic beginnings Abu Dhabi-based Rotana Jet is seeking additional tourism business and has plans to more than double its fleet over the next three years. Alan Dron reports.

Rotana set to expand at the double

Almost three years after branching out from business aviation into scheduled airline services, Rotana Jet is slowly expanding from its niche as the UAE's first domestic airline to serving destinations in the Gulf and beyond.

Steadily increasing load factors in those domestic services – notably from Abu Dhabi to Sir Bani Yas and Delma islands – have encouraged the carrier to increase frequencies and use them as a base from which to cautiously expand outside the UAE.

Now, the airline plans to increase its current five-strong fleet (two Airbus A319s and three Embraer ERJ 145s, one of them an LR variant) to 12 in the next three years. The company declined to detail the types that it will be acquiring, but said that it was looking at both passenger and dedicated cargo aircraft.

Scheduled operations

Rotana Jet began its scheduled operations from Abu Dhabi's Al Bateen Executive Airport but now uses Abu Dhabi International Airport (ADIA) as its main base. Almost all of its overseas and domestic flights from Abu Dhabi now operate from ADIA's Terminal 2. Compared to Al Bateen, this gives Rotana the space it needs to increase frequencies and also to assist connections with several airlines with which it has established interline agreements, such as Etihad, Oman Air, Jet Airways and Qatar Airways, as well as Sri Lankan.

Al Bateen initially proved ideal for the carrier, whose operations began with a single Gulfstream 450 executive jet on corporate flights before it moved up to scheduled services with the Embraers. But, as Rajendran Vellapalath, Rotana Jet's commercial and planning director, noted, the city site had limitations for scheduled services, having been designed essentially for corporate and VVIP flights.

Rotana Jet now operates domestically from ADIA and Al Ain to Abu Dhabi's offshore islands and to Fujairah.

When it began domestic services in 2010,



Rotana Jet's main workhorses for its domestic and regional services are three Embraer ERJ 145 jets.

some observers raised an eyebrow, given the relatively short distances involved and the existence of the UAE's good road network.

However, while the distances between the two Abu Dhabi airports on the one hand and the offshore islands and Fujairah on the other are not great in mileage terms, a trip that can easily take three or four hours by car (and ferries, in the case of islands such as Sir Bani Yas and Delma) can be reduced to about 40 minutes by air. Most passengers on the longest domestic route, the approximately 300km Fujairah-Abu Dhabi sector, are connecting with flights in the federal capital.

And, for passengers arriving at ADIA after long-haul flights of anything up to 12 hours, the prospect of being able to get to their ultimate destination elsewhere in the UAE in 40 minutes or so rather than having to drive for two or three hours is a tempting one.

Prepared to pay

Rotana Jet has found that residents are prepared to pay for that convenience, especially if going for a day trip to the islands; flying gives passengers much more time at the islands' leisure facilities.

When the airline initially mooted plans for domestic flights, it also looked carefully at Ras Al Khaimah. This route has not been developed as yet but "We didn't drop the idea", said Vellapalath. "As we get more aircraft we should be flying to RAK."

Now-defunct RAK Airways also operated domestic services between RAK and Abu Dhabi before its collapse at the start of 2014, but never developed beyond that route on the domestic stage. Major low-cost carrier (LCC) Air Arabia has since been appointed as the official carrier for the UAE's most northerly emirate, but has, so far, shown no inclination to operate domestic UAE flights.

Rotana Jet also has plans to fly to Sharjah, which is even nearer to Abu Dhabi. As residents know only too well, however, the road between the two emirates can be clogged, especially at rush hours

Value for money airline

Vellapalath said that Rotana Jet's business model was not that of a pure low-cost carrier, but rather a 'value for money' airline. It provides in-flight catering on some of its longer services, for example.

While competition was growing, so was the market, he added, with more construction projects under way across the UAE and drawing in business-related traffic. Additionally, where many people might previously only have flown once a year on holiday, increasingly they were making multiple trips.

The carrier first dipped its toe into international services with flights to Salalah and Bahrain in August 2013.

Salalah is a major tourist destination, when the edge of the Indian Ocean monsoon, or



Commercial activities:
 “Our strategy has always been to serve secondary cities where there is demand.”

khareef, clips the Omani coast and brings rain and mist in the middle of the blistering Arabian summer. This draws thousands of people from throughout the peninsula to see the phenomenon, as wadis and hillsides suddenly turn green with plant life.

Another Oman route, to the capital, Muscat, followed in December 2013.

“Salalah and Muscat are big tourist draws,” said Vellapalath. “Our strategy has always been to serve secondary cities where there is demand. Until such time as we started to serve Salalah a lot of people would actually drive there.

“Salalah initially was seasonal, now the trend has really changed and we can see a good year-round service. Quite a lot of people staying in Salalah are either from Abu Dhabi or Al Ain.”

Bahrain and Kuwait have also been added to the route map and Rotana Jet has found that leisure traffic is now two-way between Abu Dhabi and various Gulf destinations: “There are now quite a lot of people coming to Abu Dhabi

because of the touristic importance it is gaining. Part of our strategy is to promote Abu Dhabi as a destination. We intend to expand to more Gulf Cooperation Council (GCC) destinations quite soon.” Saudi Arabia and Qatar are being studied.

The Bahrain route is also attracting traffic that then connects on to Sri Lanka via Rotana Jet’s most ambitious service so far, which began in spring 2014.

Traditional labour traffic

“Sri Lanka out of Abu Dhabi is becoming a popular tourist destination, in addition to the traditional labour traffic. We’re just venturing into that. So far, we’ve had a great response from both locals and Sri Lankan nationals and small traders who travel between the UAE and Sri Lanka.”

Rotana Jet started its Sri Lankan service with a thrice-weekly frequency, but this is being increased to six times weekly as new aircraft join the fleet. Three flights are going to the Indian Ocean island’s main international airport

outside Colombo, the capital, while the other three transit Colombo en route to the new Mattala Rajapaksa International Airport in the south of the island before flying direct back to Abu Dhabi.

The latter airport is rapidly becoming a strong route, helped by the fact that there is little competition, said Vellapalath.

The expansion has not been without problems. In June, Oman’s Public Authority for Civil Aviation temporarily suspended Rotana Jet’s flights to the sultanate for breaches of unspecified ‘operational regulations’. Vellapalath said the matter revolved around documentation and services restarted the following month.

Rotana Jet is seeking new routes, particularly where ‘open skies’ agreements are in place.

Meanwhile, the company’s corporate business continues in parallel, with its aircraft carrying passengers that range from members of the region’s royal families to football clubs.

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 **BOEING**



While BAE Systems was officially notified by the UAE Government in December 2013 that the Eurofighter was no longer in contention to win the estimated \$6 billion dollar fighter contract, it will not stop the company from marketing the aircraft at IDEX.

THE IDEX FACTOR

Abu Dhabi plays host to the region's largest defence show this month.

Alan Warnes looks at the likely highlights from the air power sector.

PICTURES: ALAN WARNES

As the Gulf region's largest defence show, Abu Dhabi's International Defence Exhibition and Conference (IDEX) has a reputation for being the place where the high flyers assemble.

The big spenders of the Middle East will come face-to-face with some of the largest aerospace companies in the world at the Abu Dhabi National Exhibition Centre from February 22-26.

With US and European defence spending on the decline, IDEX is seen as a showcase for most western companies to market their wares in the Middle East.

This year's event will see the first unmanned systems exhibition (UMEX) in addition to the Naval Defence and Maritime Security Exhibition (NAVDEX), live demonstrations and conferences.

Iran was once the main threat to stability in the region that led to the likes of the UAE and Saudi Arabia buying modern air defences and fighters. Recently, however, the threat of terrorism has seen

the Middle East super powers looking more at airborne surveillance, close air support and urban warfare tactics.

All these new capabilities mean that IDEX will enable the UAE's growing aerospace industry to forge new partnerships or acquaintances with international aerospace companies.

In recent years, the UAE has built up its own large defence businesses with Tawazun Holdings and Mubadala being the biggest.

The Tawazun economic programme was established in early 1992 to diversify the UAE's economy and create new ventures in various sectors by partnering with international defence contractors.

Initially known as the UAE Offset Programme Bureau, the Tawazun Economic Council established Tawazun Holding in 2007 as a company to develop ventures through industrial

Continued
on Page 52

CONTINUED FROM PAGE 51

partnerships and strategic investments to add value to the UAE's manufacturing sector across a number of areas, including defence. This was in line with the directives of the UAE president, His Highness Sheikh Khalifa bin Zayed Al Nahyan.

As a result, the Tawazun Economic Committee has been established to liaise between the Tawazun Economic Council and the UAE Armed Forces General Headquarters (GHQ). It checks on the effective management of defence contractors' performances and reviews the GHQ's procurement processes and purchase requirements.

Guided weapons

South Africa's Denel Dynamics signed a deal with Tawazun Holdings in September 2012, which created a new firm near Abu Dhabi to develop and manufacture guided weapons. This has allowed the new Tawazun Dynamics partnership to offer GPS-guided glide bombs to Middle East nations and other customers around the world. The GPS-guided Al Tariq (known in South Africa as Umbani) is Tawazun Dynamics' flagship product, which comes as a family of strap-on bomb kit systems custom-made for the 500lb Mk81, 1000lb Mk82 and 2000lb Mk83 bombs.

Utilising GPS/INS guidance, the Al Tariq provides users with all-weather, day/night operational capabilities.

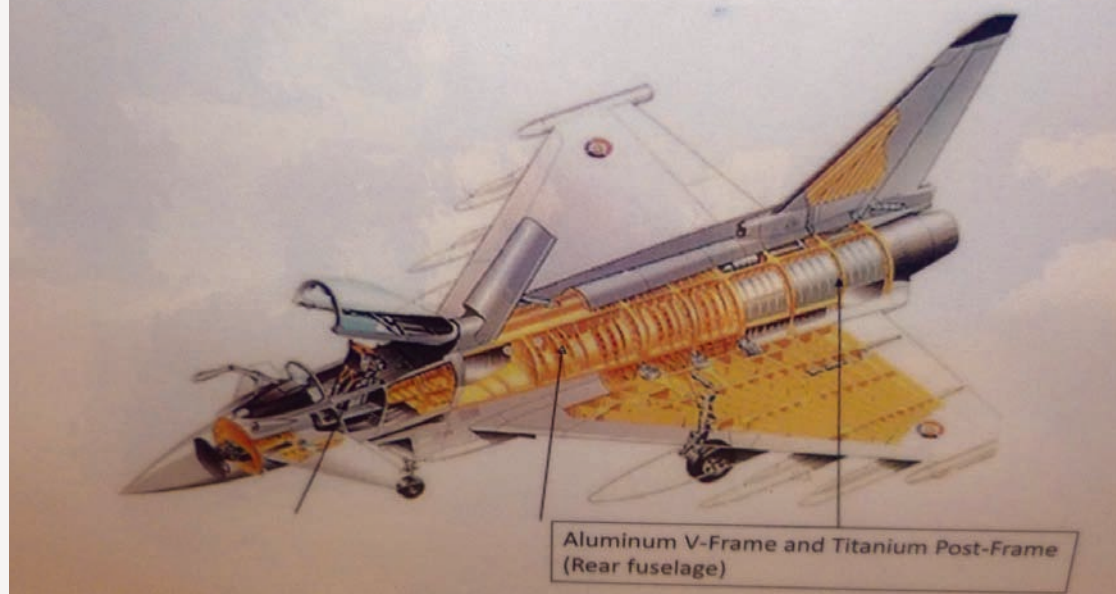
The UAE Air Force and Air Defense (UAEAF&AD) is already using them on its Mirage 2000-9s, and several countries have shown interest, including Pakistan.

After Tawazun Dynamics was awarded a contract in 2013 by the UAE armed forces for the purchase of the Talon laser-guided rocket (LGR), Raytheon Missile Systems announced on September 15, 2014 that it had begun production under a \$117 million contract.

"Full rate production of the Talon LGR is a significant milestone for Raytheon and the programme," said Darryl Kreitman, Raytheon Talon programme director. "The UAE defence manufacturing industry participated in the development of this revolutionary system and the end-user can now benefit from this laser guided precision capability."

Under the contract, Raytheon will maintain full integration of the Talon system into the UAE armed forces to include logistics, training and warranty support.

The Talon LGR is a low-cost, digital semi-active laser guidance and control kit co-developed with Tawazun. Talon integrates directly to the front of the legacy 2.75in Hydra-70 unguided rockets, using



the standard M260/261 launchers, and requires no hardware or software modifications to the launcher or aircraft platform.

Raytheon announced, on May 4 last year, that, in conjunction with the US Army, it had completed the certification process for air worthiness release (AWR) of the Talon LGR on the AH-64D/E Apache Attack helicopter. The certification provides for potential operational employment of the Talon weapon system on US Army Apaches and those in international fleets like the UAEAF.

"Talon's architecture and ease of employment make it a low-cost, highly precise weapon for missions in urban environments, counter insurgency and swarming boat defence missions," Kreitman added.

In February 2013, Saab partnered with Tawazun to create a new UAE-based radar company.

Known as the Abu Dhabi Advanced Radar Systems (ADARS), it is a joint venture with 51% owned by Tawazun and

Top: Tawazun Precision Industries announced at IDEX 2013 that it would make a pure aluminium V-frame for use in the rear of Eurofighter. TPI has been listed as an accredited supplier of the component.

Bottom: UAEAF Mirage 2000-9s can be armed with the Al Tariq GPS guided munition. Working with South Africa's Denel Dynamics, Tawazun has launched the Tawazun Dynamics joint venture, which has seen the Mk80 bombs modified with a strap-on glide bomb kit system with pop out wings and a propulsion system.

49% by Saab. It will be the Middle East region's first company for the development, manufacture, assembly and integration of radar systems.

HE Saif Mohamed Al Hajeri, CEO of Tawazun, said: "This partnership with Saab will see us invest in advanced technologies to develop unique products for the defence market, which is testament to our commitment to continuously adapting and improving new technology to meet our customers' changing needs."

ADARS is working on two Saab 340 Erieye systems, based at Al Minhad, to customise the radar to the needs of the UAE armed forces. One of them made a fly-by at IDEX 2013 and the company will be eager to promote its recent work at IDEX 2015.

Another key company within Tawazun is Abu Dhabi Autonomous Systems Inc (ADASI), which was launched in 2007 to focus on autonomous systems.

While it works with unmanned ground vehicles, surface vehicles operating on water, and unmanned underwater

Continued
on Page 55



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CONTINUED FROM PAGE 52

vehicles, a big focus is its unmanned aerial vehicles (UAVs).

ADASI manages the Al Sabr programme for the UAE Air Force with a fleet of Austrian-built Schiebel S100Camcopter UAVs. Initiated in 2005 to answer a requirement of the UAE Armed Forces, the platform was developed under a joint programme between the UAE Government and Wiener Neustadt-based Schiebel. During the production phase, manufacturing of some of the major components and final assembly took place in the UAE.

Al Sabr is based on the fully autonomous vertical take off and landing Schiebel S-100, providing a live video feed within a radius of 112 miles (180kms) from the ground control station, and staying airborne for up to 10 hours.

Real-time information

The system works with a ground control station to provide real-time information and communications, as well as acting as a transport vehicle.

Around 80 S-100s were acquired as part of the overall purchase, allowing a networked capability all over the UAE.

Since being formed in 2002, Mubadala, the Abu Dhabi-based investment and development company, has entered several joint ventures with international companies.

With Sheikh Mohamed Bin Zayed Al Nahyan, Abu Dhabi's Crown Prince and deputy supreme commander of the Armed Forces, as chairman of the board of directors, it is not surprising Mubadala is an important player in shaping the UAE's aerospace sector.

Among its portfolio of businesses is Advanced Military Maintenance, Repair and Overhaul Centre (AMMROC), which was formed by a joint venture between Mubadala, Sikorsky Aerospace Services, and Lockheed Martin, to serve as a leading provider of MRO services to the UAE Armed Forces, as well as other military providers across South Asia, the Middle East and North Africa.

AMMROC is developing a state-of-the-art sustainment centre of excellence at Al Ain. In November 2013, the company won a five-year \$5.8 billion contract extension to a performance-based logistics agreement that guarantees readiness of the UAE's military fleet of fixed-wing aircraft and helicopters.

"In only three years, we have developed our local knowledge, commenced the construction of world-class facilities, and demonstrated outstanding progress," said Fahed Ghareeb Al Shamesi, chief executive of AMMROC.



The new deal, which uses a cost-per-flight-hour operating model, will enable it to increase its workforce of UAE nationals, he added.

On November 10, 2014, Illinois-based AAR Corp was selected by AMMROC to support the design, outfitting and integration of key areas of the company's state-of-the-art facility in Al Ain.

The new buildings will be one of the largest dedicated military MRO centres in the world and a tenant at Nibras Al Ain Aerospace Park, the free-zone project being jointly developed by Mubadala and Abu Dhabi Airports Company (ADAC) to support the establishment of a sustainable aerospace hub in Abu Dhabi.

Top: Mubadala hopes to sell the P.1HH Hammerhead UAV to the UAE armed forces once development has been completed. Italy has issued a requirement for 10.

Bottom: AMMROC has a contract to overhaul the Airbus AS350 helicopters of the UAE Joint Aviation Command (JAC), valued at \$3.13 million.

Mubadala has also established an advanced flight-training facility dedicated to serving global commercial and defence customers.

Al Ain-based Horizon International Flight Academy is a joint venture agreement with Abu Dhabi Aviation (ADA) to train students on helicopters, with the Bell 206 fulfilling the basic flying role and the Bell 407 for the advanced helicopter course. For fixed-wing training, the Cessna 172SP is used for single-engine flying, while advanced multi-engine operation is carried out in the Diamond DA42NG.

Pilots of the Afghanistan Air Force have recently been trained at the Al Ain facilities, as well as those of the UAE military.

Boosted its equity

In 2013, Mubadala increased its ownership of Piaggio Aerospace to just over 98% of the Italian company. A shareholder in Piaggio Aerospace since 2006, Mubadala boosted its equity in support of an industrial plan that focused on developing existing core activities and introducing new programmes to bring the company in line with industry requirements.

The P.1HH Hammerhead UAV is one such project, which is the unmanned version of Piaggio's P.180 Avanti II business aircraft. The development P.1HH made its maiden flight on November 14 2013 at the Italian Air Force's Trapani-Birgi Air Base on Sicily, Italy.

Since then, the Hammerhead demonstration aircraft has validated and fine-tuned its advanced control laws, including augmented modes, flight envelope protection and automatic flight, plus the automatic management of the ground run, both in take-off and landing.

Continued
on Page 57



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CONTINUED FROM PAGE 55

During 2014 the P.1HH demonstrator was extensively flown from Trapani to test its intelligence, surveillance and reconnaissance (ISR) capabilities with an electro-optical/infra-red (EO/IR) sensor, managed autonomously by the mission management system (MMS), which is based on the Selex ES SkyiSTAR.

These capabilities will be further tested by Piaggio Aero on the P.1HH, which will also integrate the Selex ES radar Seaspray7300E, managed by an enhanced version of the SkyiSTAR MMS.

Aeronautica Militare Italiana (AMI), which will certify the aircraft, is expected to be the first customer for Hammerhead and has expressed an interest in up to 10 of the type. The UAE armed forces will undoubtedly consider it too.

Patrol aircraft

Work is also progressing on the first of two P180 multirole patrol aircraft (MPA) ordered for the UAEAF&AD, with the first one to fly soon. The order, announced on July 10 2012, at the Farnborough International Airshow, came after Piaggio Aero signed a contract with Abu Dhabi Autonomous System Investments (ADASI), a subsidiary of Tawazun, for the development of this new special mission surveillance aircraft.

The first was due to fly in 2014 but delays have pushed it back to 2015, so it is unclear whether the real aircraft or a mock-up might appear at IDEX 2015.

Saab was selected as the MPA systems supplier after an extensive international evaluation process and the Swedish company announced on December 27 2012 that a framework agreement had been signed to develop and integrate a full suite of sophisticated airborne sensors and surveillance systems in the first two aircraft.

The MPA's first application, being developed with Saab, will be dedicated to maritime patrol. Therefore, a high-performance search radar and EO/IR sensors suite will be integrated into a sophisticated mission management system to conduct a wide variety of missions.

On February 6 2013, Telephonics Corporation announced that its RDR-1700B radar had been selected for integration in the two prototypes. According to Telephonics, the radar is the RDR 1700 G(v) 2 version of the 1700B (v) 1 with ground movement target indicator (GMTI) mode that allows the aircraft to track vehicles once it has moved from sea to ground surveillance.

On February 18 2013 an announcement by Rockwell Collins confirmed that it had been selected to develop an integrated



avionics system with touch-control flight displays for these aircraft.

The MPA's main features are an enhanced airframe, increased maximum take-off weight, additional fuel tanks and a new aerodynamic configuration with a reinforced wing, providing an increased surface and higher aspect ratio.

The new special mission aircraft will be able to fly at up to 41,000ft (12,500 metres), with an endurance of more than 10 flight hours, a maximum range of 3,300nm (6,105km) and a 350kt (648km/h) cruise speed.

Biggest threat

The biggest threat to stability in the Middle East is the rise of Islamic extremism and the threat from insurgents. Most developed nations are now looking at airborne surveillance, whether over the sea, land, or both.

When it comes to patrolling borders, the UAE's Joint Aviation Command/Group 18 gets the bulk of the work done with its fleet of helicopters and small fixed-wing aircraft. The company tasked with procuring and upgrading the platforms to meet the JAC's requirements is Global Aerospace Logistics (GAL), a joint venture between Mubadala, Emirates Advanced Investment Group (EAIG) and Tawazun.

While supporting the operational needs

Top: The first of two P180 Multirole Patrol Aircraft for the UAEAF&AD is expected to fly in 2015, following unknown delays to the programme. Piaggio is now owned by Mubadala, which hopes to open up a bigger market for aircraft, that can track over sea and over land with its Telephonics RDR 1700G(v)2 radar.

Bottom: Florida-based IOMAX armed the AT802U Air Tractor for the UAE's JAC. Weapons options include AGM-114 Hellfire missiles, GBU-12 laser-guided bombs, 500lb (227kg) Mk 82 bombs seen here, DAGR laser-guided rockets, M260 seven-round rocket launchers and GAU-19/A three-barrel 12.7mm gun pods.

of JAC, GAL has worked with Sierra Nevada Corporation in the past to upgrade its fleet of AT802 Air Tractors and Cessna 208 Caravans with surveillance systems integrated with on-board weapons. The aircraft can pick up targets, usually through the cutting-edge FLIR Star Safire 380HD turret sensor systems, track the target and destroy it with a Hellfire missile.

The Caravans have been used for this work by the Lebanon and Iraq air forces against insurgents.

Another company contracted by GAL is Highland Integrated Surveillance Systems (HISS), which has installed a common sensor suite on the JAC's AS550 Fennecs, CH-47D Chinooks and Twin Otters, that includes the StarSafire 380HD.

Meanwhile, Texas-based IOMAX weaponised the AT802 with the Hellfire, and Roketsan 2.75mm CIRIT armoured weapon system. The latter can penetrate armoured vehicles and is used primarily by the UAEAF against boats, armed vehicles and stationary targets.

IOMAX is now marketing the Thrush Commander, which was unveiled at Paris in 2013. However, it is unclear if the JAC has shown any interest.

Another option for bigger ground threats that the UAE might consider is the gun-ship. ATK is well situated on this with systems installed on the C-27J and

Continued
on Page 58

CONTINUED FROM PAGE 57

CASA CN 235. It has worked with Alenia Aermacchi on the installation of its palletised weapon system on the MC-27J, which was announced at Dubai Airshow in November 2013. ATK has also worked with Jordan's King Abdullah Design and Development Bureau (KADDB) on the AC 235 Gunship, which was unveiled at Jordan's SOFEX Exhibition in May 2014.

A single CN 295 is now also being worked on by ATK and KADDB and is likely to appeal to the UAEAF.

Every exhibition in the UAE sees the rapidly expanding Adcom Systems reveal yet another new unmanned air vehicle.

The Abu Dhabi company unveiled a mock-up of the massive, twin turboprop-powered Global Yabhon in the static display at the Dubai Airshow in November 2013 and it will be interesting to see what IDEX 2015 will reveal.

Two sets of wings

In the same configuration as the company's United 40 Block 5, the larger Global Yabhon also has two sets of wings, each spanning more than 85ft (26 metres) and no less than 18 hardpoints for weapons carriage. These can cater for a wide array of possible weapons, including Cruise missiles and torpedoes.

Ali Al Dhaheri, Adcom's chief designer, said in November that the project was well advanced and a prototype was expected to fly within about four months.

He also confidently stated that first delivery would take place within a further six months to an unspecified launch customer.

The Block 5 version of the United 40 was first unveiled at IDEX 2013 and subsequently made its maiden flight the following month on March 7. Since its debut at Dubai in 2011, the United 40, a large, staggerwing UAV, has undergone a number of changes and the Block 5 version boasts a twin-engined configuration with powerplants mounted under the wings, replacing the single, rear-engined pusher propeller design of previous variants.

Adcom says the Block 5 variant has an unrefuelled endurance of more than 100 hours flying at 30,000ft (9,145 metres) and has a maximum take-off weight of 4,410lbs (2,000kg). The UAV can carry up to 10 air-to-ground missiles and the company says it is designed for a wide variety of operations, including near real-time combat assessment, battle damage assessment, battlefield intelligence, reconnaissance, humanitarian aid, border surveillance and communications relay missions.

The company has revealed it has three



Top: Alenia Aermacchi and ATK are working together on a multi-mission MC-27J to support special operations missions. Included in the fit is a palletised weapon system with a 30mm GAU-23 chain gun and two video cameras installed on the gun and digital video recorder, all capable of being rolled on/rolled off in four hours. The UAE's JAC is known to have shown interest.

Centre: The Adcom Global Yabhon is a huge UAV with twin turboprop engines and 18 hardpoints, which could carry missiles. There is also an option to be fitted with four torpedoes, two machine guns, two grenade launchers and a cargo hold fitted with a six stations ammunition dispenser.

Bottom: Another Adcom UAV is the United 40 Block 5, which could be used by the Navy for maritime operations. One of its configurations could be equipped with 40 sonar buoys and one torpedo.

confirmed customers for the United 40 but declines to identify them. The Russia military has shown interest in purchasing at least two, but due to Ukraine sanctions this is unlikely to happen, while the example shown at Dubai 2013 carried 'Navy' titles and was equipped with a torpedo.

First delivery of a United 40 to an unspecified launch customer was anticipated by early 2014 but the company says that it will have to rapidly ramp up production to keep up with current demand.

Discussing details

It will be interesting to see what progress the UAE company, not known for discussing details of its programmes, has made with the United-40 Block 5 and Global Yabhon over the past 18 months.

Despite announcing on December 19 2013 the UAE had decided against purchasing the Eurofighter Typhoon, BAE Systems continues to plug away with marketing the fighter. The company and the UK Government has been in regular high-level discussions with the Government of the UAE regarding a range of defence and security capabilities, including the potential supply of Typhoon aircraft.

The Typhoon had been competing with

the Dassault Rafale for the prospective UAEAF&AD order for 60 new fighter aircraft, which could be worth an estimated \$6 billion. The UAEAF&AD has been examining its options to replace the current Mirage 2000-9 fleet for some years, but latterly the competition had come down to a choice between the Rafale and Typhoon.

Previously, the Rafale had been selected as the preferred type, but lengthy negotiations failed to achieve any agreement on a deal. With the Typhoon out of the equation, it is unclear as yet what the UAE's future plans are and whether or not it will go back to trying to agree a deal on Rafale once again.

Shortly after the announcement that the Typhoon had been dropped, the US Defense Security Cooperation Agency (DSCA) announced a possible foreign military sale (FMS) to the United Arab Emirates (UAE) of equipment in support of a direct commercial sale of 30 F-16 Block 61 aircraft.

The UAEAF&AD has previously taken delivery of 80 F-16E/F Block 60 Desert Falcons (55 F-16Es and 25 F-16Fs), later supplemented by one additional attrition replacement F-16E. It not only covers equipment for the 30 new F-16 Block 61 aircraft but also to support the upgrade of its existing F-16 Block 60s.

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The Super Mushshak has been a regular participant at the Dubai Airshow, both in the static and in the flying displays.

Super Mushshak marches on

More than 300 MFI-17 Mushshak/Super Mushshak piston trainer aircraft have been delivered to Pakistan and its allies so far and the figure is set to rise with the order of 20 by the Iraqi Air Force. Alan Warnes takes a look at the programme.

Despite the Super Mushshak's heritage stretching back some 45 years to 1969, when the Saab MFI-15 Safari, on which the trainer is based, made its first flight, the aircraft is still going strong.

That is because Pakistan Aeronautical Complex (PAC) at Kamra continues to invest in an aircraft it believes has plenty to offer as a primary/elementary trainer. Its operating costs are minimal compared to some of the competition, which is why Pakistan has stuck with it for so long.

When you consider the Scottish Aviation Bulldog was the MFI-15/17's biggest competitor back in the 1970s, you can understand how well Pakistan has done since taking over the aircraft.

Furthermore, with the new digital cockpit, PAC is marketing it – along with China National Aero-Technology Import & Export Corporation (CATIC) – as part of the Super Mushshak and K-8 Karakoram lead-in fighter trainer system to the JF-17 Thunder.

Several Middle Eastern countries purchased the original MFI-17 Mushshak.

The Islamic Republic of Iran Air Force (IRIAF) bought 25 from 1990 onwards and it is thought most have been transferred to the Iranian Revolutionary Guard Corps Air Space Force



A Royal Saudi Air Force Super Mushshak on the final assembly line at PAC Kamra during April 2004.

(IRGCASF). They are split between the IRGCASF pilot training school at Badr Airport and at Kashan Airport in Isfahan.

Six were delivered to the Syrian Arab Air Force as well. But, unlike the Iranian aircraft, their current status is unknown.

However, the status of the Royal Air Force of Oman (RAFO) examples is known. Three delivered in 1994 were subsequently upgraded to Super Mushshak in-country during 2002/3. They also purchased five Super Mushshaks in 2003, which are used for elementary flying training at RAFO Masirah.

In 2004, the Royal Saudi Air Force (RSAF)

ordered 20 to replace its ageing Cessna 172s. Part of the deal saw a simulator delivered as well as five PAF instructors being seconded to King Faisal Air Force Academy in Riyadh to oversee the aircraft's introduction into service.

More recently, in February 2014, the Pakistan Government announced it had signed an agreement with the Iraqi Air Force for the sale of 20 Super Mushshaks with new glass cockpits. In doing so it will mean the Mushshak is serving in three different versions across the Middle East, which hasn't even happened in Pakistan!

With sales of the MFI-15 Safari primary trainer limited to Norway (22), Sierra Leone (2) and Zambia (20), in the early 1970s Saab looked to improve the type's appeal to the military market.

It came up with the MFI-17 Supporter, with a limited ground attack capability and ability to carry 660lbs (300kg) of external stores, such as guns and rocket pods, on six under-wing hard points.

This opened up a new market for the Supporter because, unlike the Safari, it could perform basic weapons training and light counter-insurgency missions.



Two Royal Air Force of Oman Super Mushshaks fly formation close to their Masirah base. They are used for basic flying training. PICTURE: GEOFFREY LEE

It was this ability to fulfil both roles that attracted Pakistan's military, which had just emerged from the 1971 war and the possibility of further conflict.

The aircraft's tricycle fixed landing gear is robust enough to allow operations from unprepared landing strips and can also be ski-equipped. Being able to operate in all conditions suited Pakistan with its contrasting terrain.

Pakistan's military took a keen interest in the MFI-17 trainer as a replacement for the air force's Harvards and Army L-19s, which were becoming long in the tooth. A 200hp (149kW) Lycoming engine, with a cruising speed of around 125kts (230km/h) and a landing speed of just 80kts (148km/h), was admirable.

With a service ceiling of around 13,500ft (4,100 metres) it meant the MFI-17 could also fly over the hilly terrains of northern and western Pakistan.

Inside the cockpit, two pilots sit side-by-side, and there is the ability to fit a third seat. With unusual slightly swept forward wings, the Mushshak pilots get an excellent view both up and down, as well as an outstanding low speed and short take off/landing capability. The aircraft

is highly manoeuvrable and meets US Federal Aviation Regulation 23 certification in utility, normal and aerobatic categories.

In June 1974, the Pakistan Government signed a contract with Saab for the delivery of five MFI-17Bs and the supply of kits that would allow them to be assembled in Pakistan. It would lead to the creation of the Aircraft Manufacturing Factory (AMF) at the Pakistan Aeronautical Complex, Kamra.

Two MFI-17s left Sweden on September 2 1974 for the PAF Academy at Risalpur. The journey involved around 40 stops and culminated in an evaluation by PAF instructor pilots. Several improvements were suggested in the cockpit, and delivery of the semi knocked down (SKD) kits began in October 1974.

Under Phase 1, AMF launched production in June 1975 of both the SKD and completely knocked down (CKD) kits, which, by 1982, had produced 92 Mushshaks. For Phase 2, the Mushshak was built from raw materials, initially at PAF Academy Risalpur, until the production line was set up at PAC Kamra.

In 1982, Saab stopped supporting the MFI-17 Supporter, but AMF was already supporting the

Pakistan aircraft and full-scale production was well under way with the first indigenous Mushshak being rolled out in December 1983. Between 1983 and 1995, AMF built 188 Mushshaks.

In the Pakistan Air Force, the aircraft served the Primary Flying Training Wing at PAF Academy Risalpur, as well as all the base station flights. The Pakistan Army used them for forward air controlling, recce and transport.

The PAF acquired the majority of the Mushshaks but there were also some breakthroughs overseas – to Oman (3), Iran (25) and Syria (6).

In 1995 AMF launched the newer improved Super Mushshak, which made its first flight on August 15 1996. With its six cylinder Textron Lycoming 260hp engine, the aircraft could now operate at a cruising speed of 125kts (230 km/h), around 40 knots (90km/h) faster than the original.

Another improvement was the cockpit's air conditioning system. Despite the aircraft being flown in so many countries where temperatures regularly reach 50C, the original system was based upon

Continued
on Page 62



CONTINUED FROM PAGE 61

a Swedish environment not renowned for its scorching temperatures!

When the air conditioning unit was put into the new Super Mushshak, it caused the weight to increase, so power was reduced. "We thought we could overcome this by introducing a more effective three-bladed propeller but, unfortunately, it affected the engine," explained air commodore Abdul Hague, deputy managing director AMF. "We replaced the 200hp Lycoming IO360A1B6 engine with a more powerful 260hp Lycoming IO540V4A5. In doing so, the cruise speed jumped from 125 to 165kts and shortened take off distance, although the landing distance remained the same because of the additional weight."

The PAF ordered approximately 50 Super Mushshaks and, rather than acquiring brand new aircraft, the new upgrades were simply integrated into the original Mushshak airframe. The first aircraft was handed over at Risalpur on May 16 2001 and all the original Mushshaks have now been replaced.

Original aircraft

The Pakistan Army did not follow the air force, preferring to stick with its original aircraft, much to the disappointment of PAC. The Army did, in 2001, evaluate a Super Mushshak, driven by a three-bladed Hartzell propeller, for improved ground clearance from rough airstrips, but dropped its interest.

Having marketed the aircraft throughout the Middle East, AMF clinched its first military overseas Super Mushshak sale in late-2003 when the RAFO purchased five new aircraft and upgraded its three original ones.

Developing a new glass cockpit for the Super Mushshak will allow pilots an easier transition from this 70s era training aircraft into a 21st century jet trainer with all its latest avionics.

There are now real efforts to sell more Super Mushshaks and upgrading them with a glass cockpit will help. While the Mushshak has civil certification, the Super Mushshak never did and PAC Kamra is now rectifying that.

If AMF succeeds with its plan to try and introduce the K-8 to third world countries as a lead-in fighter trainer to the JF-17 Thunder, these air arms will also need a good primary trainer and the Super Mushshak could probably fit the bill.



Above: Super Mushshak (left) and Mushshak (right) go nose to nose in front of the AMF final assembly hangar.

Left: Five Super Mushshaks are seen awaiting the next stage of production at AMF in October 2014. These are destined for the Iraq Air Force, which ordered 20 in early 2014.

Right: The Super Mushshak cockpit has been integrated with a digital cockpit, which the Iraq Air Force will have in its new aircraft.



Putting it all together

Super Mushshak production is carried out in three phases. Phase one covers the piece-part manufacturing in the AMF halls. This is where the common structures for the JF-17 and Super Mushshak are made. Some end up being for the Mushshak and others build the JF-17. The Super Mushshak's wing, alone, is made up of 227 parts.

The structure is built up with the fuselage and wings, just as the original aircraft were, with the same tolerances.

The second phase sees the fuselage being put together inside a jig, where six production workers take around 15 days to assemble around 60% of the fuselage. Rivets, nuts and bolts are fixed into the seven jig locating points for the fuselage, allowing the wing to be fastened. The other 40% is built on the floor over another 15 days, where more parts are added, including the firewall between the engine and the cockpit. This ensures the engine does not get pushed through into the cockpit and crush the pilots, should there be an accident.

Old Nygge Aero fuselage drawings, with some words still in Swedish, are fixed to the wall in the workshop to assist those building the aircraft.

In a workshop next to the jig area are the wing structures. Each wing is built in two jigs, with a left and right wing going in the structure and later skinning jigs. It allows wings for two aircraft to be assembled at one time.

Spars are placed into the two wings and then clicked into place with a fastener. Fuel tank pipes are inserted afterwards. They are both worked at the same time, so there is no difference in maintaining the design tolerances of the matching wings. Two airframe fitters then skin the set.

Once the wings and fuselages are ready, they are taken to the final assembly hangar next door and mated, before further tests to check the two wings and fuselage are aligned correctly. Then the seats and avionics are inserted and the Hartzell propellers are added.

The whole process takes about three months. Once flight-tested they are painted.

Volga-Dnepr Technics: Opening new horizons in MRO

VOLGA-DNEPR GROUP



VOLGA-DNEPR TECHNICS

Volga-Dnepr Technics is a separate business unit within Volga-Dnepr Group which provides maintenance, repair and overhaul services for Western and Russian-manufactured aircrafts. VDT was established in 2008 and was formed from existing business units and new MRO organizations, VDT provides a wide range of MRO services for aircraft produced by International and Russian manufacturers.



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Colonel Salah Al-Mansoor, of the Royal Bahraini Air Force's planning headquarters, outlined the force's roadmap for its future fighter force at the International Fighter Conference in London. Jon Lake reports.

Bahrain spells out its fighter plans

The F-16 will remain the backbone of the Royal Bahraini Air Force (RBAF) for some years to come, although there are aspirations to acquire a new platform. That was the message from colonel Salah Al-Mansoor, when he spoke in London recently.

Currently, the RBAF operates 17 Block 40 F-16C fighters and four D-version trainers (the survivors of 18 F-16Cs and four F-16Ds delivered under the Peace Crown programme in two batches between 1989 and 2001) as well as eight F-5E Tiger IIs and four two-seat F-5Fs.

Though the RBAF was the first air force in the Gulf Cooperation Council (GCC) – Saudi Arabia aside – to obtain modern, 'teen series' fighters, and the first air arm in the region to receive AIM-120 advanced medium-range air-to-air missiles (AMRAAM), the aircraft are now felt to be showing their age, and there are concerns that the avionics system could become unsupportable in around 10 years due to parts obsolescence.

All other Block 40 F-16 operators have upgraded their aircraft; Bahrain is now the only operator still using the original configuration.

Bahrain has reportedly been offered the same common configuration implementation programme (CCIP) upgrade that other operators have embodied (at a reported cost of \$300-400 million), but up until now has been unable to afford the cost, on top of an already funded \$55 million basic service life extension (SLE) programme for the aircraft's engines, and in the face of other defence spending priorities.

The highest-time Bahraini F-16 engines began to reach cycle limits in June 2009, requiring an overhaul that entails the replacement of some key parts, with a fleet-wide cost estimated at between \$60 million and \$80 million.

The RBAF reduced its flying schedule and

began to rotate engines with low flying hours through the fleet, and then funded the basic SLE programme to avoid having to ground aircraft.

As well as pushing for an integrated GCC response to the strategic missile, weapons of mass destruction, nuclear, cyber warfare and non-traditional threats posed by Iran and others, Bahrain recognises that the Islamic Republic of Iran Air Force (IRIAF) poses a particular threat that must be countered.

Although the GCC nations enjoy a numerical superiority over Iran when it comes to combat air, most frontline IRIAF aircraft have sufficient range to directly threaten Bahrain, and there is a growing and emerging threat from Cruise missiles and unmanned combat aerial vehicles (UCAVs).

According to Al-Mansoor's figures, GCC air forces together operate some 700 fighters, including less than 550 mission capable combat-ready aircraft, while the IRIAF operates 526 fighters, including not more than 300 combat-ready aircraft.

Under-estimate

This would seem to be an under-estimate, however. PowerPoint slides used by the colonel indicated about 25-35 F-14s in service in Iran, while *Arabian Aerospace* understands that, as a result of Project Babaiee, IRIAF F-14 numbers have increased from 28 in 2008 to 34 in 2010 and to 42 by 2011. Some 62 Tomcats are now going through the F-14AM upgrade, suggesting that the IRIAF F-14 fleet may be as much as two times larger than the RBAF's estimate.

Despite an apparent advantage in aircraft numbers, Iran's nuclear, chemical and bacteriological weapons threat makes effective air defence of particular importance.

Bahrain will continue to see the F-16 at the heart of its fighter plans.



The RBAF has concluded that money does have to be spent on the F-16 if the RBAF is to become an agile modern force capable of combined theatre operations, as opposed to a purely local air defence element. But the planned upgrade has again been delayed by budgetary issues, although some more limited work is being undertaken, with more aircraft having been painted in a low visibility colour scheme with smaller national and unit markings, and with the RBAF titles removed from the fuselage sides.

It was reported last year that a contract signature for the full upgrade was expected in June or July 2014, with the upgrade beginning later in 2014 and with the first four modernised fighters scheduled to be returned to service by late 2016 or early 2017. No contract has been signed and, with the CCIP upgrade kit production line scheduled to close in the near future, Bahrain is running out of time.

At the London conference, Al-Mansoor outlined a new timeframe for the F-16 fleet upgrade programme, which he now expected would begin between 2016 and 2017, concluding in 2019-2020 at the latest.

The RBAF recognises that maintaining



commonality is the key to long-term sustainment of the F-16 fleet so its planned avionics upgrade programme is based on the improvements being incorporated by the largest operator group, using a common avionics architecture to reduce development and logistics costs.

The upgrade is aimed at significantly increasing the combat capability of the RBAF F-16 and, thereby, enhancing operational effectiveness.

The Bahrain continuous improvement programme (BCIP) upgrade is planned to give the F-16 greater lethality, with the integration of a number of new advanced weapons. Bahrain plans to acquire a new generation of smart guided weapons, including joint direct attack munitions (JDAM) for the air-to-ground role, as well as advanced close combat and beyond-visual-range (BVR) air-to-air missiles.

The short-range missile will be the AIM-9X, while the BVR missile will be another variant of the in-use AMRAAM. "We are currently flying with the AIM-120C-7, but we are looking for the Delta (AIM-120D)," Al-Mansoor told the conference.

The new weapons will be accompanied by the integration of the joint helmet-mounted cueing

system (JHMCS) and by the Lockheed Martin Sniper laser designator pod.

The aircraft will be fitted with a new active electronically scanned array (AESA) radar system, replacing the existing mechanically scanned AN/APG-68(V)8, though exactly which radar option is yet to be decided. The options are the Northrop Grumman scalable agile beam radar (SABR) and Raytheon's advanced combat radar (RACR).

The upgrade is intended to give the F-16 expanded tactical flexibility, with a reconnaissance pod and a new electronic counter-measures (ECM) pod.

The upgraded F-16 will feature improved multi-function displays and new equipment including a high-speed databus, a digital improved programmable display generator, a modular mission computer and a full function centre pedestal display with electronic flight instruments. The effect will be a dramatic improvement in situational awareness for the pilot.

The upgrade is also intended to improve survivability and coalition interoperability, the latter being achieved through the incorporation of

Link 16 and the joint mission planning system, which will also confer faster mission planning.

The BCIP is felt to provide best near-term value, though what will follow it remains to be decided.

Bahrain is exploring a number of options, from the basic 'option 1' block 40 BCIP, to an 'option 2' block 40 Advanced BCIP, and a third option that would see the block 40 aircraft of the 1st and 2nd Tactical Fighter Squadrons gaining an advanced BCIP and with further "advanced F-16s" replacing the remaining F-5s of the 6th Tactical Fighter Squadron (the 'Fighting Sharks') "beyond 2020".

It remains to be decided whether there will be a further F-16 upgrade, or new procurement of later block F-16s, or procurement of a new fourth or fifth generation platform in the 2025 timeframe.

The eventual requirement is for a fighter with rapid response and effective loiter, capable of multi-target detection and engagement by day or night, engagement of traditional and non-traditional threats, and sustained surveillance. The Eurofighter Typhoon, Lockheed Martin F-35 and Dassault Rafale are viewed as possible options.

“The Afghan Air Force very much needs the A-29. Right now we do not have any type of aircraft that can guard the troops and provide the support.”
Major general Abdul Wahab Wardak.



A-29 Super Tucanos for Lebanon and Afghanistan

The United States Air Force (USAF) light air support (LAS) programme has finally seen the Embraer A-29 Super Tucano being exported – via the US foreign military sales mechanism – to Afghanistan and Lebanon.

Jon Lake reports.

The current Afghan Air Force LAS aircraft – the Mi-35 attack helicopter – will reach its planned out-of-service date in January 2016 and will be replaced by the 20 A-29B Super Tucanos, which promise to be able to drop precision weapons, while having the speed and range to reach all of Afghanistan.

The light attack/armed reconnaissance (LAAR) programme was originally established to provide the USAF with 100 light counter-insurgency, ground-attack and reconnaissance aircraft, with the LAS originally intended to be an offshoot to supply 20 aircraft to Afghan Air Force.

A variety of aircraft types were evaluated, including a modernised version of the twin-engined OV-10 Bronco, but the competition soon narrowed down to the Beech AT-6B and the Embraer EMB-314 Super Tucano (designated the A-29 by the Brazilian Air Force).

The Super Tucano was also evaluated under the US Navy's 2009 'imminent fury' close air support/counter insurgency (CAS/COIN) evaluation programme, which aimed to assess the value of such an aircraft type for the support of special operations.

The LAAR programme was eventually scaled back from 100 to just 15 aircraft, and these were to be used for training pilots from allied nations whose air forces acquired aircraft via the LAS project – “building partnership capacity” instead of establishing a dedicated USAF COIN wing.

LAAR stumbled, with unsuccessful bidder Hawker Beechcraft challenging the contract award to Embraer and Sierra Nevada, despite the clear superiority of the Super Tucano over the Hawker Beechcraft AT-6B Texan II.

The LAS programme, however, continued apace and, in December 2011, a contract was awarded for 20 A-29B aircraft for the Afghan Air Force for use in the light attack and advanced training roles. The contract was then re-awarded in 2013 after controversy and further delay.

A-29 Super Tucanos for LAS will be assembled at a new 40,000sqft facility in Jacksonville, Florida by American employees using parts and systems provided by American companies.

Pre-equipment, mechanical and structural assembly, systems installation, testing, and flight-testing will be undertaken in Florida, supporting 1,400 US jobs with more

than 100 US companies. Embraer will not simply export the aircraft.

The first US-built A-29 Super Tucano LAS aircraft was ceremonially rolled out in front of US Air Force and government officials, as well as industry and community representatives.

The first of the 20 A-29Bs arrived at the USAF's Moody Air Force Base in Georgia on September 26 to begin the Afghanistan LAS pilot and maintenance training mission known simply as air advisor training. This will see 30 Afghan pilots and 90 maintainers trained on the aircraft in accordance with a request by the International Security Assistance Force (ISAF) to conduct training outside Afghanistan.

Guard the troops

During the A-29 unveiling ceremony in Jacksonville, Florida, Afghan Air Force commander, major general Abdul Wahab Wardak, said: “The Afghan Air Force very much needs the A-29. Right now we do not have any type of aircraft that can guard the troops and provide the support.”

When the training mission is complete, all 20 A-29B aircraft will be delivered to Afghanistan, where they will provide air-to-ground and aerial reconnaissance capabilities to support counter-insurgency operations. They will also fulfil a limited airborne self-defence role.

As long ago as February 2010, there were Lebanese media reports that the United States was ready to provide the Lebanese army with light attack aircraft by 2013 in order to improve its reconnaissance and counter-insurgency capabilities. It was suggested that these would either be Embraer EMB-314 Super Tucanos or Hawker-Beechcraft AT-6 Texan IIs.

In October 2014, reports in the Lebanese press suggested that the Lebanese Air Force and the US Government would sign a contract for six A-29 Super Tucano light attack aircraft “within the next two months”.

Lebanon has a requirement for 10-12 light air support aircraft (which may be funded by Saudi Arabia) and is also beefing up its fleet of armed Cessna AC-208B Combat Caravans, with another requested in September 2014. At least two of Lebanon's three Caravans were modified to AC-208B Combat Caravan standards by ATK in the USA, giving them the ability to fire AGM-114 Hellfire missiles.

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The Royal Air Force of Oman (RAFO), long regarded as one of the most professional in the region, is undergoing a major modernisation and expansion programme. Jon Lake reports.

Omani Jaguars give way to a new breed

Although the last of Oman's ageing SEPECAT Jaguars was retired on August 6 last year, an additional squadron of F-16s has now stood up and procurement of the Eurofighter Typhoon is under way.

For many years, Oman's fast jet force consisted of just three frontline units, based at two major RAFO airfields.

A pair of Jaguar squadrons (Nos 8 and 20) were based at Thumrait, in the south of Oman, about 100 miles from the border with Yemen, while a further unit (No 6 Squadron), equipped with BAE Hawks, operated from the northern tip of the island of Masirah, a little more than 10 miles off Oman's Arabian Sea coast, 220 miles south of the capital, Muscat.

The Hawks included four two-seat BAE Hawk Mk 103 fighter-trainers and 12 single-seat Hawk Mk 203s, which were equipped with Westinghouse APG-66H radar, and which were Oman's first fast jets to be equipped with air intercept (AI) radar, though they lacked a beyond-visual-range (BVR) air-to-air missile.

Though assigned to the advanced training and lead-in fighter training (LIFT) role as part of the Sultan Qaboos Flying Academy, the Hawk 203s have always maintained a frontline role, and No 6 Squadron has a quick reaction alert (QRA) responsibility for the northern part of Oman.

With increasing tensions in the region, Oman decided to expand its fast jet force in May 2002, ordering 12 Block 50 F-16C/D Fighting Falcons,

becoming the 23rd F-16 customer worldwide, the fifth F-16 customer in the Arab world, and the second in the Gulf Cooperation Council (GCC) in the process.

The 12 aircraft comprised eight single-seat F-16Cs and four two-seat F-16Ds. They were delivered in 2005 and 2006 under the Peace A'sama A'safiya programme.

The first Omani F-16D was formally accepted on July 19 2005 and the first single-seat F-16C was accepted in September. The initial pair of aircraft was ferried to Oman in mid-October 2005 and participated in Oman's 35th National Day celebrations on November 18.

Third fighter unit

The remainder were ferried to Oman during 2006, where they equipped a third fighter unit at Thumrait, No 18 Squadron, augmenting the two Jaguar squadrons.

The radar-equipped and AIM-120 AMRAAM-armed supersonic F-16s revolutionised Omani air defence capabilities, giving a beyond visual range (BVR) capability for the first time. But the aircraft were also used in the air-to-ground role, equipped with 500lb and 1,000lb Mk 80-series general purpose bombs, and GBU-12 enhanced Paveway II laser-guided bombs, as well as GBU-31(V)3/B joint direct attack munitions, and CBU-97/105 sensor-fused weapons, as well as Sniper targeting pods.

The Omani F-16s were also equipped with the

BAE Systems' airborne reconnaissance system (ARS).

BAE Systems was awarded a \$27.5 million 'foreign military sales' contract in 2004 for the delivery of two ARS pods and a ground station to Oman. BAE Systems announced it had successfully completed the in-country commissioning of the pod on November 27 2007.

During the 2008 Farnborough Airshow, it was reported that Oman was at an "advanced stage" in discussions aimed at acquiring Eurofighter Typhoons, so that when the US Defense Security Cooperation Agency notified Congress of a possible sale of 18 F-16 Block 50/52 fighters to Oman on August 3 2010, there was some speculation that the Typhoon deal had been killed off.

In fact, the 12 additional F-16s ordered on December 14 2011 marked an interim replacement for the ageing Jaguar fleet, which had been eroded by attrition, and by the retirement of some of the older, higher timed aircraft.

The new batch of F-16s will consist of 10 single-seat F-16Cs and two twin-seat F-16Ds. Though the aircraft are Block 50 F-16C/Ds, like those in the first batch, they differ in detail, and are significantly more capable.

The new aircraft will be fitted with the internal AN/ALQ-211(V)4 electronic warfare (EW) system, for example, and are expected to use advanced Pantera targeting pods, while the



Oman Jaguars were retired last year.

weapons package being supplied will include new armaments, including AGM-65D/G Maverick and AGM-84D Harpoon missiles.

Where possible, Oman's 12 existing F-16s will be upgraded to the same standard as the new batch, and will be supplied with ITT Exelis AN/ALQ-211(V)9 advanced integrated defensive electronic warfare system pods, which will provide the same EW capability.

Interestingly, a different reconnaissance pod is being supplied with the new aircraft. Goodrich Surveillance and Reconnaissance Systems was awarded a \$34.3 million contract in 2012 for four DB-110 reconnaissance pods, which are due to be delivered by December 2016. BAE Systems recce pods were supplied with the first F-16s.

The first four Block 50 F-16s from the new batch left Fort Worth on their 13,500km ferry flight to the Sultanate on July 22 and were assigned to a reformed No 20 Squadron on arrival. All 12 aircraft will be in Oman by the end of November 2016.

Though there were, notionally at least, two Jaguar squadrons at Thumrait, there were only eight aircraft in service by the beginning of 2013, so their replacement by the 12 additional F-16s actually marked a modest expansion – even if they only equip one squadron where the Jaguars had two different squadron 'numberplates'!

It had been hoped that a small long-term fleet of Jaguars would have been able to remain in service until the introduction of the Typhoon but

this proved impossible – largely due to a shortage of engines, and by the delays to the Omani Typhoon order, which meant that the type is not now expected to enter service until 2017.

The Omani Typhoon procurement has been unusually protracted. In November 2008, the *Financial Times* reported that Oman was in talks with BAE Systems to purchase up to 24 Eurofighter Typhoon fighter aircraft in a deal worth at least £1.4 billion (\$2.1 billion). These were to have comprised 12 tranche two aircraft (eight single-seaters and four two-seaters) for delivery from January 2013, and 12 tranche three aircraft (10 single-seaters and two two-seaters) for delivery in 2015.

Third fighter unit

It soon became apparent that any Omani Typhoon buy would be rather smaller, with predictions for an order of 12-16 aircraft.

By 2010, the UK MoD was expressing its confidence that an Omani order was imminent but a deal failed to materialise.

In early 2011, BAE Systems sources expected a deal to be signed "within months", but again, no order was signed.

Later that year BAE Systems confirmed that negotiations for the Typhoon buy were on-going and that it was "absolutely certain" that a Typhoon order was imminent.

But it was not until January 2012 that Oman finally issued a request for proposals (RFP) to

BAE Systems for the purchase of Eurofighter Typhoons to equip one Squadron (12 aircraft), along with training and support, although the process was said to be further along than a mere RFP would normally indicate.

Finally, on December 21 2012, Ian King, the chief executive of BAE Systems and His Excellency Sayyid Badr Bin Said Al Busaidi, minister responsible for Defence Affairs for the Sultanate of Oman, signed the long-awaited £2.5 billion (\$3.8 billion) contract for 12 tranche three Typhoons (nine single-seaters and three twin-seat operational trainer variants). The aircraft will be delivered in 2017.

When the Typhoon does enter service, however, it will equip No 8 Squadron (the other former Jaguar unit) at the newly-built base at Adam in the North of Oman, about 100 miles southwest of Muscat.

This will give the RAFO three fighter bases for the first time, each holding a QRA responsibility, with Adam's squadron responsible for air defence in the north, Masirah's single Hawk unit looking after the eastern sector, and with the two Thumrait-based F-16 squadrons responsible for the south.

Further expansion is possible and, perhaps, even likely, since Oman has an option on six further F-16s and is understood to have an eventual requirement for further Typhoons – perhaps sufficient to equip a second full squadron.

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Neighbourhood watch leads to Raven choice

On October 17 last year the Royal Jordanian Air Force (RJAF) ordered eight Robinson R44 Raven II helicopters, becoming only the fifth military operator of the type. Jon Lake looks at the background to the deal.

The Robinson R44 is a single-engined four-seat helicopter developed from the original two-seat R22, sharing much the same configuration, and with a similar semi-rigid two-bladed main rotor, two-bladed tail rotor and skid landing gear.

First flown in 1990, the basic R44 was developed to produce the R44 Raven, which introduced hydraulically assisted controls and adjustable pedals, and this was introduced in January 2000.

In July 2002, Robinson introduced the Raven II, which featured a more powerful, fuel-injected Lycoming IO-540-AE1A5 flat-six piston engine and wider main rotor blades, allowing a higher gross weight and improved altitude performance.

Though widely used in the commercial world, the Robinson R44 has had relatively little success in winning military orders, with a single example sold to Bolivia, three to the Dominican Republic's Army, and four each to Estonia and Lebanon.

The Royal Jordanian Air Force (RJAF) selected the R44 Raven II to replace the fleet of 12 Hughes 500D helicopters used by No 5 Squadron, part of the King Hussein Air College at Mafraq, for primary rotary-wing pilot training. The Hughes 500s have been in service since 1981.

The decision to select the R44 came after a four-member RJAF evaluation team visited the Robinson Helicopter Company in March. While the team, led by brigadier general Walid Jaradat, were reportedly impressed by the R44's low operating and maintenance costs, Colonel Imad Ghwein revealed that it was positive feedback about the R44 from "a

neighbouring country's air force" that convinced the RJAF. The only Robinson operator in the region is Lebanon.

The Lebanese Army took delivery of its first two Robinson R44 Raven II helicopters in January 2005, and then received two more in December. These were assigned to the pilot training role, and were based at Rayak Air Force Base in Bekaa Valley. General Nouhad Zebian, the Lebanese Air Force commander, later said: "The use of Robinson helicopters has been very cost-effective and allowed the students to become experienced pilots before moving on to flying larger military aircraft. We hope to expand our Robinson fleet with even more helicopters in the future."

Large and powerful

The Lebanese found that training in the Robinsons was a useful substitute for instruction in large and powerful military helicopters, which had always proved to be extremely costly with heavy consumption of fuel, and maintenance man-hours. They were also happy with the R44's hot and high performance.

This was enough for the Jordanians, who promptly ordered an initial batch of eight R44s.

To prepare for the arrival of the R44 Raven II, 10 RJAF pilots attended Robinson's safety course and 12 RJAF mechanics received instruction on the type at the company's maintenance school.

The first four Jordanian R44s were scheduled for delivery before the end of 2014 with the second batch of four helicopters due to follow in early 2015.

The Jordanian R44s will be equipped with glass cockpits

featuring Garmin and Aspen avionics, and will use Bendix King's new military KTR909 UHF transceiver. No provision has been made for armament.

No 5 Squadron at Mafraq also incorporates a number of Aerospatiale AS350B3 Squirrels, but it is not known whether these will remain in service following the delivery of the Robinsons.

The RJAF operates a number of armed MD530FF helicopters with No 28 Squadron, part of the Prince Hashim Bin Abdullah II Aviation Brigade at King Abdullah II Air Base. These are due to be replaced by 18 Boeing AH-6i Little Bird helicopters.

As *Arabian Aerospace* went to press, there were tentative reports that another Middle Eastern air arm, in this case the Royal Air Force of Oman, had ordered the Robinson R44 Raven II to fulfil a pilot training role.

Royal Jordanian Air Force pilots relax after putting the Raven through its paces.



Qatar's National Day celebrations gave the PC-21 a chance to show-off and for fighter aircraft to get the hearts beating faster.



Qatar focuses on Rafale as air force gears up for change

All indications are that the Qatar Emiri Air Force (QEAF) is looking to replace its current 18-aircraft combat aircraft fast jet fleet with a much larger six-squadron force consisting of 72 new generation multi-role fighters.

Jon Lake reports.

Expansion looks to be on the cards throughout Qatar's air capability. In addition to QEAF looking to upgrade from its current fleet – consisting of nine Dassault Mirage 2000-5EDA single seat multi-role fighters, three Dassault 2000-5DDA fighter trainers and six combat capable Dassault Alpha Jet advanced jet trainers and light attack aircraft – Qatar is undertaking a similar expansion of the helicopter force.

Its 14 Aerospatiale Gazelles and 12 (or so) Westland Sea Kings are being replaced by 21 AgustaWestland AW139s, two Sikorsky S-92s, 22 Airbus Helicopters NH90s – 10 in NH90-NFH naval helicopter configuration and 12 in NH90-TTH utility helicopter configuration – and 24 Boeing AH-64E Apache Guardians.

With an expansion of transport capability through the acquisition of four C-17 Globemasters and four C-130J-30 Hercules, and with the planned acquisition of new AEW aircraft and AAR tankers, Qatar's first priority has been to build up its own pilot training capacity.

A new Air Force Academy – the Al Zaeem Mohammed Bin Abdullah Al Attiyah Air Academy – has, therefore, been established, and the QEAF has ordered 24 Pilatus PC-21 turboprop trainer aircraft, eight of which had been delivered by the end of 2014. During celebrations of Qatar's National Day on December 18, five of the PC-21s participated in the flypast over Doha, with a five-ship formation circling the Corniche twice before performing a split over the crowd line.

Aircraft requirement

Although no decision on Qatar's new fighter has been announced, many analysts believe that the QEAF's 72 aircraft requirement (originally framed as being for 36 fighters plus 36 options) may now be filled by two different aircraft types, with Qatar opting to split the buy to take half the aircraft from the USA and the other half from a European supplier, like its Gulf Cooperation Council partners Saudi Arabia and the UAE.

This could mean that Qatar will take an initial batch of 36 fighters from Europe, waiting for the F-35 joint strike fighter to be cleared for sale to GCC nations to meet the QEAF requirement for a second 36-aircraft batch.

Alternatively, some analysts have speculated that Qatar will split its buy from the beginning, dividing both 36 aircraft batches.

Under this scenario, Qatar would take 18 aircraft from each of two separate suppliers, standing up two operational squadrons (one with each type), setting up the required support and training infrastructure before exercising options on 36 further aircraft to form further squadrons.

Dassault Aviation, offering the Rafale, and BAE Systems, offering the Eurofighter Typhoon, submitted their best and final offers to supply the Qatari Air Force with up to 72 aircraft in September 2013, but a US foreign military sales proposal missed the deadline, being granted a three-month extension. It remains unclear as to whether the US bid was for Boeing F/A-18 Super Hornets or F-15S Advanced Strike Eagles.

Contract signature

During the second half of 2014, French sources started to report that the Rafale was Qatar's first choice after talks that had reportedly resumed in March 2014. A contract signature was predicted for Sheikh Tamim Ben Hamad Al-Thani's visit to Paris in June 2014, but no decision was taken, and the emir is understood to have discussed the possibility of a Qatari order for the Typhoon during a subsequent visit to London in late October.

France's *La Tribune* reported further talks about a Rafale deal in November 2014, and predicted that a deal would be signed before the end of the year, though in that same month Qatari minister of state for Defence Affairs, major-general Hamad Bin Ali Al-Atiyah, met US Defence Secretary Chuck Hagel and talked about Qatar's fighter requirement.

In December further reports emerged of a forthcoming Qatari order for the Rafale, with the suggestion that Qatar and France had reached the first stage of an agreement for the supply of 24 Rafales.

Though Qatar once instinctively turned to France for its defence equipment, the Gulf nation has increasingly sought to diversify the sources of its weapons, and some believe that the accession of the British Army-trained Sheikh Tamim, following his father's abdication, may have given the Eurofighter Typhoon a renewed opportunity.

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Lebanon opts for Huey II to refurbish force

The Lebanese Air Force is re-capitalising its helicopter force, replacing its ex-US Army UH-1H Hueys with newly refurbished and upgraded Huey IIs. Six Huey IIs were delivered to Lebanon on December 12 2012 and the US Defense Security and Cooperation Agency (DSCA) notified Congress of a proposed \$180 million sale of 18 more on September 19 2014.

Lebanon originally received 24 surplus US army UH-1H helicopters, ostensibly in two batches of 12, though, in fact, 16 were delivered in 1995, three in 2000 and five in 2001. One of these was lost in a fatal accident in the Neiha Mountains on May 12 2006.

The aircraft equipped the 10th and 11th Squadrons at Beirut Air Base, Beirut International Airport, the 12th Squadron at Rayak Air Base, Bekaa Valley, and the 14th Squadron at Kleyate Air Base, Rene Mouawad Airport.

The six Huey IIs delivered in December 2012 replaced the older UH-1Hs, allowing seven to be grounded. The proposed batch of 18 more Huey IIs will replace the 16 airworthy UH-1H helicopters.

To produce a Huey II, Bell takes and refurbishes and 'zero-times' a basic UH-1H airframe, re-wires it, updates the avionics (including an optional glass cockpit), and fits a new Honeywell T53-L-703 engine, combined with all new commercial dynamic system components. This gives a significant improvement in hover performance in hot conditions and an increase in maximum gross weight to 10,500lbs, while lowering direct operating costs. A comprehensive selection of mission-specific kits and customising options are also available.



Iraq selects Russian Hinds over Apache

Faced with an urgent requirement for attack helicopters to combat the threat posed by Islamic State (IS) insurgents, Iraq ordered Mil Mi-28Ns 'Havocs' and Mil Mi-35M 'Hinds' from Russia, taking delivery of these aircraft between June and October 2014.

With these aircraft in service, Iraq allowed the US offer of 24 AH-64E Apache Guardians, which would have taken many months to bring into service, to lapse.

The US plan for a rapid delivery of attack helicopters would have seen Iraqi army aviation leasing six Boeing AH-64D Apache attack helicopters (upgraded to a partial AH-64E

configuration) from the US Army to allow training to begin, prior to the supply of 24 new-build AH-64E Apache Guardians to be delivered over a three-year period.

A US Defense Security Cooperation Agency notification to Congress for the lease was issued on January 23 2014, and another, covering the 24 aircraft \$4.8 billion sale followed four days later.

Arabian Aerospace understands that Iraq is now not going to buy the Boeing AH-64E Apache Guardian attack helicopters that it requested, having failed to accept the formal offer from the US Government, which expired in August.

Qatar eyes Apache sights

The US Army has placed a \$90.6 million foreign military sale contract with Lockheed Martin Missiles and Fire Control for modernised target acquisition designation sight/pilot night vision sensor (M-TADS/PNVS) systems for the Qatar Emiri Air Force.

The number of systems was not specified, but in a July 2012 notification to Congress of a possible foreign military sale to the Government of Qatar, the Defense Security Cooperation Agency listed 24 Boeing AH-64D Block III Longbow Apache attack helicopters and a range of associated equipment, including 27 AN/ASQ-170 modernised target acquisition and designation sights.

The contract includes the production of M-TADS/PNVS targeting and pilotage systems at Orlando and Ocala, Florida. The systems will be fitted to the Qatar Emiri Air Force's soon-to-be-delivered fleet of AH-64E Apache Guardian helicopters.

Though Qatar will be the 14th international customer for the M-TADS/PNVS system, it will be one of the first international customers to receive the new version equipped with a new modernised laser range finder designator.

Mike Taylor, Apache international programs director at Lockheed Martin Missiles and Fire Control said: "The new laser range finder designator is more than two times more reliable, improves targeting performance and can be repaired or replaced on the flight line, which significantly reduces operation and support costs."

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Arabian Aerospace *editor-in-chief* Alan Peaford led a team including Dave Calderwood, Jonathan Lake, Liz Moscrop, Marcelle Nethersole and Steve Nichols for this special report from the Middle East Business Aviation (MEBA) show in Dubai. Pictures: Ian Billingham and Jeff Holmes.

MEBA breaks new ground...

The Middle East's first VIP completion centre hit a major milestone with a ground-breaking ceremony at the Dubai World Central site during the MEBA show. The \$80 million centre was announced by Abu Dhabi-based Falcon Aviation Services (FAS) at the Abu Dhabi Air Expo last February and is scheduled for completion by the end of 2015.

The first ground was cut by Sheikh Ahmed bin Saeed Al Maktoum, president of Dubai Civil Aviation and chairman of Dubai Airports, and FAS chairman, Sheikh Sultan Bin Khalifa Bin Zayed Al Nahayan.

When finished, the completion hangar will be large enough to accommodate an Airbus A380 and will include an in-house design studio for its elite clientele.

Sheikh Sultan said: "This is a significant achievement – for Falcon, for DWC and for the UAE. With the boom of the aviation industry in the Middle East, the opening of such facilities puts the region at the leading edge of aerospace technology. Falcon Aviation not only fills a niche in the VIP completion market, providing an exclusive service to aircraft owners and operators in the Middle East, it brings the UAE closer to becoming the global trade hub of the world.

"Rising competition in the industry and ever-tightening budgets have resulted in a shift in the way aircraft owners and operators are doing business. This is a complex business and we have paid careful attention to assess the needs of our customers."

FAS has partnered with Bombardier, Integrated Aerospace Alliance, CDG and Rockwell Collins for the project, which will be built by consulting architects Arkiplan.



Sheikh Sultan and Sheikh Ahmed pic up their spades for the ground-breaking ceremony.



Sovereign+ and M2 make debuts

Textron Aviation gave two aircraft debuts at MEBA – showing its Cessna Citation Sovereign+ and the new Citation M2 (pictured left) for the first time.

Bill Harris, vice president, sales, said: "The Citation Sovereign+ and Citation M2 are the latest in a string of newly certified Citations introduced in the past year that have garnered significant interest throughout the region."

Harris added that while larger jets have traditionally been most popular for business travel within the region, newly developed and efficient light jets, such as the Citation CJ3+, CJ4, M2 and Mustang, are gaining wider attention for both business travel and pilot training roles.



It may be just sand for now but XJet CEO, Josh Stewart, is bringing his global HQ to Dubai World Central.

X marks the spot for global HQ

Denver-based XJet is to switch its global headquarters from the USA to Dubai World Central (DWC) as part of its move to develop a worldwide network. "This is a realisation of our vision to continuously challenge the status quo and establish a new benchmark in private aviation," said chief executive Josh Stewart, at MEBA.

The new global headquarters will form part of Al Maktoum International's executive terminal, which will open in late 2015. XJet will also have two hangars with space for up to 25 member aircraft.

XJet's Middle Eastern credentials were also boosted by the announcement that it had won the fiercely contested bid to operate the executive terminal at King Fahd International in Dammam, Saudi Arabia's third busiest airport.



Bell rings the changes

Bell Helicopter dispatched an unusually detailed mock-up of the Bell Model 505 Jet Ranger X for display at MEBA, following the type's first flight in Canada just a few weeks before the show. The mock-up is fully representative of the real aircraft, and was intended to afford existing Bell 206 operators and potential customers the opportunity to see the new type's capabilities and spacious cabin in person, while the sole flying aircraft is busy with the flight-test programme.



Carlo Logli enjoys the moment that EASA certification was confirmed for the EVO.

Piaggio celebrates Avanti EVO milestone

Mubadala subsidiary, Piaggio Aerospace, was celebrating at MEBA as it announced the company's new Avanti EVO had received its certification from the European Aviation Safety Agency (EASA) to be followed closely by the Federal Aviation Administration (FAA).

Mubadala Aerospace owns the Italian manufacturer and the Abu Dhabi organisation has invested heavily in a new factory for the EVO and other Piaggio products, such as the Hammerhead unmanned aircraft and a maritime patrol aircraft. CEO Carlo Logli said: "The Avanti has evolved with

improved performance, comfort, reduced emissions and extended range."

Logli was disappointed not to have a real aircraft on display but had been held up with the rush to certification, especially with India where the launch customer is based.

"I really wanted us to have an aircraft here at the show but the certification process went behind schedule – I guess they always do. We wanted people to see the aircraft for real. When they can sit in the aircraft they can truly appreciate it," he said.



Ukraine switches the lights on at MEBA

A light twin-aircraft, suitable for owner-business operations, was unveiled with a new engine for the first time at MEBA as it made its Middle Eastern debut.

Ukraine's Softex-Aero was showing its innovative V-24-L four-seat new-generation light-twin, combining high performance and high safety standards through the use of modern technologies.

The V-24-L made its maiden flight in September 2012, and a second prototype joined the flight-test programme a year later.

Initially flown with a pair of 160hp Lycoming IO-320 piston engines, the aircraft is also available with optional 100hp Rotax 912 ULS powerplants and a 1,500kg maximum take-off weight (MTOW) and a lower MTOW of 1,300kg.

It features a ballistic recovery system, similar to that used by the Cirrus series of light aircraft. The type received its Ukrainian civil certification on October 24 2014.

The reported price of the Lycoming-engined variant – shown for the first time at MEBA – is \$430,000, with the Rotax-powered aircraft coming in at \$393,000.



AFC's Francois Chazelle and Christopher Condy at MEBA.

Smiling all the way to the bank

Abu Dhabi's Ittihad International Investment (III) teamed up with Dublin's Aviation Finance Company (AFC) to form Ittihad AFC Aviation Consultancy, a UAE-based venture to finance aviation projects in the EMEA region.

Headed up by former corporate pilot and investment banker, Chris Condy, the new company is aimed at underwriting larger fleet orders for both the commercial and private aviation sectors.

It has invested more than \$330 million in loans and pre-delivery payments for Bombardier types, including a 10-aircraft Challenger 605 order for VistaJet.

Ittihad is a family owned business based in Abu Dhabi.



Wallan's Dubai spending spree

Saudi Arabia's Wallan Aviation gave MEBA a sales boost with deals for a couple of business jets and three helicopters.

Chairman, Saad Wallan, signed contracts for a Dassault Falcon 5X – the first in the region – a Bell 429, and a pair of Bell 505s, and added a Cessna Citation Sovereign by the end of the show.

Wallan has been the exclusive agent for Cessna in the Middle East since 1999, and for Bell in Saudi Arabia since 2010.

He said that the Bell 429 had already been sold to a Government department in Saudi Arabia but that Wallan Aviation would be using the 5X for its charter business.

The Bell 505s have not yet been sold. "Finding customers for these aircraft will not be difficult – for training or light corporate roles," Wallan said. "Bell has produced the right product at the right price.

"We have been lobbying on behalf of private aviation in the kingdom for 20 years," he added, "but the government is now opening up more airspace for use by private operators."



Airbus's Chadi Saade and Benoit Defforge with a model of the A330-200, which will feature the new Summit interior.

Airbus offers Summit different

Airbus introduced its new wide-body VIP cabin concept to MEBA. Launched initially for the A330-200, the Summit programme is geared to both private and government customers.

It features a VIP section at the front of the cabin and airline-style seating at the rear, with a large dining/conference room in the middle of the aircraft. The latest iteration also features an interior especially geared to cater for Arabian tastes.

Benoit Defforge, managing director Airbus Corporate Jets said: "We aimed this modular concept particularly at government delegations, as well as private individuals in this region. We know our customers in the Middle East often prefer wide-bodies over narrow-bodies and that privacy is important to them, which is why we have constructed the zones as we have."

He added that most customers wanted the ability to carry more people non-stop around the world. The Airbus ACJ330 is based on a proven reliable technology with support centres internationally.

The aircraft features a bedroom with en-suite bathroom at the front, followed by an office, a conference and dining room and a working area.



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Alan Peaford reports from the Middle East Business Aviation Association Conference (MEBAC) in Dubai.

Business and commercial must take up the challenge

The business aviation sector's continued growth in the Middle East is key to both strengthening regional and international ties and accelerating commercial and economic success.

That was the message from HE Saif Mohammed Al Suwaidi, director general, Dubai General Civil Aviation Authority (GCAA), who gave the keynote speech at the Middle East Business Aviation Association Conference (MEBAC) ahead of the biennial regional business aviation show.

Forecasts shared by MEBA's founding chairman, Ali Al Naqbi, showed the region's business aviation sector will be worth \$1.3 billion by 2020, with 1,200 business aircraft registered across MENA.

Al Suwaidi said that there was a sense that the commercial aviation community drove everything that the GCAA did. But there were strong relationships that tie both the commercial and business aviation sectors together, he said.

He added: "We must continue to progress developments for air transport but also strengthen cooperation between the two sectors."

He said the Middle East as a whole, including the UAE, could enjoy greater benefit from a more regional approach to the corporate charter market.

"Many of the region's business goals can only be met by private charter, so it is crucial that this gets the support it needs," Al Suwaidi said.

Environmental impact

He also congratulated the business aviation community for working to reduce its environmental impact.

"Although the business aviation sector outputs a relatively small amount of greenhouse emissions compared with the commercial sector, its efforts to reduce them are just as important," he said.

Finally, he praised the International Business Aviation Council (IBAC) – the council of business aviation associations from around the world. He said its efforts to establish policies for the business aviation industry were crucial for the sector's continued success.

The MEBAC event also highlighted some of the challenges that the regulators – and the operators – were facing.

Walid Al Rahmani, the GCAA's director policy regulation and planning - safety affairs, said the aviation authorities recognised the complaints by the business aviation community that the sector is over-regulated.

One of the key issues is that some Middle East countries, such as the UAE and Bahrain, adhere to European Aviation Safety Agency (EASA) regulations, while Saudi Arabia, for example, follows Federal Aviation Administration (FAA) rules.

"To make matters worse, some countries in the region still



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CONTINUED FROM PAGE 81

adhere to old Joint Aviation Authority regulations, which are extremely out of date, unlike EASA regulations, which specify some differences between airlines and private charter operations,” Al Rahmani said.

“Those differences are not as flexible as the business operators would wish and focus more on the complexity of operations, rather than the nature of the operation itself.”

For example, he said, frequently the number of ‘post holders’ required is higher than really necessary for small charter operations.

But Al Rahmani argued that authorities were recognising this and becoming more flexible.

Both the GCAA and the Kingdom of Bahrain, with which it cooperates, said they are willing to issue waivers to operators they know and trust that allow them to combine some post-holder positions subject to specific conditions. Al Rahmani added: “I urge operators to come forward with waiver requests.”

Regional inspectors

Ahmed Al Nemah, acting under secretary for Bahrain’s Civil Aviation Services added: “We are cooperating with the UAE; our hope is that others will follow suit.” He explained that the lack of regional inspectors able to offer EASA line checks on different types of jets in the Gulf was also forcing such cooperation.

But hopes of a ‘single Arab sky’ cooperation across the regulators in the Middle East are slim, according to Lasse Rungholm, CEO of Operations, Maintenance and Supply-Europe.

Rungholm was also critical about the muddled thinking and approach to business aviation by EASA. He said its third-party operator rulings made it difficult for foreign operators to fly in Europe, and added that they were “hampering the industry”. He urged other countries to “fight against this protectionism” by imposing similar restrictions on European operators flying outside the EU.

Meanwhile, the conference addressed another major issue affecting the future of business aviation – recruitment.



Captain Samir Sajet:
“None of them do it for the money. We all do it to save lives.”

Danger pilots add food for thought

Business and general aviation as a sector incorporates a number of different roles, ranging from VIP transport through to medevac and humanitarian flights.

At the MEBAC event, delegates heard first-hand about some of the greatest challenges.

For example, when is it okay to run an operation where your pilots are at risk of being killed or kidnapped during the course of their job?

“When you are saving lives,” said captain Samir Sajet of the United Nations World Food Programme (WFP).

Sajet’s pilots know well the risks involved in flying into war-torn, disaster-filled or Ebola-stricken areas. They go into the Sudan, Iraq, and Afghanistan. However, he explained: “None of them do it for the money. We all do it to save lives.”

Sajet was speaking at MEBAC as part of the ‘fly and feed’ initiative, which MEBAA sponsors.



He had landed on the morning of the conference from Siberia, where he had been sourcing a helicopter to bring more supplies into Sierra Leone and Liberia, where people are dying in their thousands from the Ebola virus – the cruellest disease outbreak to hit humanity in years.

WFP is the world’s largest humanitarian organisation and benefits 100 million people in 75 countries.

Sajet concluded: “One million people live in chronic hunger, which is the world’s greatest solvable problem. Just 50 US Cents would feed a mother and child for a day in many countries.”

MEBAA’s ‘fly and feed’ initiative enables operator members to donate US\$20 to the WFP for every flight.

Chairman, Ali Al Naqbi, handed over \$25,000 on behalf of the organisation. “With more than 230 members, our potential contribution to this world hunger fighting charity could make a real difference,” he said.

Figures from manufacturers and other forecasters suggest that commercial airlines will swallow up all of the pilots currently in training and business aviation will be unable to meet its crew requirements by 2020.

Scott Macpherson, president of flight training provider TrainingPort.net, questioned the IATA age restrictions and suggested raising retirement ages to bring more “silver haired wisdom” into the cockpit.

The conference agreed that the sector is in a ‘Catch 22’ situation in terms of attracting pilots. Although there are plenty of young people available, there are not enough training captains or experienced officers to bring them up to the standards required by corporate operators. As low-hour qualified crew, they are not often experienced enough to land comfortably in difficult fields or fly through severe weather systems. There was recognition that, because of the flexible demand of business aviation, the flying is much more difficult and, even in the air transport world, there was a lack of experience.

Training planning

Captain Marwan Atalla, CEO of Jordan’s Ayla Aviation Academy, said: “There is not a pilot, but a captains shortage. There is a severe lack of training planning from commercial airlines, which have strategies for several years for equipment and infrastructure.”

Consequently, the pool of pilots shrinks year-on-year.

Another issue is that costs are so high for training. It costs around \$180,000 to become a commercial pilot, which is a daunting figure for a young person at the start of their career.

Macpherson added: “Flying is not glamorous any more. We need to focus on marketing it to young people.”

However, Atalla pointed out that, dollar for dollar, pilot training offered one of the best career returns on investment once pilots gained a greater depth of experience. He said that sophisticated simulators could help address the problem by providing individually geared on-going training.

Jeddah-based aviation services and operations provider Nexus is becoming a global brand as Alan Peaford reports.

Nexus growth is custom built

With a new regional base in China, Nexus, the Saudi Arabian flight support and flight operations company, has not just filled a major gap in its service reach it has also achieved its goal of becoming a serious global brand.

In the past two years it has swept across four continents and made a major acquisition into one of the world's most recognised safety brands.

But for company president and chief executive Abdulla Al-Sayed, the group's leadership will stay very quietly in the background.

"We are not just charging across and putting our stamp on things," Al-Sayed said. "We are driven by local beliefs and local customs in the countries where we operate. We are very clearly thinking internationally, but acting locally."

Al-Sayed said there is nothing more pleasing than hearing from a customer that the Nexus service is "delivered to the top international standards, but you talk my language".

From its bases in Saudi Arabia and Bahrain, Nexus has become a master at managing service in partnership with top suppliers such as FlightSafety, and is rolling out a successful business model across the globe.

"Africa is really important to us," Al-Sayed said. "Our headquarters there is in Kigali, Rwanda. That is a wonderful place and is not only a hub but also a landmark for aviation in Africa. Other African states have visited Kigali and looked at the way the country is developing and asked, 'Why can't we do that?' It really can become the hub of African aviation."

In Europe, Nexus has developed a successful business in Monaco – primarily handling cargo business and with a large customer base from Russia – and in Vienna, the headquarters for its European sales efforts.

"Vienna is a wonderful spot for us, based at the very centre of Europe with great connections. It gives us great access," he said.

In India, the company has been growing with

increased demand. And this week, Nexus has signed a deal to provide training for Korean students, winning the contract in the face of strong competition from American and UAE companies.

"I think it was the fact that, after graduation, the students will get the opportunity to work with us for on-the-job training. So, as well as just attaining their licenses, they get three to six months experience of the real work," said Al-Sayed. "We have done this with students from Nigeria in conjunction with Saudi Arabia's General Authority of Civil Aviation (GACA) and had them working in Jeddah."

Global leader

The biggest success for Nexus over the past year has been the completion of the acquisition of Wyvern, a global leader in aviation risk management and safety auditing services, by Nexus America.

Wyvern provides aircraft operators with a suite of intelligence and risk-management products. Its 'wingman' safety programme is well known in the USA and Al-Sayed believes it will grow successfully across international markets by leveraging the expertise, resources and networking contacts of the parent group.

But, again, Nexus is working to ensure that Wyvern and the wingman programme maintains its independence and transparency.

"We have a new board of directors, including Vincent Santulli, who was chairman and CEO of NetJets Europe and formed NetJets Middle East. There is Shawn Vick, who has led large organisations in the airframe manufacturing, MRO and FBO operations. Then we have Nicholas Sabatini, former FAA associate administrator for aviation safety," Al-Sayed said.

Nexus has also widened its advisory board away from just customers. "That was an important move," Al-Sayed said. "By including non-customers we have a much broader understanding of the issues."



“We are driven by local beliefs and local customs in the countries where we operate. We are very clearly thinking internationally, but acting locally.”
ABDULLA AL-SAYED



A red arrow graphic pointing upwards and to the right, with a white curved line trailing behind it from the bottom left towards the arrow's tip.

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Business aviation is growing in Iraq with Jordanian firm Arab Wings repeating history and leading the pioneering move. This, as Marcelle Nethersole reports, is something that makes CEO, Ahmad Abu Ghazaleh, particularly proud.

Wings opens the gate to the future

The Jordanian charter unit of International Wings Group (IWG), Arab Wings, has a lot to boast about. Earlier in 2014 it won a contract to establish and manage Iraq Gate, the first private jet-company with an air operator's certificate (AOC) in Iraq.

Ahmad Abu Ghazaleh, CEO of Arab Wings, said: "Iraq Gate is expanding and we now have a lot of customers. We already have four Iraqi-registered aircraft; one King Air B200, two Hawkers 800XPs and two CRJ200s."

Arab Wings was established in 1975 and is recognised as being the first private jet charter operator in the Middle East.

"The mid-1970s were an exciting time in the Arab region. Oil revenues were up and the region was in the midst of an economic boom," explained Abu Ghazaleh.

"However, getting around the Middle East by air was difficult. Flights were few, hampering business travellers. The late King Hussein and Royal Jordanian executives, were inspired to create a business jet subsidiary in 1975 which was called Arab Wings."

Ad-hoc charter

Based in Amman, Jordan, its services today include ad-hoc charter, air ambulance service, aircraft management, dedicated aircraft for special missions and a certified aircraft maintenance centre. It is also certified to do handling services out of all airports in Jordan.

"We are a Bombardier maintenance centre and are looking at a joint venture with an international MRO company," revealed Abu Ghazaleh. "While we have had offers, we have yet to decide who to go with."

Together with Dubai-based subsidiary Gulf Wings, which opened in 2009, Arab Wings operates one of the largest managed and owned fleets in the region, ranging from Gulfstreams and Challengers to Hawkers and King Air. It also recently added wide-body Lineage 1000 and, in December added a BBJ – under the management of Gulf Wings. This comes after demand from customers for the wide-body aircraft.

Abu Ghazaleh said the most popular jets were the Legacy 650 and Challenger 604/605, but added that, in terms of a reliable aircraft, Gulfstream was on top.

The company has also seen a growth in aviation training. IWG owns the Royal Jordanian Air Academy (RJAA) and is the largest flight academy in the region, with 1,300 students.

"We are very advanced right now in terms of education in aviation studies. We have a large number of students and are attracting more," said Abu Ghazaleh. "In 2013 we were



awarded a contract by the US Air Force to train students. That was a big credit to us.

"We are training more than 450 pilots from all over the Middle East at the moment. We are flying 28,000 training hours a year. The rest of the students are made up from the technical side of training."

The company uses simulators, including the CRJ 700, the AST 3000, the Alsim ALX and the Mechtronix Ascent FNPT II. It has also taken 118 Chinese student pilots under its wing; they will live in Jordan and train for two years.

Abu Ghazaleh said: "Since 2008, we've recruited around 8,000 students, including commercial pilots, technicians and people on refresher courses. We have had 5,000 pilot and engineering graduates in the past 12 years."

IWG also owns the Queen Noor Technical College (QNTC), which trains students as air traffic controllers, as well as offering refresher courses. It grants diplomas and degrees in aviation studies.

Something else the company is proud of is its intake of female students. "We graduated the first Middle Eastern female pilot and now we have a good flow of females, which is wonderful to see," said Abu Ghazaleh.

The company's MRO training started in 1998 and the academy was privatised in 2005. It opened a facility in Aqaba 2008.

"We are training more than 450 pilots from all over the Middle East at the moment. We are flying 28,000 training hours a year."

AHMAD ABU GHAZALEH



TURKEY HELPS TRANSPORT SOMALIA INTO A NEW AGE

Traditional links between the Arab world and Somalia are being reformed as the Horn of Africa country enjoys its most stable period in recent history.

*But, as **Martin Rivers** discovers, it is Turkey that could be reaping the rewards. Pictures by **Ian Billingham**.*

In most places around the world, working in civil aviation is not considered to be an especially dangerous calling.

Somalia, however, is not most places.

Just before we travelled to Mogadishu for this special report, Ali Mohamed Ibrahim, the general manager of Somalia's Civil Aviation Authority (SCAMA), was attacked by gunmen en route to his office.

The assassination attempt killed his driver and bodyguard but Ibrahim managed to escape with his life. He is now receiving medical treatment in Istanbul, and we wish him well.

Such incidents are, regrettably, not uncommon in Somalia. Two years ago, Ibrahim Iman Halane, the managing director of Mogadishu's Aden Adde International Airport, was killed in another attack presumably by Al Shabaab, the militant group spawned from Somalia's former ruling Islamic Courts Union.

Despite losing most of their urban power bases in recent years, the jihadists continue to wage guerrilla warfare across the country with a brutal campaign of suicide bombings, shootings and kidnappings.

Somalis, however, are unlikely to be cowed by such threats. Having endured two decades of civil war since the collapse of Siad Barre's regime in 1991, they are steadfastly rebuilding the institutions that most countries take for granted. A new federal parliament was



Said Korshel: "When you see Turkish Airlines going to Somalia, it becomes the same as going to New York, London, Dubai. It gives Somalia a safe reputation, which is really important. We are so grateful to Turkish Airlines for this."
Insets: Mogadishu airport and street scenes in the city.

established in August 2012, with lawmakers choosing Hassan Sheikh Mohamud as their president.

While the political process gathers steam – national elections are now planned for 2016 – members of the Somali diaspora are flocking back in ever-greater numbers, eager to play their part in rehabilitating the war-ravaged country.

They are emboldened by seeing the tangible difference that other returning Somalis have already made.

"I came back to the country in 2004. Before then I had lived in Canada since 1991," explained Said Korshel, Somalia's minister of Air and Land Transport.

"Now, my sister, she is an MP. My wife, she is an MP. The reason we came back is just to help the country try to recover, to do the best we can. As the minister of transport I was very happy to see the changes there have been; in the media, you cannot really feel what's going on in the country.

"Outside Mogadishu there are no real roads, so civil aviation is very important in Somalia," he continued. "Each local city is making its own airstrip, so you can fly from Mogadishu to any location in the country. There's a lot of Somalis who are now investing in small planes to make these connections."

For the Somali diaspora – centred on the

United Kingdom, Scandinavia and North America – aviation also provides a crucial connection with the homeland.

It is a connection that, for now at least, is served exclusively by Turkish Airlines, the only major international carrier flying to Mogadishu.

"When you see Turkish Airlines going to Somalia, it becomes the same as going to New York, London, Dubai," Korshel emphasised. "It gives Somalia a safe reputation, which is really important. We are so grateful to Turkish Airlines for this. Otherwise nobody would come here. They took the risk, and they showed that it's safe."

Turkey's flag-carrier launched its twice-weekly service from Istanbul in March 2012, later boosting frequencies to four times weekly and incorporating a stopover in Djibouti.

Kayhan Bilgili, Turkish Airlines' country manager for Somalia, said load factors on the route are strong and it could become a daily service.

"Istanbul works perfectly," Korshel added, referring to the mega-hub's huge intercontinental network. "The next day you can go to anywhere you want. Wherever Somalis live, they should be connected [to their homeland]. That's the priority for us."

While Istanbul serves as a bridging point for Europe and North America, two regional hubs open up the rest of the world to Mogadishu.

Dubai unlocks easy connections with the Middle East and Asia, and is served by all three of Somalia's home-grown carriers: Jubba Airways, African Express Airways and Daallo Airlines. Nairobi, meanwhile, facilitates onward travel to southern, central and west Africa. It is again served by all three domestic carriers, as well as Fly-SAX, a subsidiary of Kenya's Fly540.

Scheduled flights are operated to just four other foreign cities – Djibouti, Aden, Jeddah and Sharjah – while about one third of all departures from the capital are domestic services. The main destinations are Kismayo in the south, Hargeisa, Bosaso and Berbera in the north, and Baidoa and Galkayo in central Somalia.

Ethiopian Airlines is the only other scheduled foreign operator in Somalia, serving Hargeisa, the capital of the semi-autonomous north-western region of Somaliland.

But, following two years of trouble-free operations by Turkey's flag-carrier, a growing number of airlines are now evaluating the Somali capital.

"After Turkish Airlines started to fly here, it opened the way for international flights," confirmed Mohamed Egal, the deputy general manager of SCAMA. "It created a lot of confidence among the other commercial airlines. They are willing to come and do business in

Said Korshel, Somalia's Minister of Air and Land Transport: "We are planning to establish Somali Airlines again as the national carrier. It's not going to be only a government institution; we want to give other companies – Jubba (right), African Express, Daallo (bottom) – a chance to join together, and each one take a share and create a big Somali Airlines."



CONTINUED FROM PAGE 89

Mogadishu; they see opportunities in Mogadishu."

Bilateral agreements have been updated with Egypt, Kenya, Ethiopia, Rwanda, Yemen, the United Arab Emirates and Oman. Talks, meanwhile, continue with Uganda following last summer's grounding of Air Uganda, which had flown from Entebbe to Mogadishu.

Pressed to identify specific airlines considering route launches, Egal noted that Flydubai, the short-haul affiliate of Emirates Airline, has sent delegations to Mogadishu "several times" to review its security arrangements. Flydubai is rapidly expanding across east Africa, having last year launched three routes to Tanzania plus one each to Burundi, Uganda and Rwanda. It will begin serving Hargeisa in March.

Negotiations have also been held with Yemenia, Qatar Airways and Royal Jordanian Airlines.

"It's not that we are approaching other countries. They are approaching us," added Mohamed Abukar, SCAMA's air transport manager. "There was an image of Somalia as a civil-war country, pirates, everyone killing each other. Now that image is changing."

As well as leaving the door open for foreign carriers to enter the market, SCAMA and the federal government are working hard to resurrect Somali Airlines, the country's historic flag-carrier, which was founded as a joint venture with Alitalia in 1964 but ceased operations in 1991.

"We are planning to establish Somali Airlines again as the national carrier," Korshel confirmed.

"It's not going to be only a government institution; we want to give other companies – Jubba, African Express, Daallo – a chance to join together, and each one take a share and create a big Somali Airlines."

Korshel accepts that a reborn, part-privatised Somali Airlines "will not be the Somali Airlines of the 1970s and 80s". In its heyday, the flag-

carrier's route network included several European cities plus an extensive footprint across Africa and the Middle East. But he insists that a more modest operation would still aid the country's economic recovery.

The cash-strapped government is, therefore, seeking out a foreign partner for investment in the project. Given that Alitalia offloaded its stake back in 1977, the preferred choice is, predictably, Turkish Airlines.

"We are happy and ready to work with Turkey," Korshel said. "If they can join and take a share of Somali Airlines, that's welcome and it would be helpful. Two or three or four planes could start Somali Airlines."

Emphasising the flag-carrier's strong asset portfolio, the minister noted that it still owns offices near Aden Adde Airport, at the KM4 junction in the city centre, and even overseas in cities like Rome and Nairobi. He further believes that insurance could be recovered on some of the planes spirited away to Germany in 1991.

Even with foreign backing, though, the project will likely be dependent on commercial assistance from Somalia's existing market players. That, Korshel admitted, cannot be taken for granted.

"If it's not possible, we should respect these companies," he stressed. "It's not up to the regulator to say only certain companies should work in this country. That's history, it's gone, it's the good old days of scientific socialism. Now is the time for competition."

Egal echoed this stance, saying that SCAMA has made its preference clear, but will not interfere with the free market.

"We encouraged them (local operators) to collect together, to merge, and be Somali Airlines," he said. "We advised them to do it, but we don't force them."

As Korshel put it: "The important thing is that we are moving in the right direction. I think we are."



TURKISH AIRLINES... SOMALIA'S BIG BROTHER

The decision by Turkish Airlines to begin serving Mogadishu in March 2012, although seemingly risky, was not unexpected.

Seven months previously, Turkey's then-prime minister, Recep Tayyip Erdogan, had made clear his commitment to Somalia by becoming the first non-African leader to visit Mogadishu in nearly two decades. His arrival came within days of Al Shabaab abandoning its bases in the capital.

With Somalia's institutions in disarray following two decades of civil war, efforts by the country to get back on its feet were always going to rely heavily on support from the international community.

Turkey put itself firmly at the vanguard of this support.

"During the summer months of 2011, Somalia faced a huge drought and famine, the worst in 60 years," explained Olgan Bekar (right), Turkey's ambassador to Somalia, from his heavily fortified city-centre embassy.



"Facing such a kind of humanitarian crisis, we started to implement a comprehensive system of programmes in Somalia.

"Our humanitarian assistance was followed immediately by development activities. Sending humanitarian assistance solves the problem for only a short time. Providing development projects; providing training for institutional capacity building – that is the most important thing."

Within the aviation sector specifically, Turkish airport management specialist, Favori, has initiated a 20-year contract to operate Mogadishu's Aden Adde International Airport, including providing ground-handling services and constructing the new terminal.

But Turkey's reach extends far deeper. As well as providing budgetary support to the federal government – about \$30 million in 2013 – Ankara is constructing roads, schools and hospitals in Somalia. Mogadishu's 200-bed Digfer Hospital, for example, was re-built by Turkey at a cost of \$58 million. Following a five-year management contract, it will be handed over to the federal government as a gift.

The Turkish International Cooperation and Coordination Agency (TIKA) and the Turkish Red Crescent run countless other projects, managing orphanages, providing free meals, and teaching rural Somalis best practices for farming and fishing.

Bekar admits that such projects will take years, even decades, to deliver meaningful change to the impoverished country. But, together with long-term political backing – signalled by the construction of Turkey's largest embassy anywhere in the world – Ankara shows no signs of cutting and running.

"Of course Somalis face enormous challenges," the ambassador conceded. "But they trust us, and we trust them, and based on this trust and confidence we try to help them in a sincere way."



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Mogadishu's new airport terminal will give the Somali capital a welcome facelift when it opens this year; just one of several projects reinvigorating the country's transport infrastructure.

Airport makeover heralds the fresh face of Somalia

Abdullahi Mohamud, Somalia's most senior immigration official, was working at Mogadishu's Aden Adde International Airport before the outbreak of civil war in 1991, and he still works there today.

Flicking between CCTV cameras on a huge widescreen display in his airside office, Mohamud said the airport has undergone radical changes for the better in recent years.

The introduction of biometric passports was among the most noticeable improvements. When Turkish Airlines launched flights between Mogadishu and Istanbul in March 2012, Mohamud's staff would seize fake travel documents on almost every Europe-bound flight. That flow of asylum seekers has since run dry, with the federal government's new E-passports proving too hard for human traffickers to forge.

Airport security has also improved dramatically since the days of Siad Barre, Somalia's Soviet-backed military dictator. Troops from the African Union Mission to Somalia (AMISOM) deserve most of the credit for this, erecting rings of steel around the gateway and defending them with their lives.

Far from glamorous

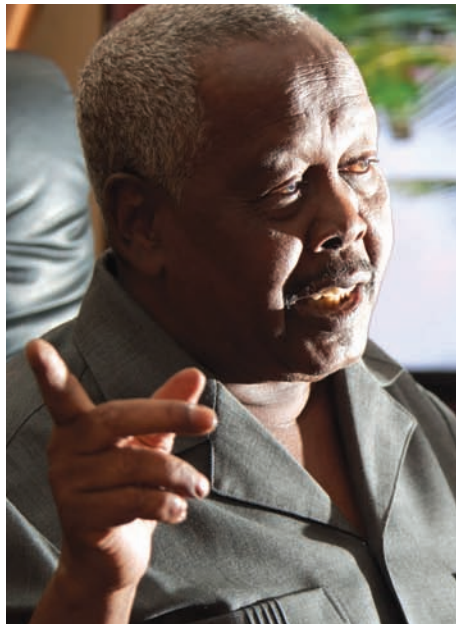
But, while Aden Adde Airport is in better shape today than at any point in recent history, it is far from glamorous. The gateway's crumbling terminal building and cramped immigration halls convey the gloomiest of welcomes to international visitors.

Little wonder, then, that Mohamud and all his colleagues are waiting with bated breath for the demolition of the entire building.

Turkish airport management specialist, Favori, began a 20-year contract at Aden Adde Airport in 2013, and at the time of writing general manager Bora Isiner was approaching the first major milestone of the agreement: the opening of a brand new terminal building with a stunning glass facade and state-of-the-art passenger facilities.

The new terminal will, in the words of Somalia's president, Hassan Sheikh Mohamud, "change the face of Somalia".

With a maximum throughput of 1,000



Abdullahi Mohamud: radical changes.

passengers per hour, it will put Aden Adde Airport on track to process 60 commercial flights per day – more than double the current volume. AMISOM soldiers will continue to secure all entrances, while 50 unarmed guards and 70 CCTV cameras will keep a close eye on activities within.

"Now that security is returning, the diaspora want to come back," Isiner noted. "And why wouldn't they? They have a beautiful country here."

Within months of the terminal opening, construction of Aden Adde Airport's new landside hotel should also be complete. Located safely within AMISOM's security cordon, the hotel will be a sanctuary for businesspeople and other international visitors who stay overnight in the capital. At present, most travellers hire a local fixer and venture into the city for accommodation.

Favori expects to see a return on its \$20 million investment within five years. Several foreign

airlines have already expressed interest in serving Mogadishu, and Isiner believes the new terminal will help turn those words into actions. The opening of an upgraded air traffic control tower in 2015 should further boost confidence.

For Transport minister Said Korshel, overhauling Aden Adde Airport is a crucial first step towards normalising the entire country's image.

"It all starts with the airport," he stressed. "When you arrive, if you see something beautiful, that becomes the attraction. So we thank Favori for investing. They are one of the first companies to invest in this country."

They may be one of the first, but certainly will not be the last. Over at Mogadishu's seaport, Al Bayrak Group, another Turkish firm, has secured its own 20-year management contract. The company is investing \$80 million in the modernisation of the cargo hub, striking a revenue-sharing deal that will send 55% of its income directly to the federal government.

Transport projects

Elsewhere in the capital, more rudimentary transport projects are slowly making a difference to the lives of ordinary Somali citizens.

Mogadishu's chaotic roads had, for two decades, been shrouded in darkness during night-time hours, until a joint initiative by the Norwegian and British governments rolled out 15km of solar-powered street lights in 2013. Despite bringing universal benefits to residents of the capital, the lights have twice been targeted by bombers – presumably members of Al Shabaab – whose nihilistic world view considers any developmental progress a threat to their dark vision for Somalia.

But, with every push back by the jihadists, Somali society takes two strides forward. Solar-powered traffic lights are also being introduced to Mogadishu, while the Turkish Cooperation and Coordination Agency (TIKA) is steadily rebuilding its battered roads.

On the administrative front, the federal government is working to introduce mandatory drivers' licences and number plates – basic safeguards that most countries take for granted,



Said Korshel: "It all starts with the airport. When you arrive, if you see something beautiful, that becomes the attraction".

and whose absence contributes to the prevailing sense of criminal impunity in the capital.

Such measures are emboldening a growing number of foreign countries to rekindle diplomatic ties with Somalia. Turkey, Sudan, China, Iran, India and Ethiopia all now have embassies in the city centre, undeterred by the threat of Al Shabaab attacks. Several other governments have based their embassies within the safe confines of the airport, among them Britain, Sweden, the Netherlands, Italy, America and Uganda.

"Years back it was not possible for embassies to function in Mogadishu. Nobody would accept sending their people here," Korshel recalled. "Now they feel safer."

While signs of progress are emerging in all corners of the capital, Aden Adde Airport remains the nucleus of developmental activities.

These efforts received a major fillip in 2013, when the International Civil Aviation Organisation (ICAO) removed the gateway from its Zone 5 list of airports deemed to pose a security risk to aircraft, crew and passengers. That achievement, said Ahmed Farah, flight safety manager at Somalia's Civil Aviation Authority (SCAMA), was a watershed moment for the sector.

"They sent their investigation team here and they recognised that we are improving," he beamed. "I don't think there is any other airport as secure as Mogadishu Airport."

Though many would agree, Kenya's government still forces flights originating in Mogadishu to stop for additional security checks in Wajir, northern Kenya, before continuing on to Nairobi. Korshel believes this is a "political" decision, noting that no other countries have insisted on such measures. Aden Adde Airport, the minister emphasised, is "not just an airport, it's a green zone. It's totally secure".

Putting security to one side, however, he is more than willing to highlight the gateway's operational limitations. Night-time flights are not currently possible, for example, due to the absence of runway lights. TIKA is considering his request for an upgrade.

Two decades of civil war

Mindful of the brain-drain caused by two decades of civil war, Turkey is also training a new generation of Somalis, who will inherit the country's expanding aviation sector. In April 2014, prime minister Abdiweli Sheikh Ahmed laid the foundation stone for Mogadishu's Turkish-funded Aviation Training Academy, due to open its doors later this year.

Asked about aviation infrastructure projects outside of the capital, Korshel said lifting locally administered airstrips to international standards must be the first priority.

"Somali civil aviation is going to be stronger than land transport," he predicted. "Each

community is building a small airstrip, so we have to encourage them and help them. We have to give the facilities they need."

International partners are again fuelling much of this development, with the cash-strapped federal government unable to finance most projects itself.

Thus, the United Nations Support Office for AMISOM (UNSOA) recently donated eight fire-fighting trucks for use at the country's airports. Three were positioned in Mogadishu, while the rest were sent to Baidoa, Kismayo, Beledweyne and Baledogle.

In Somaliland, the US Agency for International Development (USAID) has, meanwhile, constructed a wind energy facility to power Hargeisa Egal International Airport.

But it is Aden Adde Airport that continues to attract the lion's share of attention – and not only from the Government's supporters.

Conceding that the gateway is a major target for Al Shabaab, Mohamed Egal, SCAMA's deputy general manager, recalled how in 2010 two cars filled with suicide attackers drove up to the main entrance. One vehicle exploded, while insurgents spilled out of the other and tried to storm the terminal.

"Security destroyed them all," he smiled. "There is no way that they come in. They've tried, but they always fail. Mogadishu Airport is healthy and safe and secure from Shabaab."

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'ROC AND ROLES

Heliconia Aero Solutions is pioneering civil helicopter operations in Morocco as the country's only indigenous rotary-wing specialist. The company's burgeoning success also demonstrates the untapped potential of a market that is primed for growth.

Sometimes the best entrepreneurial decisions are taken quickly, at least if the inception of Heliconia is anything to go by. In January 2008, a chance conversation with friends in Casablanca led to an unexpected investment opportunity for Aurélie Giraud and Daniel Sigaud to create Morocco's only home-grown civil helicopter business.

Neither of them had the concept remotely on their career maps. Giraud was due to take up a posting in Nigeria with Bristow, after working with the operator for several years as a flight instructor in Florida. Sigaud had built up a successful oil and gas logistics business in Nigeria and Angola, and was anticipating retirement, albeit with an eye on how to best use his newly acquired Eurocopter EC130 B4 helicopter.

In a matter of three days they decided to take the

plunge and set about building a business from scratch.

Recalling how quickly the decision was taken, Giraud said: "It was clear to us very early on that there was a growing need for helicopter transport and aerial work in Morocco and at that time there were no truly 'local' Moroccan solutions. The time was right for us to fill that void, so we just said 'Let's do it'."

The origins of the Heliconia business of today can be traced to the acquisition of Helisud Morocco in March 2008, a business that represented the last vestige of helicopter companies operating in the 2000s.

Helisud comprised a pilot, a mechanic and a secretary; its operations involved just a few hundred flight hours a year and it relied on the service of a 1961-registered Alouette II helicopter.

Renewing the fleet was only one of the challenges facing the nascent business as, over the next 18 months, six helicopters were purchased, imported and registered in Morocco. Then, in 2010, the company was rebranded as Heliconia.

Lack of infrastructure and skills both presented significant hurdles, while perhaps the most crucial aspect was the need to work in partnership with Morocco's Department of Civil Aviation to develop a solid foundation for a civil helicopter industry.

Prior to 2000, Morocco's airspace was off limits to private helicopter operators and attempts to kick-start the sector in subsequent years were beset by problems.

Giraud was appointed general manager for Morocco, a role she

Continued
on Page 96



CONTINUED FROM PAGE 95

still holds now, although with a wider remit as the company looks to expand further into Africa: “It was definitely a big challenge to establish the business, especially in the early days. As an example, to begin with we had no authority to land other than at an airport, otherwise it took three weeks for approval to be granted.

“But, on the other hand, we have a great belief in Morocco as a place to do business. It is stable, open to investment and there is real potential to grow because the industry is starting from such a small base.”

Heliconia’s headquarters are in Marrakech and what began as a five-person business has blossomed to number around 100 employees, mirroring an increase in the fleet’s flight hours in Morocco to more than 3,500 annually.

The total fleet has swollen to 25 helicopters, including the French operation, while 14 of these are used in Africa. The fleet operates from five locations in Morocco, plus international missions in more than 10 countries in Europe and Africa, including Mali, Mauritania and Senegal.

The company’s success has been built on a diverse range of operations including aerial work, heavy lifting, forestry support (fire suppression), VIP transport, geo-seismic surveys, high-end tourism flights and heli-skiing. The popularity of Morocco as a setting for movies also presented opportunities for location scouting.

Investment programme

Between 2008 and 2014 Heliconia launched a major investment programme, ploughing nearly €40 million (\$50 million) into infrastructure and associated developments that would provide a platform for growth.

Investing in human resources, property and equipment, the business created Heliconia Airservices as a focal point for maintenance and repair services in March 2010.

The shareholders then finalised the acquisition of France’s JCE Helicopters and its subsidiary Heli-Challenge in November 2012, providing a gateway to European operations and a workshop with European standards and new operational structures.

Today Heli-Challenge has developed a Part 145 secondary maintenance base in Marrakech, with Agadir and Dakhla as line maintenance bases, through an agreement with Heliconia Industries.

The launch of exploration for oil off Morocco’s coast has brought a new dimension to the civil helicopter industry in the country and has injected even greater impetus into Heliconia’s growth over the past two years.

The presence in the country of international energy giants such as Total and Shell, and the creation of 35 ‘blocks’ of territory for exploration offshore, underline the potential of the country’s natural resources.

Giraud said: “When we started the company we talked about what might happen if the offshore market really expanded and, from the start of 2013, it was clear that oil and gas companies



An AW-139 in action offshore Morocco.

needed helicopter support, but also that we needed to become a credible player in this market.”

Working with partner Tunisavia, Heliconia secured a four-month contract with Cairn Energy in August 2013 for offshore transport using two Eurocopter AS365 N3 Dauphin helicopters, followed by a longer contract with US oil company Kosmos Energy. Since then the company has been gradually expanding its presence in the offshore sector.

Recognising the stringent operational safety requirements of the offshore industry, Heliconia also made a significant strategic decision to acquire two AgustaWestland AW139 medium twin helicopters. To bridge the gap while these aircraft were being built, the two companies agreed a lease deal for a further two AW139s.

Offshore customers

Heliconia has now taken delivery of both AW139s, which will be used to support offshore customers in Morocco, while the company says it expects to take up an option for two more of the type this year, confirming the strength of the offshore sector as a driver of demand. Although offshore operations only account for about 15% of total flying hours, Giraud said this application is responsible for a growing proportion of Heliconia revenues and that should a significant discovery of oil be made, it could be a “game-changer” in terms of demand for helicopter support in Morocco.

Alongside its flight operations, Heliconia has also been investing in other parts of the business with a view to longer-term growth.

As part of the agreement with AgustaWestland, the company signed a distribution agreement for AgustaWestland models in Morocco and, from the start of this year, it also became an authorised service centre for the AW139.

To date its maintenance operation has been focused on the requirements of its own fleet, but will in future involve more third-party work.

And what of further expansion beyond Morocco?

“First of all we are committed to maximising our business in Morocco,” said Giraud. “However, we also believe that there is a lot of potential in Africa as a whole. This is a market we know well and we are looking to see how we can focus our efforts, particularly in west Africa. I have also spent time in Cape Town for the Africa Oil & Gas Conference recently and we are looking at a range of options.

“The drop in the oil price [from \$100 a barrel to \$80 at the time of writing] is making the big players think a little differently about exploration but there is still a lot of untapped potential in Africa. This is where we see the next phase of our development.”

Fledgling business

It seems pertinent to ask about the experience of swapping a flight instructor role and the well-developed infrastructure of Florida for a fledgling business in Morocco: “All I knew before was the USA and it is a completely different game here. Our goal was to build a business and that has really coincided with the development of the civilian helicopter industry in this country, so it has not only been about what we do inside the company but also how we work with the authorities,” said Giraud.

“Crucially, we are doing all this with European standards in terms of safety and how we operate and this is helping to remove any pre-conceptions among potential customers about dealing with a local partner in Morocco. It’s been a steep learning curve but exciting at the same time.”

What better definition of the life of an entrepreneur?



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Aircrafting



Thailand was the first International customer for the Sea Hawk - Sikorsky sees more opportunities.



Hawks on sale at the rotary souk

With increased competition from European manufacturers, and with the US domestic markets for both civil and military helicopters becoming increasingly hard fought, Sikorsky, like most US and European rotorcraft manufacturers, has turned its attention overseas in an effort to find new customers. China is obviously an important new market for commercial helicopters but, as the manufacturer said at the Helishow Dubai, the MENA region is just as important, as it offers opportunities for both commercial and military sales. Jon Lake reports.

The UAE is already an important market for Sikorsky, which concluded a contract for 60 Black Hawks for the UAE Air Force and Air Defence in 2010, with an estimated value of \$300 million.

The Sikorsky S.70 Black Hawk has been successful in a number of Gulf Cooperation Council (GCC) and MENA markets, while the larger S-92 has gained a foothold in the VIP and long-range offshore support roles.

Saudi Arabia was the launch customer for the new Schweizer S434, while the S-76 is a popular corporate choice in the region.

The continuing growth in the Middle East's oil and gas industry has been driven by the discovery and exploitation of reserves further offshore or, in some cases, further from habitation, which has placed increasing emphasis on the use of commercial helicopters.

A growth in helicopter emergency medical services (HEMS) in the Middle East and Asia

Pacific regions is also expected during the next decade, as countries seek to establish emergency medical networks comparable to those now in operation in North America and Europe.

Fire-fighting and rescue from high-rise buildings is also of growing importance in Dubai and other major Middle Eastern cities, providing a further impetus for commercial helicopter market growth.

Last year, Bell Helicopter forecast a 50% increase in rotary sales in the Middle East over the next decade, a finding broadly echoed in Honeywell's 2014 forecast.

The military helicopter market in the Middle East is also booming, with virtually all of the GCC countries in the process of modernising their rotary-winged fleets. Many still include helicopters purchased in the early 1990s following the first Gulf War (and before), which incorporate some ageing, attack/reconnaissance helicopters that can operate effectively only by

daylight, as well as some support helicopters whose capability in hot-and-high conditions is, at best, marginal.

In the light of this buoyant market, some local industry insiders described the recent 2014 International Helicopter Technology and Operations Exhibition (perhaps better known as the Dubai Helishow) as a souk for rotorcraft.

The show was held at the Meydan Hotel, Meydan Racecourse, Dubai on November 4-6, and was the sixth incarnation of the biennial exhibition, which was first held in 2004.

Held under the patronage of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President & Prime Minister of the UAE and Ruler of Dubai, the three-day exhibition was inaugurated by HH Sheikh Mansour bin Mohammed bin Rashid Al Maktoum, one of Sheikh Mohammed's sons and, himself, an accomplished pilot.

The number of visitors and exhibitors has progressively increased with each successive Dubai Helishow, and the exhibition has steadily gained greater prominence and importance. US and European manufacturers now see it as a 'must attend'.

Sikorsky Aircraft, therefore, dispatched a team, led by Anand Stanley, Sikorsky vice-president for the Middle East, Turkey and Africa, to the show, where the company joined some 80 other exhibitors, including the AAL Group, Lockheed Martin, Petroleum Air Services, Russian Helicopters, and Ukrainian Helicopters.

Despite the presence of a UAE Air Force Sikorsky UH-60M in the static display (one of 59 in service in the Emirates), representing the dozen or

Black Hawks have been delivered to a number of operators across the region.



so regional Black Hawk operators and customers in the region (which include the Royal Bahrain Air Force, the Egyptian Air Force, the Royal Jordanian Air Force, the Royal Moroccan Gendarmerie, the Royal Saudi Land Forces, the Saudi Ministry of the Interior, the new Saudi National Guard and Royal Guard aviation elements, the Tunisian Air Force, the Turkish Army and Air Force and the UAE Air Force and Air Defence, Special Forces and Royal Guard), Stanley placed particular emphasis on the presence of representatives from what he called 'Team Seahawk' on the Sikorsky stand, and highlighted the capabilities of the US Navy's MH-60R Seahawk aircraft, which he described as: "The world's most sophisticated anti-submarine and anti-surface warfare helicopter."

The Sikorsky MH-60R Seahawk multi-mission helicopter replaced the US Navy's SH-60B and SH-60F helicopters. The SH-60B was a dedicated antisubmarine warfare (ASW) helicopter used principally on US Navy frigates and destroyers, and equipped with AN/APS-124 search radar and a magnetic anomaly detector (MAD), while the SH-60F 'Oceanhawk' had an AN/AQS-13F dipping sonar, and tended to be operated from the US Navy's aircraft carriers.

The MH-60R features a new multi-function digital glass cockpit developed by the Owego Helo Systems division of Lockheed Martin Systems Integration, a Raytheon AN/AQS-22 advanced airborne low-frequency (ALFS) dipping sonar, and a Telephonics AN/APS-147 multimode radar, which has inverse synthetic aperture (ISAR) imaging as well as periscope and small target detection capabilities.

The type also has a Raytheon AN/AAS-44

detection/tracking system, which includes forward-looking infrared (FLIR) and laser rangefinder and a 6,000lb cargo hook. It effectively combines the capabilities of both earlier variants, making it a more flexible and more useful, and much less 'niche' multi-role platform.

Weapons options include the AGM-114 Hellfire anti-tank guided missile and ATK Mk 50 or Mk 46 active/passive lightweight torpedoes.

The MH-60R first flew in July 2001, and operational evaluation (OPEVAL) was completed in October 2005. Operational deployments began in 2009. Australia became the first export customer of the MH-60R when it ordered 24 aircraft in June 2011.

Requested the sale

The Government of Qatar requested the sale of six MH-60R Seahawk helicopters in September 2011, and it later emerged that the nation had a requirement for 10 MH-60Rs (plus six options) and 12 MH-60S 'navalised' utility aircraft. This programme seems to have gone very quiet and may have stalled, with Qatar evaluating the rival NH Industries NH90 in 2013 and then ordering 22 of the European design in March 2014, 10 in Naval and 12 in utility configuration.

Elsewhere in the GCC, Oman has acquired NH90s, while Saudi Arabia has taken EC532s and Jordan, Kuwait, Morocco, Oman, Saudi Arabia and the UAE have the AS332 Super Pumas.

Sikorsky clearly believes that a growing focus among GCC and MENA nations on maritime and littoral operations should create a number of

potential sales opportunities for the MH-60R in the region, in addition to the various requirements to replace older maritime helicopters like the Westland Sea King and Commando and the Aerospatiale/Eurocopter/Airbus Helicopters Puma and Super Puma, including the UAE Navy's eight AS332Ms.

Another helicopter for which Sikorsky expects further Middle Eastern sales is the S-92. The type has already been sold to a number of commercial and military customers in the region, and further sales are likely.

Some of the commercial S-92s delivered to, or ordered by, Gulf customers are used for corporate and VIP transport (for example with Gulf Helicopters in Qatar) but more are likely to be sold to offshore oil support operators.

In addition to the civilian corporate/VIP S-92s, some aircraft have been ordered by local air forces for VVIP and head-of-state duties (including two in Bahrain, two in Kuwait, two for Qatar and two in Turkey), while the Saudi Arabian Ministry of the Interior has already received 17 in military utility configuration to begin to replace its ageing fleet of Kawasaki Vertol KV-107 Sea Knights.

In January 2014, Carey Bond, president of Sikorsky's commercial arm, Sikorsky Global Helicopters, admitted: "The original S-76 was not a strong performer in the Middle East because of its installed power." But with the advent of the new, much-improved, extensively modernised and up-engined S-76D, installed power is no longer a problem. "Now we have that in spades," Bond remarked. As a result, Sikorsky now has high hopes for the S-76D in the region.

Abu Dhabi Aviation flying high with AgustaWestland support venture.



The Middle East has been one of the key drivers for growth in the helicopter industry over recent years and, as the regional fleet has increased, so, too, has the demand for locally based support services.

Against that backdrop there is a clear logic behind the creation of AgustaWestland Aviation Services LLC (AWAS), which brings together one of the region's leading operators and a manufacturer that has an expanding stake in the region.

The intention to establish AWAS was first announced by AgustaWestland and Abu Dhabi Aviation (ADA) at the end of 2011, and the venture has been operational since 2013, offering a portfolio of services that includes helicopter maintenance, repair and overhaul (MRO) activities and logistics support for customers across the MENA region.

Logistics facility

The company's base of operations is located close to Abu Dhabi International Airport, while a separate logistics facility is situated within the Abu Dhabi Airport free zone.

AWAS chief executive, Angelo Carlino, said the expansion of the AgustaWestland fleet in the region, a desire to bring services closer to customers and the long-standing relationship with ADA, were the critical factors that led to the development of the joint venture.

"We now have more than 150 AgustaWestland helicopters operating in the Middle East and our goal is to give our customers here access to the services they need, when they need them; this is why having a footprint here in the region is so important," he stressed.

"We have an excellent relationship with ADA;

PARTNERS IN CLIMB

As the Middle East's appetite for helicopters shows no sign of being sated, AgustaWestland and Abu Dhabi Aviation have joined forces to create a helicopter support joint venture in the UAE. The partnership has ambitious aims, as Paul Derby discovered.

they have a large AgustaWestland fleet of their own comprising 16 AW139s, and a willingness to invest in the latest technologies, as well as excellent engineering and maintenance expertise, so it's a good fit for both companies.

"Through AWAS we are able to support both military/government and commercial customers and offer a more responsive service, particularly in aircraft-on-ground (AOG) situations, where speed is a critical aspect. Since April of 2014 we have offered customers access to 24/7 support for AOG situations.

"By creating this local hub for services, we also remove the need for customers to order spare parts either from Europe or the USA and, instead,

we can respond in a matter of hours. It is our aim for parts to be made available within one hour of contact from the customer and to then ship the order as soon as possible."

Basing the logistics part of the operation within the free zone makes sense on a number of levels, according to Carlino. He pointed to the advantages of expediting the customs process, as well as the proximity of courier companies, enabling parts to be transported with the minimum of delay.

AgustaWestland's presence in the Middle East has expanded significantly, particularly since the introduction to service a decade ago of the AW139 medium twin helicopter, which has

ADA's business model is well balanced.



become the market leader in its class and recognised as the 'reference point' for helicopters in the offshore application.

Although offshore customers comprise a proportion of the customer base for AWAS, Carlino said that the customer base was not restricted to one application and there was actually a good balance between military and commercial opportunities. "We have a long history of military and VIP contracts in the Middle East and, since the arrival of the AW139, this has also grown to include offshore, corporate and connecting flights to the islands in the UAE region as well."

Among the capabilities that AWAS provides are one-year testing on floats and rafts for the AW109 and AW139, and the ability to carry out repair and overhauls at 3,200 hours and four years respectively.

Significant improvements

It is in this repair and overhaul arena where the business has been able to drive some significant improvements, including a reduction in turnaround time of 50% on key activities.

Carlino said AWAS has a three-phase plan to realise its vision of continued growth – the first phase now being almost complete with the successful introduction of helicopter maintenance, repair and overhaul, and logistics services that have formed the backbone of the AWAS business to date.

Phase two involves the establishment of a MRO capability for components, again negating the need for regional customers to rely on an extended supply chain stretching to Europe or the USA. AWAS is in the process of setting up this new dimension to its business and expects to have a

Profile: Angelo Carlino

A former technical officer with an Italian Air Force search and rescue unit, Angelo Carlino joined AgustaWestland 25 years ago and has held positions both in logistics support and in the commercial and international government business units.

He has worked in the Middle East previously, supporting upgrade contracts in the UAE and Qatar, and has also spent time in South Korea and Singapore during his career with AgustaWestland.

Prior to taking up the CEO role at AWAS, he was marketing and commercial manager at NHI, the European consortium responsible for the NH90 helicopter programme, comprising AgustaWestland, Airbus Helicopters and Fokker Aerostructures.

fully qualified capability in the second half of 2015.

Phase three will include a greater focus on the increasing demand for training services in the Middle East, particularly in light of the entry into service of two new AgustaWestland helicopter types. The AW169 and AW189 will sit either side of the AW139 in terms of weight and, together, the three helicopters comprise the AgustaWestland new generation 'family' of helicopters, which the manufacturer says will offer operators of more than one type commonality benefits in areas such as maintenance, training and spares.

A number of operators in the region, including Gulf Helicopters and Falcon Aviation Services, are among the customers to have ordered one or both of the new types. Dubai Air Wing is also a future operator for the AW189.

"Supporting these helicopters, as well as existing models, with the right training solutions

is an important priority for us and we are currently assessing how best to get the right infrastructure in place," explained Carlino, adding that the training requirement extended beyond the need for appropriate synthetic training for pilots via simulator time, to also include training for technicians and ground instruction for pilots.

One scenario is that ADA will become an authorised training centre for AgustaWestland, supporting the manufacturer's commitment to offer training services on a regional basis so that they are more accessible to the customer base. However, these arrangements are unlikely to be in place before 2016.

Further expansion

The potential for further expansion of AWAS is underlined by Carlino, who said that the business, which currently employs 21 people directly, aimed to grow turnover by between 30% and 40% in 2015, fuelled by strong regional demand for services and the continuing growth of the AgustaWestland fleet in the Middle East as the AW169 and AW189 enter service with customers.

"It is really positive for us at the moment. Working with ADA and having the expertise here in the region means that we can offer competitive services, better turnaround times and an improved customer experience overall," said Carlino.

"The Middle East market is an exciting and rewarding place to do business because is characterised by a willingness to invest in leading-edge technologies. This commitment by our customers must be matched by AWAS in terms of delivering a consistently high-quality service and always seeking to improve the way that we work."

Students to help launch UAE's first CubeSat mission

Engineering students from the American University of Sharjah (AUS) are to build and launch the UAE's first CubeSat into space as part of a senior design project.

A CubeSat is a nanosatellite with a standardised and simplified cubic design, weighing about 1kg and with sides around 10cm long.

The student-built CubeSat, named *Nayif-1*, which means "one that soars high above", is scheduled to be launched from Florida aboard a Falcon-9 rocket by the end of 2015.

The CubeSat mission is a partnership between AUS, the Innovative Solutions in Space company and the Emirates Institute for Advanced Science and Technology (EIAST).

The mission aims to offer Emirati students from various engineering disciplines hands-on experience at designing, testing and operating a communications satellite.



Ebrahim Hamza Al Qasimi, acting manager of knowledge management and strategic research at EIAST, said: "*Nayif-1* is an amateur radio satellite and will be the first satellite from the UAE to be launched into an elliptical orbit.

"Seven Emirati students from mechanical, electrical and computer engineering disciplines have been assigned to the project. They will build and operate this satellite as part of their senior design project at university."

The nanosatellite will produce a communication footprint ranging from 5,000-5,500km and can orbit at a height between 450km and 720km for up to three years.

A ground station will be built at AUS and operated by engineering students, who will be responsible for mission planning and operations.

The CubeSat project is being carried out in collaboration with Innovative Solutions in Space, which specialises in the development of space components and nanosatellite systems.

2016 launch for Qatar's second satellite

Qatar is preparing to launch its second geostationary satellite, *Es'hail 2*, in 2016.

This second high-power satellite will boost broadband delivery, broadcasting and global connectivity in Qatar and surrounding region.

Es'hail 1 is currently providing satellite connectivity and premium direct-to-home television content from its 26 degrees East location, for channels such as Al Jazeera and beIN SPORTS.

Ali Al Kuwari, CEO, *Es'hailSat*, said: "*Es'hail 1* is providing high-quality broadcasting and communications services for Qatar and the MENA area."

The country's satellite fleet will help support the infrastructure the country is putting in place to host FIFA's World Cup in 2022.



What future now for Abu Dhabi spaceport?

The future of Abu Dhabi's proposed spaceport is in doubt following October's fatal crash of Virgin Galactic's *SpaceShipTwo* in the Mojave Desert.

The space plane broke up during a test flight, killing one of the pilots and seriously injuring the other.

Virgin Galactic is backed by Abu Dhabi-based Aabar Investments and, as a result of the crash, the company is said to be considering its future investment in the company.

Reuters reported in November that Aabar was said to be waiting for the independent US National Transportation Safety Board (NTSB) study into the crash before deciding on its further commitment to the project.

The backing of Aabar, which is run by the Abu Dhabi Government, is seen as crucial to Virgin Galactic's future success.

Aabar bought a 31.8% stake (initially investing \$280 million) in Virgin Galactic in 2010 and increased it to 37.8% in 2011, according to the company's website.

The overall investment is believed to be around \$400 million.

Abu Dhabi was set to gain exclusive regional rights, subject to regulatory clearances, to host Virgin Galactic's tourism and scientific research space flights.

At the time of the announcement in 2009, Virgin Galactic's then president, Will Whitehorn, said: "What marked Aabar out as a potential investor was that they were extremely committed to the conceptual use of the system, well beyond the use of space tourism – they

Steve Nichols ponders the Abu Dhabi spaceport's future in the wake of October's Virgin Galactic SpaceShipTwo tragedy.

understood our business plans for astronaut training and human space science.

"Abu Dhabi indicated that they are very keen to develop a spaceport with some sort of science park facility around it and that it would be a resource for all the emirates to take advantage of, but that is a decision that has not yet been taken."

Aabar's funds are being used to develop Virgin Galactic's space tourism business and a low-cost satellite launch system called *Launcher One*.

In 2013, Steve Landeene, Virgin Galactic's appointed chief advisor for the Abu Dhabi spaceport project, said that the company could be transporting fee-paying astronaut tourists into near space from its UAE spaceport "in around two-three years time".

Speaking at the 2013 Global Space and Satellite Forum in Abu Dhabi, Landeene, who was Virgin's director at Spaceport America from 2009 to 2010, said that proposals for the Middle Eastern spaceport in the emirate had been put forward to both the Virgin Galactic board and financial backer Aabar Investments.

Virgin Galactic's SpaceShipTwo detaches from the WhiteKnightTwo mothership.



“Information has been put together on the possible size and scope of the Abu Dhabi spaceport and that is now making its way up for a leadership decision,” Landeene said.

He added that difficult decisions then were still to be made – where should the spaceport be, do you go for an existing airport (military or civil), or build from scratch?

“It is really a case of what outcome you want from a spaceport,” he said. “It can be a catalyst for economic development, for tourism and/or for education. The activities you decide to engage in have a direct impact on each of those.”

Landeene said then that there were many other good reasons for having a spaceport facility in the UAE. For example, the SpaceShipTwo and WhiteKnightTwo mothership both use a lot of carbon composite technology, which is a good fit with locally-based industries, such as Mubadala-owned Strata.

Virgin Galactic was also said to be talking with Khalifa University to see how it could integrate its spaceport activities with academia.

No further news is expected on the Abu Dhabi spaceport until at least the release of the US NTSB report into the crash, which is thought to have occurred after the spaceship's pivoting wing was deployed inadvertently, shortly after its rocket motor was ignited, resulting in the craft breaking up.

A spokesperson from Edelman, Virgin Galactic's PR company, said that any comments on the Abu Dhabi spaceport should come from Aabar Investments, but both Aabar and Steve Landeene declined to respond to questions.

Thales Alenia Space to supply UAE's Falcon Eye

Thales Alenia Space has been selected by the United Arab Emirates Air Force (UAEAF) to develop the very-high-resolution payload for its Falcon Eye satellite programme.

Falcon Eye optical observation satellites are designed to provide a new capability to the UAE military by 2018 and will cost around AED 3.4 billion (\$925 million).

The programme had earlier been beset by problems due to France needing US approval for the technology transfer of some of the key US-made components. This has now been granted.

A consortium led by Airbus Defence and Space is developing the satellite, which is based on the French Pleiades spacecraft.

The contract includes building two satellites offering very-high-resolution optical capabilities and a ground system for monitoring, receiving and processing images.

It also includes a training programme for the UAE engineers who will control and operate the satellites once in orbit.

As the co-contractor, Thales Alenia Space is in charge of the high-performance, very-high-resolution optical payload, the image data transmission subsystem, the ground image processing system, and co-engineering and validation of the overall system.

Jean-Louis Galle, president and CEO of Thales Alenia Space, said: “This contract with the UAEAF is the culmination of a long effort by our teams with the total support of the French Government and the French Ministry of Defence, in particular.

“It underlines, once again, our unique capabilities in high-resolution optical observation systems, whether for French defence applications or export markets.

“This partnership with Airbus Defence and Space combines the strong points of our two companies to stand up to the competition and bolster Europe's position in the global space industry.”

Arianespace CEO, Stéphane Israel, has said that the two Falcon Eye satellites will be launched in 2017 and 2018 aboard European Vega rockets.

Flight Safety Foundation brought its international air safety summit (IASS) to Abu Dhabi where, reports Tom Kok, the results were inspirational.

Good safety systems are no accident...

Accident investigation around the Asiana 214 accident in San Francisco, go-around procedures, pilot training innovations, aircraft tracking, regional safety cooperation, and turboprop operations, were all on the agenda at the summit.

Keynote speaker, Captain Richard Hill, chief operations officer of Etihad Airways, gave a thought-provoking talk about what the industry needs to do collectively to improve safety.

"Last year, we were all in a comfortable place for aviation safety, seeing the results of a global effort into the sharing and analysis of data," Hill noted. "We saw the implementation of new programmes, policies and education. Analysis identified key accident types and procedures to address them."

But then the events of 2014 made the entire industry realise that there are other threats out there. "It is clearly not the time for self-congratulatory moments, but for a strong need to further identify global hazards and mitigate the risks," Hill warned.

David McMillan, chairman of Flight Safety Foundation's board of governors, presented on the work of the task force on risks to civil aviation arising from conflict zones (TF RCZ). McMillan chairs the TF RCZ and updated attendees on the activities of the task force. It was implemented after the tragedy of Malaysia Airlines flight 17 being downed over Ukraine.

The task force considered the responsibilities of the states under the Chicago Convention, the roles of others involved – air space users, the air navigation service providers, airports etc – and how these interact with each other and the security and intelligence services. Based on the task force's deliverables, which included some

for the states to lead, some for industry and some for the International Civil Aviation Organization (ICAO), McMillan said his belief was that the system was fit to handle the issue and would rise to the challenge.

The other significant event referred to by Hill in his keynote speech was the tragic disappearance of Malaysia Airlines 370. Captain Kevin Hiatt reported on the activities of the aircraft tracking and task force (ATTF). Hiatt is the senior vice president, safety and flight operations at the International Air Transport Association (IATA).

"We met monthly with representatives from a number of industry groups, operators, manufacturers and other aviation experts. Initially, the task force did an assessment of existing aircraft tracking capabilities," Hiatt said.

Long-term project

"Our report is set for a review by the IATA board. From there, it will feed into a long-term project being led by the ICAO. The report will be shared with ICAO and the member states at the high-level safety meeting in February 2015 in Montreal," Hiatt concluded.

Airbus' captain Harry Nelson was one of the presenters on go-arounds. Nelson brought his points across by inserting strong storytelling in his presentation about how good pilots make "early" diversion decisions.

"We will have to find a new way of training our future pilots," he said. "We need to test regulations with today's data, examine them against growth, measure and test the true level of resilience in the system and then seek new ways of generating exposure to issues through a new training paradigm."

In a later presentation, Shawn Pruchnicki, from the Ohio State University, spoke of the importance of exposing cockpit crews to novel, more complicated scenarios in simulators during training, with not just single failure events being used. "Our research has found that this will help develop skills for being resilient in unexpected situations," Pruchnicki explained.

William Chiles spoke on the Bristow Helicopters Group 'target zero' campaign. As senior advisor and CEO emeritus at Bristow, Chiles and his team created the 'target zero' culture of safety, which consists of best practice for achieving zero accidents, zero injuries and zero harm to the environment in all activities. Chiles detailed how the campaign was implemented at Bristow Group from 2007 onwards.

"When we re-calibrated our mission and values, we explicitly chose not just to talk 'safety is our number one priority' but actually lay it down as such," Chiles said. He shared the six values of Bristow, which has safety as the first value and profitability as the last. "In the middle sits fulfilment, develop our talents and enjoy our work."

As is fitting with the aviation safety tradition, he shared 'target zero' with his competitors in the offshore industry and helped create HeliOffshore in 2014.

Chiles was presented with the Laura Taber Barbour air safety award in Abu Dhabi in recognition of his leadership and personal commitment, along with his visionary approach to safety in the offshore helicopter industry.

"I would like to share this recognition with all those in the industry who understand our sacred



Captain Richard Hill: Strong need to further identify global hazards and mitigate the risks.

responsibility to operate every flight home safely every day," he said.

In what, hopefully, will become a growing trend, the summit also focused on safety promotion and achievements in Africa.

Harold Demuren's work in that field was recognised with the FSF-Boeing Aviation Safety lifetime achievement award. "Harold has spent more than 40 years of his professional career dedicated to raising the aviation safety standards in Africa," said Jon Beatty, president and CEO of FSF. "The African aviation community is stronger and safer thanks to his tireless commitment and we are all grateful for his hard work."

Dr Demuren was director general of the Nigerian Civil Aviation Authority in 2005, a position he held until 2013. "Harold has demonstrated his strong ethics and professionalism in every position he has held, including as a board member of the Flight Safety Foundation. His is an important voice in the international safety community," Beatty continued.

Boeing's Dr Michael Snow presented on the work of the commercial aviation safety team (CAST) in relation to significant themes across 18 loss-of-control events. "In quite a number of these cases, the flight crew lost their aircraft state awareness," explained Snow. "It is very interesting to learn more about the actions that the airlines took in the aftermath of those accidents. In many cases, these safety enhancements addressed two thirds or more of the significant themes.

"One of the CAST safety enhancements demands the industry must pay more attention in training for attention to management issues."

Dr William Bramble and captain Roger Cox,



Captain Harry Nelson: "We will have to find a new way of training our future pilots."

from the National Transportation Safety Board (NTSB) detailed the human factor and operational issues that formed part of the probable cause of the Asiana 214 crash in San Francisco in 2011.

The NTSB investigation found causal factors, originating from human factors and operational issues, that led to mismanagement of the aircraft's descent during the visual approach, unintended deactivation of automatic airspeed control and inadequate monitoring of airspeed. "Combined with the flight crew's delayed execution of a go-around after they became aware that the aircraft was below the acceptable glide-path and airspeed tolerances, this accident contains a lot of valuable lessons for the industry," Bramble summarised.

Attention management

Professor Robert de Boer, from Amsterdam University of Applied Sciences, spoke of work being carried out on attention management. "We have started using sociometrics to help improve crew resource management (CRM)," De Boer explained. "Sociometrics is all about measuring social relationships. It reveals the hidden structures that give a group, in our case a cockpit crew, its form: the hidden beliefs, the forbidden agendas," he elaborated.

"We conducted our first research on relatively newly qualified air transport pilots in a basic simulator set up. We looked at so-called 'honest signals' – subtle patterns in how we interact with other people that reveal our attitudes toward them. These unconscious social signals offer an unmatched window into our intentions, goals, and values.

"We used a three-axis accelerometer,



William Chiles: air safety award in Abu Dhabi in recognition of his leadership and personal commitment.

PICTURES: WAYNE ROSENKRANS

microphones and an infrared sensor to measure the honest signals. The microphones didn't record the actual words but the rhythm, stress, and intonation of speech. These may reflect various features, such as the emotional state of the speaker and the form of the utterance (statement, question, or command).

"The early signs of the usefulness of sociometric research for CRM are promising and we look forward to expanding our research on the subject," he concluded.

This summit also featured a panel discussion about turboprop operations, given their high prevalence in accident statistics.

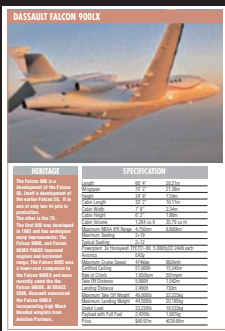
The panel looked beyond the usual suspects, such as lower time (less experienced) pilots that are flying turboprops, perhaps less well versed in a positive safety culture, and flying shorter legs into sometimes more challenging aerodromes. In many countries of the world, turboprops make up the largest proportion of the aircraft on register.

Eve Jackson, safety & quality manager of Tanzanian operator Coastal Aviation, brought to the fore safety challenges that operators in a lot of developing countries face.

Captain Anastasios Thomos, from Kenyan operator 748 Air Services Limited, gave an interesting insight into his company's operational challenges. "Where we operate, sometimes going for the stable approach will either mean you'll continue to go-around or it will get you killed," Thomos explained. "With many animals and people crossing some the runways we fly into, the best we can sometimes achieve is a stabilised dive," he stated frankly.

The panel highlighted the importance of standard operating procedures.

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- The book, described as “essential” at the AfBAA conference in Johannesburg, is available to African operators and readers of African Aerospace.
- For \$30 you can compare technical specifications of every business jet or corporate turboprop in production.
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The Gulf region's ground-handling industry will encounter greater competition and increased service demands as a result of on-going airport development and rising traffic. Keith Mwanalushi speaks to the experts, asking whether the sector will need to evolve to meet the needs of future airports.



Dnata handled 150,000 bags in Dubai on a single busy December day.

The case for handling the future with care

The Gulf Airports Services Association (GASA), a grouping of 11 non-airline ground-handling agencies in the region, recently said that many companies would adopt cost-centric operational models in order to stay competitive and maintain commercial viability in light of increased service demands.

“The ground-handling industry will need to evolve to meet the needs of future airports,” said Dr Ghanem Al Hajri, director general of Sharjah International Airport and secretary general of GASA.

“A greater emphasis on efficiency and productivity will raise ground-handling service standards to a new level to the benefit of the whole aviation industry.”

So, the initial question is, how the regional ground-handling business can stay competitive and maintain commercial viability in these circumstances.

Jon Conway, Dnata's divisional SVP, UAE airport

operations, agrees that regional airport development is undoubtedly significant and much needed, with the major Gulf carriers expanding at a pace that continues to outstrip the airport and air traffic control infrastructure needed to support their growth.

However, Conway believes that the link between airport expansion and competition in ground-handling is less clear. “Indeed, inadequate infrastructure or infrastructure that lags demand – as it often does – places significant strain on the operating costs and efficiency of all stakeholders at airports, including ground-handlers. The airport authority, regulator, or government determines the policy on competition and handlers in the region are set-up accordingly. Within Dnata, we strive to provide safe, high-quality ground-handling at a price that is both regionally and globally competitive,” Conway continued.

Continued
on Page 108

CONTINUED FROM PAGE 107

Martin Lenke, founder of Lenke AeroConsult in Germany, has conducted ground-handling audits and provided advice to optimise performance and service quality at several Middle East airports, including Bahrain, Abu Dhabi, Muscat, and Jeddah.

Lenke stressed that currently, at several Middle East airports, there are ground-handling monopolies, which are “not beneficial” to the client airlines. “Often, the home carrier is providing such services to competitors as well and it’s clearly visible that the service is not to their interests. Therefore, more competition will be a significant advantage to the industry as a whole with regards quality, performance and eventually pricing,” said Lenke.

Undoubtedly, introducing competition in such services requires careful preparation and thought, not just for the infrastructure needed but also the operational culture of the region. Lenke highlighted a number of considerations for regulators, starting with clear rules for performance and safety for the service concessionaires. He said it was imperative to have close supervision by the regulator in case an airport operator also provided ground services. This would ensure that there were no cross-subsidies or unfair treatment of competitors, such as allocation of space and pricing.

Cherry-picking

“There should be no cherry picking – the owner of such a ground-service concession would have to provide all services and not exclude those which require expensive ground support equipment (GSE),” Lenke noted, adding that the regulator should potentially define a limit to competing service providers. “Too much competition can lead to destructible pricing, as seen in Amsterdam during the 90s, where quality and performance went down, leading to bad airport performance, airline delays and increased aircraft damage,” Lenke recalled.

Seemingly, it is also necessary to observe which parts of the business, if any, cannot be freed up to competition. “In general terms there is no alternative to increased competition, both in operational and commercial terms. The increased competition on the airline market will demand and require way better ground services and will lead to a significant cut in costs, that is, service costs, aircraft damage and aircraft and crew utilisation.

“The related regulator will have to be prepared for the demanding task of organising the competition and safeguarding safety and performance in the overall interest of the aviation community,” Lenke explained.

Oliver Knispel, a consultant at GroundOps Consult, gained experience in the aviation ground-handling business over 20 years. He believes that the most important thing is that business conditions are equal for all service providers. “Airports and authorities must set standards and continuously observe these conditions for the benefit of airports, customers and service providers.”



Jon Conway: The link between airport expansion and competition in ground handling is less clear.

The monopoly held by most airport ground-service providers at Gulf airports is still a subject of much debate on social media platforms. Some suggest that opening up the ground-handling market, as in Europe, could help the industry evolve and meet the expectations of future airports in the region.

“I am pretty sure that competition will automatically lead to an improvement in service, if conditions are equal with all providers,” Knispel said, adding: “There are, indeed, examples in Europe showing this. In most European countries ground-handling was opened to competition decades ago, for instance in the UK, The Netherlands, France, and Scandinavia. “There is still no sign of a service level that has turned for the worse after opening up the market. Every service provider has to stay competitive and smart, and competition forces that.”

Dnata is the sole ground-handler at Dubai International Airport (DXB) and Al Maktoum International Airport at Dubai World Central (DWC). Conway argues that while competition at many European and North American airports has driven down the cost of handling for airlines, driving efficiency or improving quality, in his opinion, is not always the case.

“I believe many carriers are now realising that the ground-handling contract price is only one part of the equation. Quality, consistency, and safe operations all require investment in people, technology, systems, and equipment; this is not



Dnata handles all flights and baggage at DXB and DWC.

sustainable for handlers operating on margins of 1 or 2% or less," he said.

Dnata is actively involved with stakeholders in planning at DWC, where Conway envisages a truly "magnificent world-class facility, bristling with innovation, new technology, robotics, smart security solutions, ready to welcome the expected 220 million passengers when complete".

Dnata handles all flights and baggage at DXB and DWC, as well as all passengers transiting through DWC and those accessing terminals 1 and 2 at DXB. The integrated air services company deals with passengers from more than 125 airlines, departing or arriving in Dubai, or in transit en route to their final destination.

Interestingly, in December 2014, Dnata experienced its busiest travel day ever for Dubai's airports. The holiday travel season hit its peak on December 19, as more than 133,000 passengers, 150,000 bags and 540 flights from around the world landed at Dubai's airports. To ensure each passenger, flight and piece of luggage was handled properly, Dnata had more than 4,400 staff working between the two hubs, and deployed in excess of 7,000 vehicles airside, including baggage conveyor belts, passenger steps, pushback tractors, and baggage tractors.

"Dubai continues to grow as an international hub and is expected to soon be the world's busiest airport," said Nick Moore, Dnata's SVP airline services. "As the sole ground-handler at the city's airports, we are committed to working with the



Martin Lenke: At several Middle East airports ground handling monopolies are not beneficial to the client airlines.

airport authority to ensure we are ready to support its expansion and the growth of aviation in the region."

Low-cost carriers (LCCs) are a key part of the Middle East's booming aviation industry. It's worth noting that Gulf-based LCCs, such as Air Arabia and Sama, have, in the past, called for an end to airport service monopolies as they seek to further lower operating costs.

So, does the carrier truly believe they're getting value for money from their provider?

Conway said: "My experience suggests Gulf-based LCCs get a good deal from their ground-handling providers. But, of course, purchasing teams will always argue otherwise!"

Lenke continued to insist that competition, if clearly regulated, monitored and guided by the authority and controlled and enforced by the aerodrome operators, would lead to a significant leap in service quality, performance, safety and costs. "But the contribution to the total costs for the airline by the ground-service sector will not be sufficient to keep LCCs happy," he added.

"Clearly regulated ground-service competition alone will not serve the valid interests of LCCs, but it is a first step. The regulator will have to make sure that LCCs' cost pressure is not leading to unsafe and unsecure operating conditions on the ramp."

Close relationship

Knispel recognises that there are always pros and cons regarding competition. "A sole ground-handler may have a very close relationship with the airport operator and they may combine their experience resulting in a continuously good and stable service level with growing airport capacity and infrastructure," he pointed out.

Knispel used Frankfurt Airport as an example. "FRA showed that this model could be quite successful as this airport had a very good reputation, especially on transfer processes. However prices were very high and the home carrier was more or the less the only company to benefit from this system."

Knispel believes that carriers calling for the break-up of ground-handling monopolies should not be ignored. "They mostly do not need infrastructure and processes tailored to the home carrier but do need efficient, safe and cost-sensitive processes. There might be a danger that a ground-handling monopoly will only serve the needs of their largest customer. Competition will not only break up high prices but also stop stagnancy in development of ground service – but only if conditions are fair for all competitors."

Ultimately, Conway feels that any half-decent ground-handler should work with its customer airline to provide only what is needed, removing any unnecessary activity and cost and delivering a value-for-money proposition. "At constrained airports, I believe a sole provider solution delivers benefits via economies of scale, reduced GSE airside and the ability to invest in equipment and people appropriately," Conway concluded.

As Dubai International overtakes London Heathrow to become the world's busiest international airport the focus moves to the future - and that is Dubai World Central.

SILK CITY SET TO SMOOTH THE WAY TO THE WORLD

Call it the 'Silk Route of the sky' or the 'Silk Route of the future'. Either way, Dubai World Central's new network of air connectivity is as revolutionary as the first roads that were once built to connect the markets of the east and the west.

Without a doubt, the days of travel and trade by road and rail have been replaced by the efficient mobility of air travel. Where once thriving cities needed a combination of land routes and waterways, today airport hubs have taken centre stage.

Described as "one of the 10 ideas that will change the world" by *Time* magazine, the concept of the airport city, or aerotropolis, represents a shift in dynamics and criteria required to compete in an increasingly globalised world.

A city designed around an airport with the objective of connecting workers, suppliers, executives and goods to the global marketplace, an aerotropolis is a new model of urban design that reflects the changes in the way we live and work today.

Accordingly, the city of DWC, with its districts built around Al Maktoum International Airport, the world's largest airport when completed, has been designed to reflect this dynamic.

Based on the vision of John Kasarda, an American professor who envisaged a new type of urban development in which people working in or near airports would not need long commutes

to go home but live in a city specifically built for them, DWC will offer its residents and visitors places to live, eat, shop and be entertained without having to commute.

A self-sustained economic zone with its own businesses, trade facilities, customised transportation links and residential offerings including schools, hospitals and parks, DWC is comprised of eight districts which cater to the specific needs of those living and working there. The districts are logistics, aviation, residential, commercial, humanitarian, exhibition, golf and the airport, itself.

Ecosystem of business

"We are not just building a new city. We are creating an ecosystem of businesses that will support each other," said Rashed Bu Qara'a, COO of Dubai Aviation City Corporation (DACC), the government entity responsible for overseeing the development of DWC.

While it is natural for aviation-related businesses to take centre stage in an airport city, all the districts of DWC have been designed to complement each other, catering to the distinct needs of residents (such as the residential district with its middle-income housing facilities and the golf district with its high-end villas) and benefiting from the transportation corridors radiating out from the central airport.

Connected to the airport, the aviation district



is a cluster of aviation-related businesses that meet the needs of the industry from design to development to the operation and use of aircraft.

With its landside and airside access to the world's largest airport, this district caters to the practical requirements of MROs, FBOs, light industries, research and development facilities and pilot training.

As the region's booming aviation industry breaks all records with Emirates, Etihad and Qatar Airways leading the way, this district is poised to become the aerospace hub of the world.

Strategically located for international markets, it stands at the crossroads of three continents. The natural midway point between the manufacturing hubs of Asia and Europe, it offers access to Middle East, North Africa and South Asia (MENASA).

An eight-hour flight from two-thirds of the



DWC is so much more than just an airport as this model demonstrates.

world's population and a four-hour flight from one-third, it sits in a commanding position, ready to lead the world's aviation industry.

Connected to the Jebel Ali seaport, the sixth largest container terminal in the world, Al Maktoum International Airport and its related businesses stand to benefit from Dubai's port structure – rated number three in the world – as well as Dubai's air transport, rated number two in the world.

"It is the speed, connectivity and ease of doing business that we offer that sets us apart," said Tahnoon Saif, vice president of the aviation district.

In a region – MENA – where the growth rate of business aviation is being forecast as 152% (up from \$515 million to \$1.3 billion by 2020) and a city – Dubai – in which total aviation contribution comprises 28% of the GDP, the scope of future growth for this industry can only be extrapolated.

Connected to the rest of the world as well as the UAE through its network of sea, road, rail and air networks, the aviation district is comprised of aviation clusters, which provide a comprehensive ecosystem for business aviation and aerospace with a support system replete with full facilities.

Market demands

These clusters, which have been developed in accordance to the market demands and business opportunities of the region, will provide service, repair, maintenance and assembly facilities for the FBOs.

Access to top quality maintenance and repair services at DWC, building time as well as cost efficiency, is the value that this district brings to the region.

Among the many amenities offered by the district is a completion centre, which will allow new, "green" (unfinished) jets to be refurbished

as per the customers' specific requirements on site.

As the business aviation facilities from Dubai International Airport begin their shift to DWC, more and more amenities will become available for its business partners. From individualised, custom-made hangars designed for the specific needs of different operators, to VIP customs and immigration facilities, to quicker take-off and landing slots to a private entrance for each FBO, the ease of doing business at DWC is already a reality.

The world has come a long way from the days when travellers had to navigate their way through treacherous mountain paths by foot and by camel in order to transport their goods. Back then, there was no concept of speed, connectivity or ease of business.

Today, at DWC, the sky seems to be the limit. Or maybe, not even.

Clear to go: The first Etihad A380 launches from the new runway.



Fifteen minutes of fame...

A 15-minute “training flight” out of Abu Dhabi International Airport (ADIA) caused quite a stir recently.

Barbara Saunders

explains why.

The first Etihad Airways (EY) A380 flight from the newly upgraded southern runway at Abu Dhabi International Airport (ADIA) was something of a fashion parade as one of the world’s largest passenger airliners, bedecked in the sleek new livery of the UAE’s national airline, took to the skies for a short flight over the surrounding area.

It was a training flight – timed beautifully to also promote the completion of ‘project runway’ and just days before the airline began scheduled flights from the UAE capital to London Heathrow using its A380, complete with its residences in the sky.

The runway, of course, was the star, representing a milestone in Abu Dhabi Airports Company’s (ADAC) expansion in preparation for the much-heralded 2017 opening of the iconic Midfield Terminal Complex (MTC), designed to increase Abu Dhabi’s passenger capacity to 30 million a year.

Aviation landscape

Watching from a shaded VIP area was a who’s who of the Abu Dhabi aviation landscape, including ADAC chairman, His Excellency Ali Majed Al Mansoori, the company’s board of directors and officials from the General Civil Aviation Authority, Etihad Airways, and Abu Dhabi’s Department of Transport, Department of Customs, and Department of Ports and Airports Security.

They were all delighted by the southern runway refurbishment and widening – the key component of ADAC’s south airfield programme.

The runway, which had been out of action for nine months, has now been elevated to code ‘F’ standard from code ‘C’, enabling it to accommodate every type of commercial aircraft.

The upgrade cost ADAC AED830 million (\$226 million).

EY has a hefty aircraft order book boasting nine airliners due for delivery in the first half of 2015, comprising three Airbus A380s, three Boeing 787-9 Dreamliners and three



ADAC chairman Ali Majed Al Mansoori gives the radio clearance to open the runway.

A320 family aircraft. The carrier currently has a fleet of 102 aircraft with more than 210 additional on firm order, plus options and purchase rights for a further 81.

ADIA’s southern runway now functions independently of the parallel northern runway – yet combine the two and you get a whopping capacity in excess of 500,000 annual aircraft movements, making ADIA one of the world’s largest two-runway operations.

In addition to the runway renovation, the southern

airfield programme included the construction of a 1.2km airside road tunnel running underneath the runway. The 40metre-wide tunnel will enable full connectivity between the MTC and ADIA’s existing terminals 1 and 3.

An additional 21 wide-body aircraft stands have also been built along the apron.

ADAC officials say that the newly upgraded runway will allow ADIA to handle more passenger and freight aircraft and, once the MTC is complete, will raise capacity to above 45 million passengers per annum, enough to accommodate EY expansion. It can handle 34 flights an hour, which, ADIA believes, will increase efficiency and reduce air traffic congestion.

Maintain aircraft activity

Another upside of the upgrade is that it will help maintain aircraft activity in adverse weather conditions – good news for a facility which, in late November, was hit by unexpected dense rolling fog that delayed 44 EY flights for up to four hours and led to the cancellation of several others.

ADAC sees the runway project as taking it one step closer to becoming, in the words of its chairman, “the world’s leading airports group” while His Excellency Saif Mohammed Al Suwaidi, director general – UAE General Civil Aviation Authority said the knock-on impact of ADIA’s development is touching a myriad of sectors.

“The stunning growth of the aviation sector has had a positive impact on many industries in the emirate, including the business sector, tourism, foreign trade, and other mainstays of the national economy,” he said.



Strata's new layers of aerospace expertise

Strata has been expanding its procurement from local industry.

Composites and metallic components specialist, Strata Manufacturing, is a prime example of the UAE's drive to develop a full-scale aerospace sector. As it moves up the value chain, Alan Dron reports that it is pulling in more companies and helping develop an aviation ecosystem.

Just five years after being created, Strata Manufacturing has become a tier-1 supplier to Boeing and Airbus as it builds increasingly complex components for the world's two largest aircraft manufacturers.

However, the company is not resting on its laurels – it plans to continue its rapid expansion in the next few years.

"Wait until you see what we are going to be doing with Plant 2, our next big project," said Badr Al Olama, Strata's CEO.

That new facility is due to start production in around 2018-19 and will considerably expand capacity, playing a major part in reaching another target – increasing the company's annual revenues to one billion dirhams (\$272 million) by 2020.

Even now, the existing facility is being expanded by almost 50%, from 21,000sqm to 30,000sqm, with the intention of increasing today's six production lines to 10. And, within today's plant, more space is being made available for expansion by outsourcing simpler tasks to subcontractors.

Last year, for example, Strata signed a 10-year contract to outsource honeycomb cutting and kitting to Premier Composite Technologies (PCT) of Jebel Ali. Premier will cut the material into the required shapes and send the kits for A380 flap track fairings to Strata for assembly.

The benefits to Strata included reduced inventory days on raw material, working capital

savings, and the availability of 400sqm of factory floor space that can be utilised for higher-value activities. "Space to us is very important," said Al Olama. "If we're using it for non-core activities, we might as well find somebody to help us.

"We chose PCT following a very competitive bidding process, which involved several international companies – a reflection of the growing capabilities of Emirati companies entering the aerospace industry's global supply chain."

In addition to the A380 flap track fairings work, PCT will also competitively bid on the honeycomb packages for A330 flap track fairings, ailerons and spoilers. Tenders for work on Boeing programmes are likely to follow.

Moves such as this expand the UAE's aerospace industry as a whole; last year, Strata's procurement from local suppliers amounted to 30%, a percentage it is working towards increasing. In addition, spreading aerospace activities among more companies creates new revenues and new jobs, particularly for Emirati citizens.

By the end of 2014, Strata aimed to have increased the number of UAE nationals in its workforce to around 50%, as it followed its ambition to become a centre of excellence in wings and, particularly, empennages.

Why empennages? "We do have a limited pool of UAE nationals," acknowledged Al Olama. "We want

Continued
on Page 114



Strata is aiming at 50% Emirati staff.

CONTINUED FROM PAGE 113

to focus that energy, drive and passion towards a specific know-how. We believe empennages will continue to be made from carbon-fibre or composites.”

If it can establish that type of niche for itself, the sky’s the limit. Al Olama pointed to the huge – and expanding – order books of both Boeing and Airbus, where a 737 or A320 emerges from the final assembly line every 18 hours. Successfully tap into that output and the company’s future is assured for years.

Strata is already developing a reputation with the aerospace giants. In 2012, it signed a contract for 777 empennage ribs and 787 vertical fin ribs. In May last year, it announced that it had achieved a major milestone in its development by delivering the first of those parts – the first ship-set of 777 composite ribs – to Boeing facilities in Washington State.

Vertical fin

Fittingly, they were installed in the vertical fin and horizontal stabilisers for a 777-300ER that was delivered to Emirates Airline later in 2014.

“We have already delivered 12 ship-sets of 777 ribs,” said Al Olama late last year “and by the end of the year we’re hoping to finish off the first 787 ribs.” Strata is also in discussions to build the complete 787 vertical fin.

Building the Dreamliner’s complete fin would be a major accomplishment for Strata. Numbers of ship-sets have still to be worked out. However, Al Olama believes it is unlikely Strata would become sole supplier of the fin.

This is because there has been a shift in the components policies of major airframers. Until recently, their policy was one of ‘supply chain

“We do target having an Emirati staff population of 50% and intend to maintain that. I think a balance between a local population that’s eager to learn and very passionate and committed, and 50% that is well-seasoned and sees this as an opportunity to create a new legacy in the market, is ideal.”

BADR AL OLAMA

efficiency’, with one supplier focusing on just one item. That has now changed to ‘supply chain flexibility’. Al Olama believes this is as a result of the tsunami that struck Japan in 2011. Several western manufacturers, particularly in the electronics sector, faced considerable disruption when their sole Japanese suppliers’ factories were inundated and left unworkable for weeks. Other OEMs in various industries took note and decided to spread their bets.

At the 2013 Dubai Airshow, Strata’s parent company, Mubadala, signed contracts with both Boeing and Airbus. With Boeing, it announced an agreement to supply up to \$2.5 billion in advanced composites and machined metals for both the 787 and next-generation 777X.

The companies also agreed to work together to develop pre-preg and carbon-fibre manufacturing capabilities in Abu Dhabi to support the development of an aerostructures industry.

With Airbus, it secured a new strategic agreement for further work package commitments. That built on previous agreements to build flap track fairings for the A330, A380 and new A350. It is also delivering fully assembled A330 ailerons and has won a recent contract with SABCA of Belgium to manufacture A350 flap surface fairings. Work on those is likely to start this year.

Despite the publicity that surrounded the deals with Boeing and Airbus, Strata was already a tier-1 supplier – to Franco-Italian manufacturer ATR, for which it provides vertical fins for the European company’s twin turboprop regional airliners.

Possibilities exist for Strata to widen its capabilities beyond aerostructures, particularly through the use of automatic tape-laying machines for composites, which the company does not currently possess. Such a move could see it



Strata is committed to the kaizen continuous improvement methods.

manufacturing items ranging from wind farm turbine blades to shipbuilding.

Despite its own success, however, Al Olama sees Strata's greatest achievement as being an enabler for the local economy: "Yes, we're supplying parts for Boeing and Airbus around the world, but very important is the fact that we're building a national capability, encouraging small and medium-sized companies to enter the aerospace sector. By becoming registered suppliers to us, that gives them enough base load to enable them to start supplying other aerospace manufacturers. It's about growing an ecosystem around us."

Work packages

Strata currently has around 640 employees, with another 100 UAE nationals in training, and the CEO sees this number as staying in the 650-750 bracket over the next few years, depending on work packages won by the company.

"There's always some attrition, which is good for any organisation, as it allows you to bring in fresh blood," he said.

"We do target having an Emirati [staff] population of 50% and intend to maintain that. I think a balance between a local population that's eager to learn and very passionate and committed, and 50% that is well-seasoned and sees this as an opportunity to create a new legacy in the market, is ideal. These people have seen the world and want to bring best practice here."

Women are increasingly applying for jobs with Strata: "You see a lot of women who are very interested in doing jobs that in the UAE and around the world you would assume men would do."

Part of the reason for this, said Al Olama, was that the Al Ain region had the greatest number of

universities and colleges in the UAE. There were increasing numbers of graduate women or who saw the development of the UAE on the world stage and wanted to be part of that development. "I do feel that a lot of UAE women are very much committed to that national vision of the country and want to play a role in it."

Traditionally, many had found jobs in the oil and gas industries, or real estate, but the up-and-coming aerospace sector was now providing a new outlet for their talents, said Al Olama. As proof, he pointed to the 1200 CVs he received in the past year from Emiratis keen to join Strata.

However, the company has to fight to find the necessary numbers of Emirati staff. There is competition from many other local companies. The most difficult people to find are mechanical and industrial engineers.

Strata is looking into the possibility of working with local universities and colleges to offer students the opportunity to work for the company on a part-time basis and, perhaps, also to introduce them to skills that they might not previously have thought of tackling.

In February 2013, Mubadala Aerospace signed an agreement with UAE University to train the next generation of Emirati technicians to work at Strata. The initiative brought in professional trainers from Lockheed Martin to deliver key parts of the course.

Two or three batches, each of around 70 trainees, begin their studies each year. The course consists of four months of foundation training, six months of working on composites, followed by 12 months of on-the-job experience.

Standards are high; typically, around 45 people from each batch fail to complete the 22-month training process. "They either fail exams or don't

have the necessary discipline," said Al Olama. Boeing and Airbus "have no mercy with missed deliveries", he explained. If working on weekends or holidays was required to fulfil a delivery deadline, staff had to be prepared to do that.

Talks are also under way with Boeing and Airbus that could see engineers spending time with the two airframers as a form of apprenticeship.

Despite the achievement of winning contracts with Boeing and Airbus, Olama personally rates the promotion of 10 Emiratis to team leader positions as Strata's greatest success of 2014.

"I don't influence that decision; it's my English and Irish managers who tell me who has shown leadership skills and who they feel are capable of managing groups of 10 people."

Multi-national personnel

Many of those new team leaders are women and to have them managing groups of multi-national personnel is a real achievement, he said.

Keeping Strata ahead of new competitors is vital. For this reason, it is committed to the Japanese kaizen, or continuous improvement method. Al Olama and his management team have visited Japan to see this in action and every year groups of Strata personnel travel to the Far East to train in the technique and, in turn, train their colleagues back in the UAE.

What does Al Olama see as the future path for Strata? Developing a design capability is one goal. Positioning Strata as a partner on the next generation of civil airliners is another.

If the next five years show the same level of progress as the company's first half-decade, its name is likely to become much better known in the aviation industry and beyond.

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Sixth of the best...

The Aircraft Interiors Middle East (AIME) show is gearing up for record numbers when it opens its doors this month as Marcelle Nethersole reports.

Following the success of co-locating Aircraft Interiors Middle East (AIME) and MRO Middle East, the two-day event will return on February 2-3 at the Dubai World Trade Centre (DWTC).

Both shows are expected to grow year on year, reflecting the increasing importance of the Middle East in the global aerospace industry.

In 2014, the events saw a record number of visitors with 3,344 attendees from 75 countries, 80 airlines, and 229 exhibitors.

This year will mark the sixth edition of the show and it is set to break 2014's visitor numbers. An analysis showed that 71% of airline attendees do not attend any other major aircraft interiors event worldwide.

Philipp Dahm, managing director of exhibitor Rohi, said: "This two-day exhibition and conference provides the ideal platform for interiors suppliers, providers and buyers to network and establish new relationships in the Middle East. In 2014 we successfully met all the right people under one roof."

Ideal location

Another one of the big exhibitors' last year was Thales. "AIME provides us the ideal location to meet key customers up close, especially airlines such as Emirates, Etihad and Oman Air, who are leading the way in cabin interiors," said Bruno Guinamand, vice president, general manager EuMEA Region, Thales Avionics.

Angus King, sales Europe & Middle East, at Lonséal confirmed its 2015 booking: "Last year was our third time exhibiting at the show and we decided to take a larger stand as this market is 'where it is at' – basically where all the growth is happening. This year will be another exciting year at the show."

Returning for the 2015 show will be the airline buyers programme, which will see scheduled meetings between invited airline attendees taking place with exhibitors, allowing both parties to maximise their time at the show.

Michele van Akelijen, managing director, F&E Aerospace, organiser of AIME, said: "The return of the airline buyers

programme, which is updated for 2015, demonstrates our commitment to creating a platform for sales and strategic networking opportunities for our attendees."

This year's event will again focus on in-flight entertainment (IFE) and, for the third time, HMG Aerospace (publishers of *Inflight* magazine) has again partnered with F&E Aerospace to host a dedicated in-flight entertainment and connectivity (IFEC) pavilion.

The pavilion will offer a designated area where leading IFEC manufacturers and suppliers can showcase their innovations and product developments to a highly targeted audience.

Wireless entertainment

Key names in the market are divided on where airline efforts should be focused, with some arguing that wireless entertainment will become the new norm, and that investment should focus on in-flight Wi-Fi and connectivity to support this shift. In the Middle East, however, carriers are fully vested in embedded IFEC and are setting a new standard for passengers as a result.

With more and more airlines offering in-flight Wi-Fi and the exponential passenger increase in personal electronic devices (PED), plus the growing acceptance of – and reliance on – connectivity and PED applications in all areas of life, the time has never been better for airlines to redesign their offerings.

A recent survey from Honeywell Aerospace revealed 76% of respondents – of 1,300 Middle East residents – said they viewed in-flight connectivity as important or vital. Some 68% agreed that staying online while flying was vital for work; while 70% said they would consider purchasing Wi-Fi on board a long-haul flight.

"IFEC is a key part of the airline experience," said van Akelijen. "Previous editions of AIME demonstrated the popularity of the IFEC pavilion and we are pleased to be partnering with HMG Aerospace to bring this feature back for AIME 2015, along with the associated workshop and awards ceremony."

The Ebola epidemic in west Africa has potentially major implications for the airline industry. One company fears that poor cleaning standards and increasingly tight turnaround times are providing Ebola and other lethal pathogens with an opportunity to spread among passengers. How do carriers keep crew and customers safe without disrupting their businesses? Alan Dron reports.

How to wipe out risks for passengers and crew

The theory of international air travel facilitating a fast-spreading pandemic has been around for decades. In the 1970s, one seminal British television programme posited the results of a lethal flu-type organism travelling the air routes and wiping out much of the global population.

Perhaps a little extreme – but never before in human history has it been possible for someone to travel from the seat of an epidemic in a remote location to one of the world's major population centres within 12 hours.

The current Ebola crisis has seen several incidents where medical personnel treating victims in west Africa have been hospitalised after flying back to their native countries. While these individual cases have, so far, been contained, there are fears that passengers on the same flight as a someone carrying a dangerous virus – such as Ebola, Middle East Respiratory Syndrome (MERS) or H5N1 bird flu – could be infected and spread the disease after they reach their destination.

According to the World Health Organisation (WHO), the chances of contracting Ebola when travelling in close proximity to someone with the virus are very slight. A carrier only becomes contagious (the virus spreads through contact with bodily fluids) when they are so ill that it is extremely unlikely that they would feel able to travel. The International Air Transport Association (IATA), the airlines' representative body, supports this view.

"One thing to emphasise is that the WHO does not recommend the closure of border or restrictions on travel/trade," noted an IATA spokesman.

On the issue of on-board cleaning standards, he added: "Airlines are regulated nationally. In principle, regulations are aligned with global standards where they exist, but requirements can vary from state to state." The WHO was the best body to issue any international guidelines, he added.

Concerns remain, however, that a person just on the cusp of reaching the contagious stage might be



An Emirates flight is held under quarantine in Boston having carried a suspected ebola victim from Africa via Dubai.

on a flight when they started to feel unwell. A British nurse returning from treating Ebola patients in Sierra Leone in late December flew from Freetown to London via Casablanca on Royal Air Maroc, then on to her home city of Glasgow by British Airways. She reported to health authorities at London's Heathrow airport that she felt unwell. However, her temperature was normal and she was allowed to travel onwards.

At the time of writing in mid-January, she remained seriously ill in a special isolation unit in a London hospital.

The big problem, say the bosses of a new company whose product is aimed at destroying dangerous pathogens on board aircraft, is that many are capable of remaining infectious for days, even weeks. And they claim that current cleaning procedures on airliners simply do not kill the organisms.

Alex Sahni and Wim Savonije, two of the three managing partners of Virus-Guard, said the Ebola virus has been found capable of remaining

viable for 21 days on surfaces, while MERS can stay active for 14.

Sahni and Savonije, stressed there was no need to over-react to the Ebola crisis, but neither should it be under-estimated.

A major problem, they said, was that cleaning airliners was frequently outsourced to the cheapest bidder and that cleaners were under pressure to do their job as quickly as possible so as not to delay departures. Cleaning was frequently restricted to vacuuming carpets and clearing any obvious spills. And some airlines targeting turnarounds of around 40 minutes between flights had little or no time to do any cleaning.

All this, argued Sahni and Savonije, makes cross-contamination of surfaces such as trays, armrests, touch-screens and window surrounds virtually inevitable.

Scrapings taken from seatback trays around the world have found a huge variety of organisms living there. Some of the worst areas for contamination are seatback pockets.



Existing disinfection methods frequently rely on alcohol-based substances, which act effectively against microorganisms.

However, alcohol can be problematic in the Islamic world and is, anyway, supposed to be banned on board aircraft because of its flammability. In addition, as it evaporates quickly, it does not give lasting protection. Water-based disinfectants take time to become 'established' on surfaces and their effectiveness still fades quickly, claimed the Virus-Guard partners.

There are methods of effectively disinfecting a complete aircraft, said Sahni, but these rely on special vaporisers placed on board that require three to five hours to do their job.

His company, which is registered in the Netherlands, is proposing a new substance (bearing the Virus-Guard name) to solve this problem.

Its innovation is not in the active ingredient, an anti-viral, anti-bacterial and anti-fungal substance called Bacoban, but in the medium in

which it is contained, which creates a microscopic 'spongy' layer on surfaces that remains effective against contaminants for up to 10 days, claims the company.

Sahni and Savonije said they have made presentations to several Middle East airlines on Virus-Guard. All have expressed interest, but Virus-Guard's partners have been frustrated by the fact that responsibility for aircraft interior cleaning seems to fall between several departments, such as those responsible for in-flight services, engineering and ground handling. This has resulted in confusion over who is responsible for making the necessary decision to get their product on-board.

The most favourable reaction, said Sahni, has come from Qatar Airways, one of whose senior officials was keen to acquire the product. The airline said it was unable to comment.

Given the difficulty of having cleaning crews disinfect aircraft adequately between flights, added Sahni, "Giving wet wipes to passengers

WHO guidelines for staying safe

The World Health Organisation's (WHO) 2009 Guide to Hygiene and Sanitation in Aviation makes the point that: "disinfectants tend to be oxidizers, and the interior of an aircraft contains many materials susceptible to damage from cleaning products and disinfectants. Metals used in the construction of the aircraft may corrode... and aircraft furnishings may have their fire resistance properties reduced."

"The critical aspects of cleaning and disinfection programmes include the availability of cleaning schedules and procedures for timely and effective airport and aircraft routine cleaning by designated personnel."

"Aircraft operators should be prepared to adjust their routine cleaning programmes if a public health risk is detected and/or if advised to do so by public health authorities."

WHO guidelines for cleaning up after a passenger suffering from Ebola has left the aircraft are based on IATA recommendations. These include cleaning crews being issued with full protective clothing, including masks and goggles, and thoroughly cleaning their hands after removing that clothing.

"Seat covers and carpeting with a significant contaminated area should be removed carefully, placed in a labelled, sealed plastic bag, and laundered in accordance with the manufacturer's instructions, or destroyed. In case of contamination that has penetrated the seat cover, the underlying seat upholstery may need to be removed for adequate disinfection."

to sanitise their individual seat area is probably the most efficient way of doing it."

Sachets containing the wipes could be branded with the airline's logo and bear a simple message such as 'For your surroundings', he suggested. It would allow the airline to have a proactive stance, yet leave the decision of whether to clean a seat to the individual passenger.

Putting this proposal to one Middle East carrier, which Sahni declined to name, brought an excited reaction: "They immediately started to ask how much they could charge for selling the sachets to passengers." Not quite the reaction Virus-Guard was hoping for.

The cost to an airline of using the product would be around \$10 a flight, said Savonije, who has a background in chemistry and nanotechnology.

The Ebola threat will diminish, said Sahni, but another problem will take its place. He hopes that airlines will be in a position to confront it effectively.

*In-flight connectivity aboard business jets has gone from being a technical curiosity to a necessity in just a few years. And, as **Steve Nichols** reports, it is about to get even more useful as faster satcom systems come online.*

Calling all Kas...

High-speed Ka and Ku-band systems allow TV, video calling and conferencing, fast broadband internet access, e-mail, virtual private network (VPN) access, voice over internet protocol (VOIP) and much more for the cabin.

And the flight deck is not being forgotten either, with wirelessly updated flight maps, real-time weather updates, and maintenance information.

So what is going to drive this growth over the next few years?

Inmarsat is due to launch its Global Xpress (GX) Ka-band service to the aviation community early in the second half of 2015.

Whereas Inmarsat's existing SwiftBroadband (SB) service uses L-band frequencies in the 1 to 2GHz range, Ka will use much higher microwave frequencies in the 26.5–40GHz area of the spectrum.

Radio frequencies

Just as an FM radio broadcast can offer higher quality than medium wave, the higher Ka-band radio frequencies being used means data throughputs can be increased dramatically, offering in the region of 30-50 megabits per second (Mbps), compared with 432kbps with SB – up to a 100x speed increase.

Boeing built the three 702HP Ka-band satellites that will form the Inmarsat I-5 constellation when they are fully operational next year and a fourth satellite has been ordered to act as a back-up in case of a launch failure.

The first I-5 satellite is now safely in position over the Indian Ocean and is ready to serve Europe, Asia, the Middle East and Africa. The second satellite will cover the Atlantic Ocean Region (AOR) and the Americas, with the third covering the Pacific Ocean Region (POR).

The next two satellites are likely to be launched early in 2015, after a delay due to technical problems with the Russian Proton launcher, one of which failed to put its payload into orbit back in May.



Inmarsat is due to launch its Global Xpress service during this year.

Leo Mondale, Inmarsat's president aviation, wouldn't put an exact date on the next I-5 launch.

"We will have all our three I-5 satellites in service by mid-2015," he said. "But as for the exact launch dates we can't put them on the calendar just yet. I've been in the space industry a long time and what we want is a successful launch. That won't happen until everyone is confident that it will be OK."

Incredibly complex

"Inmarsat's Global Xpress system is incredibly complex and the launch is only a small, but important part of its entire journey, so we want it right. What I would say is that the experience we have built up with the first I-5 satellite means the testing and introduction to service phases of the second and third satellites will be much shorter.

"GX will offer the only truly global Ka-band connectivity service – that's the ultimate goal."

Honeywell is building the antennas and avionics needed for aircraft wanting to use GX. The business jet offering is called Jet ConneX

(JX) and will offer up to 50Mbps to VVIP aircraft and up to 33Mbps to jets.

Narrow and wide-body aircraft can be fitted with a fuselage-mounted antenna that can track the satellite. Smaller aircraft, such as business jets, will use a tail-mounted parabolic dish antenna, which tips the scales at just 9lbs and can easily be balanced on one hand.

Both antennas will have to sit under a radome made from specialist materials transparent to the microwave radio signals being beamed down from the three I-5 satellites 22,000 miles above the equator.

So, with GX coming online in the middle of 2015, is that the end of Inmarsat's slower SwiftBroadband (SB) service?

Far from it. Inmarsat expects the two services to be complementary, not for GX to replace SB. In fact, Inmarsat is continuing to invest in SB, which it feels has a long life ahead of it.

As well as offering data speeds to the cabin of up to 432kbps – enough for e-mails, small file transfers and phone calls using VOIP – there is a



lightweight version known as SB200, which uses smaller, lighter antennas and is, therefore, well suited to business jets.

Data speeds give a similar experience to that found over a typical hotel Wi-Fi connection.

But Inmarsat is also currently flight-testing SB for aviation ‘safety services’ – air traffic control (ATC) instructions passed from the ground to aircraft.

This will allow aircraft communications addressing and reporting system (ACARS) data messages to be passed over an SB satellite link.

Initial testing has been complete aboard an Airbus A319 and Hawaiian Airlines is due to start further testing shortly using a Cobham Aviator S terminal – the S standing for “safety”.

Start of a revolution

Mondale said: “This is the start of a revolution in communications for the flight deck. It shows the way forward for future air navigation systems (FANS) for the nearly 10,000 aircraft currently relying on our Inmarsat ‘classic aero’ services, which were launched more than 20 years ago.

“SB Safety provides prioritised voice and ACARS/FANS data transmission when an aircraft is out of reach of land-based communications, which is indispensable for aircraft flying over oceans.”

Safety services are currently approved for use over the Inmarsat I-3 “classic” services. But one of the key milestones for SB safety services was the launch of the Alphasat satellite last year, which provides the extra throughput and capacity needed.

As well as ACARS, SB Safety also supports flight deck voice services and IP connectivity to the flight deck, enabling other flight operations and cockpit services, such as in-flight updates to electronic flight bags (EFBs) and flight data recorder (FDR) downloads.

It also supports aircraft position reporting and tracking, and voice transmission for air traffic management (ATM) communications. A range of terminal variants will be available, ensuring SB Safety can meet the requirements of all aircraft types, including business jets.

SB Safety is expected to achieve FANS approval in early 2016, following successful flight trials with Hawaiian, which are being undertaken under FAA supervision.

So is there anything else in the pipeline for business jet operators?

Iridium has also been another mainstay for operators in the MENA region. Using a constellation of low-Earth orbiting satellites, Iridium’s biggest plus has been the small antennas needed for the system to work. Often only the size of a hockey puck, this has meant installation costs could be kept low.

The downside is that Iridium only offers very low data speeds of around 2.4kbps – good enough for telephone services and basic e-mail, but not fast enough for video or large file transfers.

Iridium is also authorised for critical air traffic control communications (safety services) for aircraft operating in oceanic airspace

This followed the completion of an FAA process evaluating aircraft flying in airspace under its jurisdiction to use FANS 1/A over Iridium.

But times are changing and the company has plans for a new constellation of 66 satellites and a number of in-orbit spares to be launched called Iridium NEXT.

The constellation is expected to provide service to 2030 and beyond, while offering customers greater bandwidth and data speeds.

Matt Desch, CEO, Iridium, recently said: “Our Iridium NEXT programme continues to track toward its first scheduled launch in mid-2015, as we’ve achieved several key milestones during the last few months.

“The first satellite engineering model is complete and has been delivered to Iridium’s technical support centre, enabling us to conduct a rigorous functionality and compatibility review with the entire network system.”

But, if you don’t want SwiftBroadband or Iridium, and can’t wait for Jet ConneX or Iridium NEXT, there is another alternative available.

ViaSat’s Yonder and Exede in the Air high-speed connectivity services promise cable-like performance, plus seamless connections around the globe, via Ku-band and Ka-band satellite connections.

Yonder offers up to 1.5Mbps to the aircraft and up to 128kbps off with supplemental type certificates (STCs) for a host of aircraft including Gulfstream, Boeing (BBJ), Cessna and Bombardier.

Extensive coverage

ViaSat currently has extensive coverage throughout the world and there are plans to extend this further over the next few years, especially over parts of north Africa, eastern Europe, the Far East and northern Scandinavia.

There is currently good coverage over the Middle East.

ViaSat Exede in the Air takes speeds even higher thanks to its Ka-band performance, but there is currently no coverage over the Middle East.

Exede boosts cabin-available speeds up to around 12-15Mbps via a network of three satellites. Europe is covered by an agreement with Eutelsat for coverage over its KA-SAT satellite. ViaSat-2 is also coming in 2016, bridging North America and Europe Ka-band satellite coverage.

ViaSat also has embryonic plans for Ka-band coverage over the MENA region in the future.

So, the future of in-flight connectivity for the business aviation community is a rosy one. There are lots of options to choose from and plenty of developments in the pipeline.

The recent AirAsia crash in the Java Sea has seen renewed calls for flight-tracking to be made mandatory. Steve Nichols looks at the issues.

Flight tracking: the plot thickens

The loss of Indonesia AirAsia flight QZ8501, while en-route to Singapore, has prompted renewed calls for accurate and frequently updated flight-tracking to be made mandatory.

The Airbus A320-200, carrying 162 people from Surabaya in Indonesia, crashed in late December after communications were lost following the pilot's request for a route diversion to avoid thunderstorms.

Wreckage and bodies were subsequently found by search and rescue teams in the Java Sea off Borneo.

The accident has brought into sharp focus the problem of knowing exactly where an aircraft is at all times, with many commentators drawing parallels with the loss of both Air France flight AF-447 and Malaysia Airlines flight MH370.

AF-447, which crashed in the Atlantic Ocean in 2009, was missing for two years before the flight recorder and cockpit voice recorder were recovered.

In the MH370 incident, UK satellite communications giant Inmarsat used satellite 'pings' from aircraft to try to narrow down its possible location. As a result, the hunt for MH370 moved entirely to the ocean off the coast of Perth in Australia.

In the end, Inmarsat used the Doppler effect and time delays from the aircraft's signals to help it plot the likely last known possible locations of the aircraft, although the aircraft or its wreckage have so far not been found.

MH370 was fitted with equipment capable of transmitting over the Inmarsat I-3/I-4 satellite network, but the AirAsia Airbus had no such equipment. Inmarsat confirmed that AirAsia was in the midst of rolling out equipment offering Wi-Fi for passengers using a satellite link that could also

deliver position updates, but it was not fitted on QZ8501.

Nevertheless, this has highlighted an on-going issue with tracking that has been hotly debated since the MH370 disaster.

In May, Inmarsat announced that it had proposed a free global airline tracking solution to both the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO).

This service was offered to all 11,000 commercial passenger aircraft already equipped with an Inmarsat satellite connection, virtually 100% of the world's long-haul commercial fleet.

In addition to the free global airline tracking service, Inmarsat also offered an enhanced position reporting facility to support reduced in-flight aircraft separation, and a 'black box in the cloud' service, under which – on the back of certain defined trigger events (such as an unapproved course deviation) – historic and real-time flight data recorder and cockpit voice recorder information could be streamed off an aircraft to defined aviation safety recipients.

Major contribution

At the time of the announcement, Rupert Pearce, CEO of Inmarsat, said: "Inmarsat has been providing global aviation safety services for more than 20 years and we are confident that the proposals we have presented to ICAO and IATA represent a major contribution to enhancing aviation safety services on a global basis. In the wake of the loss of MH370, we believe this is simply the right thing to do.

"Because of the universal nature of existing Inmarsat aviation services, our proposals could be implemented right away on all ocean-going commercial aircraft using equipment that is

already installed. Furthermore, our leading aviation safety partners are fully supportive of expanded use of the automatic dependent surveillance – contract (ADS-C) service through the Inmarsat network."

Last May, in-flight entertainment and connectivity specialist, Panasonic Avionics, also joined in the call for better tracking when it took part in a conference with the United Nations' International Telecommunication Union (ITU) and the Government of Malaysia.

The event, in Kuala Lumpur, was set up in response to the tragic loss of Malaysian Airlines flight MH370.

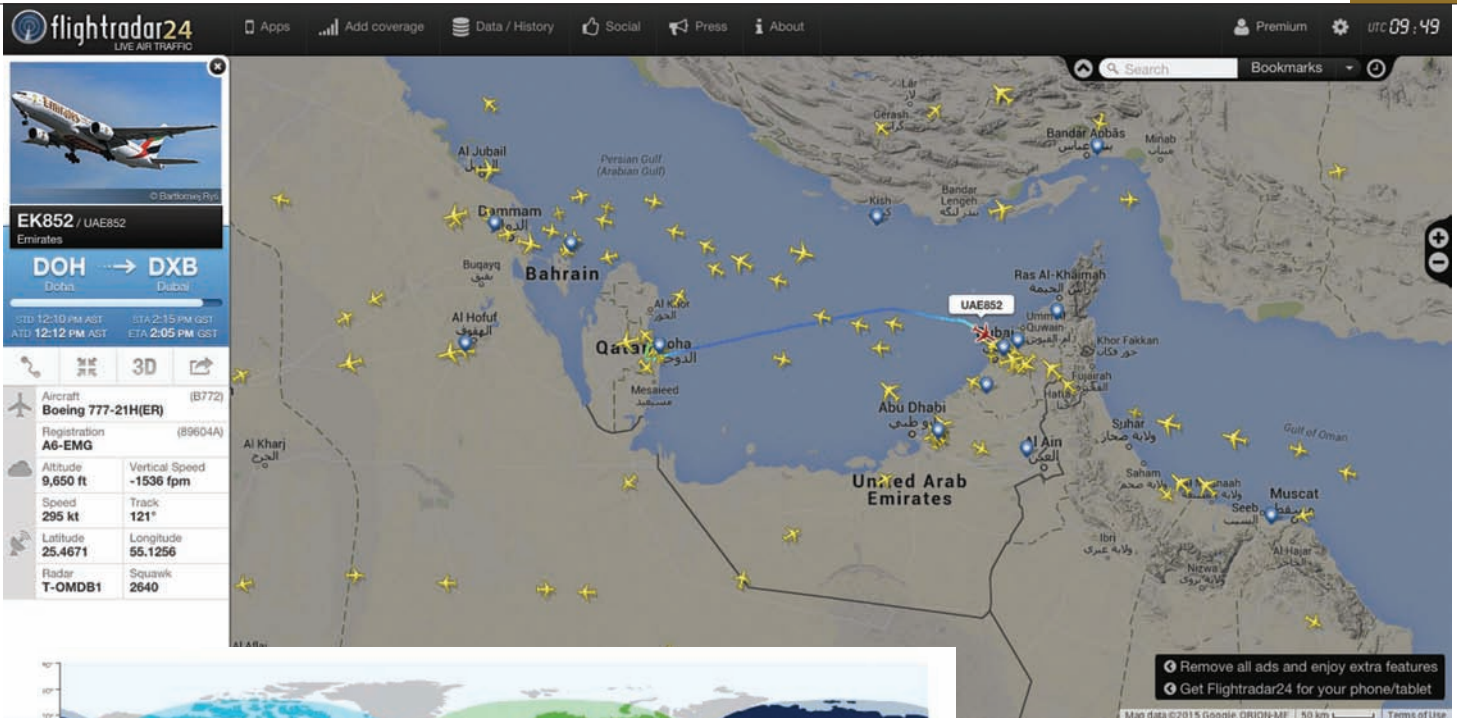
Panasonic contributed its technical expertise and presented FlightLink, its fully integrated aircraft communication, tracking and weather information solution.

FlightLink offers Iridium-based satellite communications for cockpit voice, text and operational data as well as real-time fleet monitoring. It simultaneously tracks all Panasonic-equipped aircraft, 24/7 around the globe.

Its aircraft tracking services range from positioning reporting at no more than five-minute intervals to live flight data streaming.

But satellite-based tracking is not the only option available to the industry. Systems using automatic dependent surveillance – broadcast (ADS-B) that can automatically transmit an aircraft's location are mandatory in many parts of the world, enabling even plane spotters to see where aircraft are, using a cheap and cheerful smartphone app or website. Unfortunately ADS-B is of less benefit away from ground stations.

But US-based Aireon is proposing global satellite-based ADS-B tracking be made available using Iridium's next-generation



Top: ADS-B lets enthusiasts track aircraft in near real time. Inset: Inmarsat's geostationary satellites cover a large portion of the globe.

constellation of 66 cross-linked low Earth orbiting (LEO) satellites, due to be launched over the next couple of years.

So why is it that, seemingly, nothing has been done since the loss of MH370, highlighting the irony that in the 21st century GPS technology can locate a person or car to within a few metres, but we don't always know where a fully-loaded passenger aircraft is in the world?

The IATA convened the aircraft tracking task force (ATTF) after the loss of MH370. The body was announced on April 1 2014 at the IATA ops conference in Kuala Lumpur and its first meeting took place immediately following the ICAO special meeting on aircraft flight-tracking on May 12-13 2014.

The ATTF is focused on identifying near-term options. One of its primary activities was to assess the products and services that exist today to see how they could be used to implement global flight-

tracking. It outlined a number of recommendations and standards at an IATA news conference at its Geneva headquarters on December 10, 2014.

Speaking at the conference, Tony Tyler, IATA director general and CEO, said: "Safety is our top priority. Airlines are taking the tracking issue very seriously. Some already exceed the report's suggested performance criteria. For others, closing the gap may take more than a 12-month time line for every aircraft."

"The task force has produced a report containing tracking performance criteria and a series of recommendations for airlines, air navigation service providers, and governments. ICAO says it intends to use the report to create guidance materials for states.

"Its key conclusions are that there are tools available to enable the tracking of aircraft, but more effort needs to be made to set standards for performance and procedures need to be improved.

"The public should be aware that there is no silver bullet solution on tracking. The industry is working to improve but some issues, such as tamper proofing, will take time to address and implement. Remember, the sealing of cockpit doors after '9/11' took several years to complete.

"One area of concern that also needs to be addressed is the tracking of aircraft in areas of the world that have no radar coverage," Tyler concluded.

IATA said it wanted to underline that there are up to 100,000 flights per day that operate without incident and there are different levels of tracking capabilities throughout the world that need to be further evaluated.

It also said that passing legislation covering an aircraft's failsafe systems, so that transponders or other key tracking systems couldn't be shut off, was well beyond the ATTF's near-term focus.

The ATTF broke down its conclusions into short, near, and mid-term solutions. The next steps being:

- Short-term – use what we currently have and what is currently being offered;
- Near-term – look to other solutions if the aircraft/airline don't have the latest technology, and
- Medium-term – utilise new technology, plus look at tamper-proofing.

Industry observers expecting a more hard-hitting set of recommendations were left feeling let down, according to social media.

Many were expecting better tracking solutions to be made mandatory after the loss of MH370 but it appears that a coherent industry-wide approach to the problem is still a long way off.

With, according to the British Broadcasting Corporation, only 0.24 incidents occurring per one million departures worldwide, the industry may feel that the cost of full tracking is just out of proportion to the risk.

Late last year Rockwell Collins acquired ARINC Direct. Steve Nichols looks at the integration and the outlook now for the company's business in the Middle East.

ARINC takes a Direct line to the Middle East

L launched in April 2003, ARINC Direct Business Aviation Solutions was created to provide support to private jet owners and operators.

More than 2,800 aircraft now rely on ARINC Direct to deliver a suite of services for every aspect of business aviation.

These include flight planning and operations management systems, weather, notices for airman (NOTAMS), safety management, communications, flight tracking, flight operations system (FOS) and international trip support services.

James Hardie, director, Rockwell Collins ARINC Direct EMEA, said: "The powerful combination of the two well-respected brands under one company does seem to be opening up additional opportunities and, as an example, we are transitioning some services management between our teams as we consolidate and integrate the ARINC Direct and Ascend services.

"For us to provide the services, we need to have the hardware on board the aircraft and Rockwell Collins can provide that with cutting-edge equipment, upgrades and retrofits of new functionality. For ARINC Direct, as a service provider we support all the equipment, whoever makes it, and aim to manage the continuity of aircraft connectivity by whatever means are available.

"We are all enjoying working more closely with our other Rockwell Collins colleagues who are also based in the region and have done some joint customer visits where appropriate."

He added that the company has two people based in Dubai who support the ARINC Direct business.

"One looks after sales and account

management and the other is an engineer with extensive experience in avionics and cabin systems. Additionally, we now have the support of the Rockwell Collins field service team and are collaborating in a number of positive ways," he said.

Hardie said that many of the company's experts make regular visits to support specialist requirements and work directly with customers to better understand their needs.

"For example, we have recently coordinated trips to Saudi Arabia with the support of other specialists from our teams in Europe and the USA," he said.

Global support

"Local presence is important, but what really makes this work is the global support and wide body of experience that we can bring to bear in troubleshooting any kind of customer connectivity or flight planning problem. And, if the hardware needs replacing or upgrading, then we can get some support for that too."

Hardie said that ARINC Direct was in the unique position of not only owning its own extensive datalink network, which supports thousands of airliners and business jets worldwide, but also being a partner supplier for other networks that aircraft may access, including both satellite and VHF datalinks.

This gave customers resilient worldwide capability for making sure their aircraft was connected.

The company has continued to invest and expand its VHF datalink capability across the Middle East and Africa to improve its network.

"We really understand the technology and its capabilities, so if there are any issues we can

quickly get to the bottom of it with a customer aircraft," said Hardie.

"A typical airline would probably have a whole department dedicated to maximising the use of datalink information, but in business aviation we find that we have to help customers to get the most out of it and that is a key part of our service philosophy.

"We are also fortunate to have such an active community of customers, who constantly challenge us to do things better, and those improvements are a benefit to all our customers as we evolve our services," he said.

The data ARINC Direct delivers to the cockpit encompasses the full range of aircraft services, including direct instructions from air traffic control under the controller pilot datalink communications (CPDLC) programmes that exist; engine health monitoring reports that are delivered back to original equipment manufacturers (OEMs) for fault analysis and pre-emptive action; safety of flight messages, such as weather warnings and clearances; aeronautical operation control (AOC) messages; and much more.

The latest wind information and graphical weather can also be uploaded to the pilot to ensure that the aircraft's fuel load is still valid.

So how is business?

"In spite of the challenges of 2014 for business aviation in different markets we have continued to see growth in our service uptake globally and regionally," said Hardie.

"We have increased our overall number of customers across the EMEA region and have had some great successes in the Middle East specifically.

"We are also seeing growth in the volume of



James Hardie: "We have continued to see growth in our service uptake globally and regionally."

Inset: Demand is increasing for mobile services.

use of services such as Inmarsat SwiftBroadband internet access in the cabin. Our combination of integrated services is stimulating interest and growth as customers buy into one service and realise it can be easily linked to another, which they may already have a similar version of from another vendor.

"What we are all aiming to achieve with the ARINCDirect solution is something that is greater than the sum of its parts, and that can only really be achieved by the close cooperation that we are now able to achieve within Rockwell Collins," he said.

ARINCDirect also has a state-of-the-art operations centre in Annapolis, Maryland, which maintains a round-the-clock service.

Its 'flight following' service is a premium offering to ARINCDirect customers, providing enhanced pre-flight, en-route, and post-flight support.

With the service, ARINCDirect flight coordinators (FCs) take a proactive approach to flight planning, aircraft tracking, and pilot communications, providing crews with up-to-date information on events and conditions that might affect the safety, efficiency, and comfort of the flight.

ARINCDirect was also the first business aviation service provider to integrate with the FAA's collaborative decision making (CDM) data exchange.

Originally available only to the major airlines, this service allows the company to receive early FAA air traffic projections and traffic data.

And, because it is a CDM participant, customers receive higher take-off and landing priorities than non-CDM participants.

In addition, it works hand-in-hand with the National Business Aviation Association general

aviation desk and air traffic control system command centre, monitoring the state of the national airspace system for en-route flow constraints, anticipated or assigned reroutes, and airport demand.

Using this information, integrated with its flight following service software applications, it can develop and present pilots with flight planning alternatives before and during flight, mitigating disruptions to their schedule.

Dedicated flight following helps reduce or eliminate ground delays and mitigates schedule disruptions because of weather and/or ATC problems.

Popular service

So what has been ARINCDirect's most popular service and how has it developed?

"We have seen increasing demand and uptake for our mobile services capability, which we demonstrate most clearly in two mobile applications that link to the back office of a flight department – FOS Mobile and ARINCDirect's flight plan app," Hardie said.

But what about business going forward?

"I think it is going to get increasingly competitive in the Middle East, not just for aircraft operators as availability of aircraft increases, but also for suppliers who have to meet the technology demands of the passengers and the operations," he said.

"Passengers are increasingly demanding the best possible connectivity on their aircraft, whether it is for charter or private operation. Being part of managing this and supporting this demand is a challenge we look forward to. Being so comprehensive in our full service delivery now gives us a great opportunity."

A new product aimed at giving air passengers a better deal while allowing airlines to 'lock in' their business for an extended period is coming to the Middle East. Alan Dron reports.

Flight Pass may be just the ticket for flyers

Whether it will be the paradigm shift in flight bookings that its originators claim remains to be seen, but Flight Pass Option aims to change the way in which people buy airline tickets.

The invention aims to “change customers into subscribers”, said Anuj Goel, vice-president, sales and marketing of US-based Optiontown, the company behind the project, converting passengers from one-time buyers of flights into regular customers.

The deal Optiontown is proposing is this: passengers initially pay for a block of flight coupons – a minimum of four to six, with no upper limit – with an airline operating the Flight Pass Option. For this, they get a discount on the price of individual flights when they make their reservations. The greater the number of flight coupons bought, the larger the discount.

For its part, the airline ‘locks in’ passengers and gets a percentage of the money up front. So far, the company has 18 airline partners, of whom the largest are Scandinavian Airlines and Air Asia: “We already have a couple in the Middle East and are in the process of signing up a lot more,” said Goel.

The only one he was in a position to name at the time of writing was Kuwaiti hybrid carrier Jazeera Airways.

“Currently, it’s very inefficient that every time you need to buy a ticket, you never know if you’ve got the best deal,” said Goel.

“And for the airline, no matter how good a service you give to people, there is no assurance you’re going to get their custom again next time. So airlines have to pay a lot in marketing to try and retain loyalty – and then someone like [Ireland-based low-cost carrier] Ryanair comes in with a \$50 fare and everyone goes there anyway.”

While there have been similar ideas in the past, he added, “the problem was that there was no technology behind it. People tried to do it in bits and pieces; we have the technology to customise it and bring the economies of scale to bear.”

That technology allows pricing to be “dynamic and customised”, said Goel. At the heart of the system are proprietary algorithms that optimise the discounts available to passengers as they book individual tickets.

Customisation is essential to the system, he added. “It’s all up to the customer to decide. You can customise destinations and have a family pass, or a family and friends pass. It’s 100% customised.”

Optiontown makes its money through a revenue share with the airlines.

Individual airlines

Asked whether passengers could use their Flight Pass Option tickets with different members of an airline alliance, such as Oneworld, Star Alliance or Sky team, he said that to start with, the deal was limited to individual airlines. “But if there’s a group of airlines that agree and are willing to share [revenues], it could be applicable.”

Among a number of ‘add-ons’ is an ‘empty seat option’ for passengers wanting to ensure the seat next to them remains empty – either because a business traveller wants some privacy in which to conduct work, or simply to give themselves more space.

For this, they pay a nominal sum to reserve the adjacent seat. If the flight is extremely busy and the airline can make more money by selling that vacant seat, the ESo fee is refunded.

Flight Pass Option users also have the possibility of buying upgrades to premium cabins at reduced rates.

Goel claimed the product is already making an impact. “Within three months of launch we are selling more than 1% of total sales at our airline partners. Customer surveys tell us that 70% of people want to fly with an airline that offered Flight Pass Option and 36% said they had never flown with that airline before it adopted the product.”

A better way: Anuj Goel believes there is a new beginning for both passengers and carriers seeking more efficient ways of booking travel and optimising fares.



Turbulent times for MRO

The times they are a-changin' for MRO but, as Tom Pleasant reports, for the Middle East, this presents as many opportunities as it does challenges

The region's thriving aviation industry is reaching a stage of development where it is becoming prudent, even necessary, to have a matching maintenance, repair and overhaul (MRO) industry to support it.

Across all sectors, MRO supports 123,000 aircraft, flying almost 1 billion hours a year.

Of that fleet, air transport accounted for 26,800 aircraft in 2013, with 5% of it in the Middle East.

While estimates predict the global fleet will grow by an average of 3.1% over the next decade, to 36,400 aircraft, the Middle East will lead the way with 5.6% growth.

This is impressive, but the region has far to go before it catches up on the rest of the world. The entire MRO industry is valued at \$131 billion, with the air transport segment being approximately 46% of that (\$60.7 billion).

This will rise to \$89 billion by 2023, at 3.9% per annum.

The Middle East's share is currently only 7%, behind North America, Asia Pacific and Europe with 31%, 27% and 26% respectively, but that

will double, rising from its current level of \$5.7 billion to \$11 billion by 2023.

Home-grown companies are rapidly upping their game as non-domestic rivals hurry to capitalise on this potential.

For example, at the Middle East Business Aviation (MEBA) exhibition in Dubai late last year, Falcon Aviation broke ground on the Middle East's first VIP completions centre at the Dubai World Central (DWC) aerotropolis.

Scheduled for completion

The Abu Dhabi-based VIP jet and helicopter service provider revealed the \$80-million project is scheduled for completion by the end of 2015.

Dr Sheikh Sultan bin Khalifa bin Zayed Al Nahyan, chairman of Falcon Aviation, said: "The opening of such facilities...not only fills a niche in the VIP completions market in the Middle East, it [also] brings the UAE closer to becoming the global trade hub of the world."

Similarly, US-based Tempus Jets and Rotocraft Service Group (RSG) both announced plans to

Continued on Page 128

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CONTINUED FROM PAGE 127

open MRO facilities in Dubai World Central's (DWC) Aviation District.

Tempus Jets will have a 24,279sqm VIP-aircraft engineering and interior design centre, while RSG's will be a rotorcraft modification and completion centre, the first of its kind in the region.

However, the industry is far from stable. A domino effect, driven by pressure on costs and an influx of new technology, is forcing change on to the global MRO industry.

And for the Middle East, it is not something that can be avoided.

Greater innovations

A prime mover of this (despite the current reduced price) is high fuel costs, which continue to drive greater innovations in weight savings. Ultimately, this prompts airlines to replace older, less fuel-efficient aircraft with newer ones. Between 1990 and 1999 the average retirements per year was 171, rose to 410 between 2000 and 2009, and is due to climb to 751 by 2023.

This affects aviation material strategies in several ways.

While demand for new parts from OEMs accounts for approximately 67% of the total demand for commercial aircraft material, the dramatic increase in retirements has created a glut of perfectly serviceable, but marginally inefficient, aircraft, which, in turn, is leading to a boom in the spare-parts market.



Mark Kerr (left) and Miguel Martins : they will consider how OEMs are increasingly exerting more influence in both the airframe and engine maintenance market.

Meanwhile, those retired aircraft are being 'up-gauged' – replaced with aircraft of a larger size – so airlines can maximise their capacity per flight. This has training implications, as those companies with expertise of working on smaller aircraft must diversify.

These new aircraft are also increasingly enabled, allowing ever-greater amounts of data to be collected about performance – aircraft health monitoring (AHM) – and so more efficiently detect and schedule necessary maintenance.

As an example, a 767 currently only has about 10,000 AHM parameters, but a 787 has

more than 100,000. These are driving the field of predictive maintenance and providing design feedback for original equipment manufacturers (OEMs).

These trends are all heavily affecting independent MRO providers, already suffering from a shifting balance of power towards OEMs. In particular, newer aircraft have longer intervals between maintenance visits and older aircraft are retiring before major, and so more profitable, shop visits are needed, both hitting the independents' bottom line.

This year, attendees of MRO Middle East 2015 will be able to discuss and learn more about these topics.

For example, Abdullah Osman, Emirates Engineering's vice president engineering material management and supplier support, and Michael John Adams, Etihad Airways Engineering's vice president MRO services, will discuss how next-generation aircraft are affecting the industry.

Meanwhile, Zaffar Rassaq, Pratt & Whitney vice president MENA commercial engines, global services, and Frank Walschot, COO, SR Technics, will take part in a discussion on how engine OEMs are trying to improve their products to allow them to operate in the region's harsh desert environments.

Panel discussion

In the 'reshaping the aviation aftermarket – OEMs, MROs and operators' panel discussion, Miguel Martins, engines sales general manager, TAP Maintenance and Engineering, and Mark Kerr, head of customer marketing – services, Rolls-Royce, will consider how OEMs are increasingly exerting more influence in both the airframe and engine maintenance market.

While the competition between OEMs and service providers has clearly increased, they will consider what the impact of this change is in the MRO ecosystem on the airlines.

MRO Middle East will be co-located with Aircraft Interiors Middle East (AIME), from February 2-3 2015 at the Dubai World Trade Centre.

It will provide a vital opportunity for members of the growing MRO industry in the region to meet with more than 3,500 attendees from in excess of 70 countries.

"MRO Middle East enabled us to meet with people from several potential customers within the region. We had more business meetings than comparable to other trade shows," said Armando Jorge de Macedo Ferreira, general manager, TAP Portugal M&E.

"It is a very worthwhile networking event," said Jim O'Sullivan, vice president business development Europe, Middle East and Africa for HEICO. "It means we get to meet all our customers and potential customers in one location over a two-day period. It is the premier event for us in the region. We will definitely be back in 2015."

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AMMROC's state of the art facility will be one of the largest dedicated military MRO centres in the world.

AMMROC deal makes history for AAR

AAR has been selected by the Advanced Military Maintenance Repair and Overhaul Center (AMMROC) – the Abu Dhabi-based joint venture between Mubadala, Sikorsky and Lockheed Martin – to support in the design, outfitting and integration of key areas of its state-of-the-art facility in Al Ain, UAE.

The new facility will be one of the largest dedicated military maintenance, repair and overhaul (MRO) centres in the world and will be an anchor tenant at Nibras Al Ain Aerospace Park,

the free-zone project being jointly developed by Mubadala and Abu Dhabi Airports Company to support the establishment of a sustainable aerospace hub in Abu Dhabi.

This deal represents the largest military-focused MRO advisory and design services contract in AAR's history.

AAR has been provided training and advice on aircraft components, hydraulics, avionics and landing gear for government customers around the world, including Turkey and Egypt, since 1999.

AMMROC was formed by Mubadala, the Abu Dhabi-based investment and development company, Sikorsky, and Lockheed Martin, to serve as a leading provider of MRO services to the UAE Armed Forces, as well as other military providers across South Asia and the MENA region.

The approximately 1.2 million-square-foot facility will support more than 40 different types of military aircraft.

"We chose AAR to support us as we develop this world-class facility because of their experience and expertise in this area," said AMMROC CEO Fahed Al Shamesi. "We are excited to start work on this military aviation MRO that will allow us to reduce maintenance costs, increase fleet readiness levels for our valued customers and provide high-tech employment opportunities for UAE nationals."

David P Storch, CEO and chairman of AAR said: "This deal allows the UAE Government to retain control over maintenance of their military aircraft while leveraging AAR's industry experience and best practices.

"While AAR has provided customers with counselling and training in the past, this deal brings our work to the next level, and will hopefully lead to additional opportunities once the facility begins operations."

Young partnership looks at mature engines

Rolls-Royce and Lufthansa Technik (LHT) are to explore closer cooperation in the technical care of mature engines.

It follows a year-long pilot project intended to reduce the maintenance costs of mature Trent 500 engines, which power the Airbus A340-500/600 aircraft.

Rolls-Royce's expertise as an engine manufacturer and LHT's experience as one of the world's largest engine maintenance providers, were combined in the pilot project, which pursued the question: How can Trent 500 maintenance costs be reduced through the mature phase of the life-cycle?

This work plays a significant part in ensuring Rolls-Royce has the capabilities to introduce TotalCare Flex, a concept to address the service needs of customers with mature-phase engines, including the Trent 500.

Joint efforts on several Trent 500 engines

made it clear that tangible reductions in costs were achievable through systematic changes in work scope, improved use of used material, and optimised processes in the workshops.

"This successful pilot project by Rolls-Royce and Lufthansa Technik shows that a close partnership between a manufacturer and a maintenance organisation offers advantages for airline customers and for both partners," said LHT senior vice president engine services, Bernhard Krueger-Sprengel.

"Mature engines remain competitive for longer and the costs of operating them can be reduced," he added.

Encouraged by the successful pilot project and what was described by LHT as the "great interest from customers", the two project partners have agreed to explore options for longer-term cooperation, which may expand to include other engine types.

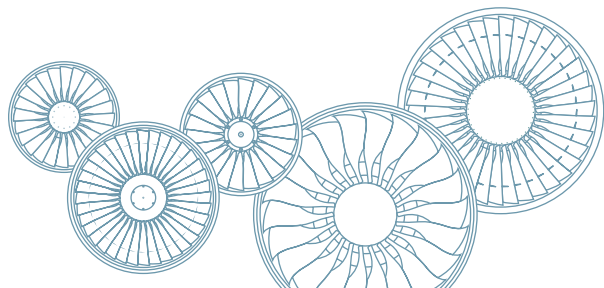


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Sharia-compliant aircraft leasing

Back in November, the UAE's low-cost carrier, Flydubai, issued its first sukuk – a Sharia-compliant financial certificate – raising more than \$500 million to support its further growth and refinance current obligations. We look at the rising trend in these financial vehicles for airlines in the Islamic world.

Flydubai's historic five-year sukuk deal received more than \$3 billion in orders, exceeding its funding need by almost six times. Some 60% of the willing investors came from the Middle East.

While clearly indicating the growing investors' confidence in the airline industry, the deal has also fuelled the discussion as to whether separate Sharia-based deals might actually be a rising new trend in the global aviation finance market.

Since Emirates (as an aviation company) pioneered the Islamic capital market back in 2005, many other industry players, such as AirAsia, Air Arabia, GE Capital, Royal Jordanian, Ethiopian Airlines, SriLankan Airlines and Pakistan International Airlines, have already either conducted or expressed their strong interest in Sharia-compliant solutions to support their development.

In summer 2014 the International AirFinance Corporation (IAFC), together with Airbus and the Islamic Development Bank, launched a \$5 billion Sharia-compliant leasing fund. The initiative, supported by a major aircraft manufacturer, came as an acknowledgment that sukuk deals are no longer a rare alternative, specific to a certain region, but rather a new trend in the global aircraft market.

Actively developing

"Outside aviation, the sukuk industry has been actively developing since the early 2000s, expanding more than 20 times and topping \$120-140 billion today. The boom clearly reflects the growing wealth of the Islamic community, both in the MENA region and outside," said Tadas Goberis, CEO of AviaAM Leasing.

"However, due to the generally conservative nature of the industry and the latest downturn in the global financial markets, aviation has only recently started exploring the available alternatives to finance its development and refinance current obligations."

At the moment, the total Islamic finance market is estimated at approximately \$2 trillion. Multinational professional services firm, Ernst & Young, expects that the Islamic banking assets will continue increasing by around 19.7% per year over the next several years. However, when it comes to making the funds work, Islamic investors face specific restrictions and risks.

Islam clearly condemns making money from money – receiving interest from loans etc – thus



Sukuk is a new trend in the global aircraft market.

forbidding interest-based investments. However, it is allowed to receive payments for renting a property or an asset to a tenant. With this in mind, the Islamic world has developed its own investment category, which is generally being referred to as sukuk (a plural version of Arabic "saak" – a legal instrument or check).

In its modern shape, the Sharia-compliant deals are based on sukuk certificates (bonds) backed by the asset they are issued for. Through 'special purpose vehicle' (SPV) companies the certificate holders (lessors) receive the ownership rights on the asset and can lease it back to the certificate issuer (lessee). In return, the issuer utilises the asset and provides the investor with payments in the form of rent.

However, according to the Accounting and

Auditing Organization for Islamic Financial Institutions (AAOIFI), the amount of the payment may correlate as investors are expected to share the risks with the sukuk issuer and, thus, are dependent on the lessee's profits and losses arising out of the sukuk assets. Once the certificate matures, the issuer may buy the asset based on its market price (though is not obliged to, according to Sharia).

"At the same time there are some extra risks," explained Goberis. "For example, the law forbids selling an asset at the end of the 'leasing' period for a pre-agreed fixed price as it requires the asset to be sold for a fair price based on its market value at a given time. Since the residual value may be both lower and higher than the one expected at the beginning of the 'leasing' period,

– will it change the market?

the investor may end up with either returns or losses that are hard to predict. However, in reality, many sukuk deals are structured on a more firm basis, which ensure that investors are not left with nothing.”

In a way, sukuk certificates may resemble an enhanced equipment trust certificate (EETC). At some point they also reflect the model of financial or operating leasing. The final contract depends on the specifics of a particular deal – whether it is an asset, debt, business or other form of investment.

In the aviation industry, ijara sukuk (ie “rent”) is considered to be one of the most optimal lease forms for many airlines, as it closely corresponds to the conventional leasing transactions.

Aviation sukuk may be a great opportunity for Islamic investors to diversify their portfolios. In addition, it provides them with the chance to invest large amounts of capital while securing it with “hard” liquid assets, which maintain quite predictable residual values, particularly when it comes to newly built aircraft.



Tadas Goberis: “The boom clearly reflects the growing wealth of the Islamic community.”

At the same time, while Islamic investors might be looking for more capital-intensive investments, and airlines for financiers to support their “short on cash” expansions, sukuk may be an emerging – still fully unexplored – financing source for leasing companies and other aircraft owners.

“Will sukuk make a major impact on the aviation finance industry? Maybe not, but it will certainly broaden the market’s access to large capital, while offering new transaction models and structures,” Goberis, said.

“In return, the global aviation industry can also make a contribution to the development of the Islamic financing. After all, the most common term of a sukuk’s maturity is up to three years, while in aviation the average finance period is seven-ten years. What it means is that a successful aircraft-related practice may extend the average sukuk investment as well as diversify a sukuk portfolio. In either case, one should bear in mind, that today’s alternative may be tomorrow’s mainstream. Whoever catches the wave – wins.”



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Expos, summits, and shows ...something for everyone

A new year usually brings new aviation events to the calendar and 2015 is no exception.

Marcelle Nethersole highlights some of the prominent shows taking place in the first few months of the year.

After AIME/MRO in Dubai, airport delegates will be setting their sights on Cairo for the Airport Development & Modernisation Summit, taking place in the Egyptian capital from February 10-11.

The summit will include discussions on investment in aviation, as well as panel sessions with key speakers, including Mohammed Al-Binfalah, CEO of Bahrain Airports Company, discussing 'investigating the challenges facing regional airports and devising strategies to increase profitability'.

Captain Joachim Wirth, head of operations at Qatar Civil Aviation Authority, will also be discussing 'increasing airport efficiency'.

As well as the big International Defence Exhibition and Conference (IDEX) event in Abu Dhabi (see story on page 56), the emirate will also be home to the third annual military satellite communications conference (MilSatCom) Middle East & Africa on February 23-24.

Safety is high on the aviation agenda and Dubai Civil Aviation Authority (DCA) is hosting the World Aviation Safety Summit, which takes place on March 16-17. The event will bring together local and international stakeholders from regulatory authorities, airline



Daniyal Qureshi: "Airport 2015 will be the strongest on several fronts."

operators, airport operators, aircraft manufactures, pilot associations, safety organisations and air traffic control service providers, to discuss key strategies and challenges in improving safety culture. Details are available on the Arabian Aerospace website.

The Airline Engineering & Maintenance: Middle East event is set to take place in Abu Dhabi on April 28-29. It is designed to explore strategies and best practices that people can deploy to position their company to take advantage of the unabated growth in the region's MRO industry.

According to figures from consultants, ICF International, the Middle East aviation industry is set to outstrip global averages until at least 2015; further expansion is set to see the

regional commercial fleet double from 1,300 to 2,600 during this period and the MRO industry is following suit, with a predicted doubling of the market to \$8.7 billion by 2023.

As we go further into the year, the world's largest annual airport event, the Airport Show, will take place at the Dubai International Convention and Exhibition Centre from May 10-12.

In 2014, the event gathered more than 600,000 aviation professionals, creating over US\$20 billion of business possibilities.

Daniyal Qureshi, group exhibition director of Reed Exhibitions said: "As aviation growth continues across the Middle East, Africa and south Asia, regional airport authorities are spending more than US\$100 billion towards building new airports and expanding and modernising existing facilities. We are delighted to see the show's progress in line with this growth and Airport 2015 will be the strongest on several fronts, delivering the global expertise and innovation that the region's aviation leaders are looking to reflect in their mega-airport developments. We expect this year's edition to attract more than 7,000 visitors."

An event close to our hearts is Aviation Africa 2015. The publisher of *African Aerospace* and *Arabian Aerospace* magazines is launching this first event, a two-day summit and exhibition that will take place at Le Meridien, Dubai on May 10-11.

The conference and exhibition aims to bring together governments and civil aviation authorities, as well as the whole aviation sector.



Some 7,000 visitors are expected at Airport 2015.

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O'Hare lands Etihad marketing role

Shane O'Hare, the former president and CEO of Royal Jet, has been appointed senior vice president, marketing at Etihad.

Over a seven-year period, O'Hare helped develop Royal Jet into one of the most successful private jet brands in the world. Prior to that, he held senior marketing roles at Gulf Air, Star Alliance and Ansett.

In his new role, he will have responsibility for developing the airline's marketing strategy, and for leading its successful implementation across commercial strategies, brand management, communications, product and service development, and sales and distribution strategies.

New DCAF commercial

DC Aviation Al-Futtaim (DCAF) has announced the appointment of Paul van der Blom as director commercial.

Based at DCAF's headquarters at Dubai World Central, he will oversee the commercial aspects of aircraft management, aircraft charter, FBO handling and MRO technical sales for the company.

General manager Holger

ALL CHANGE AT THE TOP FOR ROYAL JORDANIAN



Jordan's national carrier, Royal Jordanian (RJ), has made two major new appointments.

The Amman airline's directors first elected Suleiman Al Hafez as chairman of the airline's board, succeeding Nasser Lozi, who resigned from the post that he had occupied since 2006.

The airline followed up by appointing Captain Haitham Misto as acting president/CEO of the airline.

Captain Misto had been head of flight operations at RJ since December 2013.

He joined the airline as a pilot in 1983 and holds a master's degree in aviation management from Maastricht University.

Ostheimer said: "We are extremely pleased to have Paul on board, bringing with him extensive aviation market experience as well as technical knowledge."

Guest appointment

Yasser Al Yousuf, an Emirati national, has been appointed as the managing director for Etihad Guest, Etihad Airways' award-winning loyalty programme, and its partners Air Serbia, Air Seychelles and Etihad Regional.

Al Yousuf assumes the role at a time of rapid growth in the business as Etihad Guest continues to evolve into a broad-based lifestyle programme.

Oman Air appoints country managers

Oman Air has appointed Ritchie Tuano as country manager for the Philippines and Iman Hartono in the same role for Indonesia.

Mahfood Ali Saleem Al Harthy, chief officer sales at Oman Air, said: "We look forward to benefiting from their extensive experience and knowledge of local markets to make these new routes to Manila and Jakarta a resounding commercial success. Our new services from Muscat to Manila and Jakarta have already attracted huge demand for tickets, demonstrating the popularity of both destinations among both business and leisure travellers."

Freight's great Dane arrives

Emirates SkyCargo, the freight division of Emirates, has appointed Henrik Ambak as senior vice president, cargo operations worldwide.

Ambak, from Denmark, spent the past 27 years in various roles in the air cargo industry, having worked for companies such as Novia, CSLux and Cargolux Airlines.

He started his career as a freight forwarder and then moved into ground and cargo-handling, before joining Cargolux to oversee cargo and ground-handling, trucking, standards and procedures, network delivery, ground safety, unit load devices (ULD) management, customs and e-business, as well as IT systems used by the commercial division.

In his new role, Ambak will be responsible for the management of all Emirates SkyCargo operations.

EMEA role for Hendriksen

Bas Hendriksen has joined Chromalloy as the company's Europe, Middle East and Africa (EMEA)

account manager.

Previously, Hendriksen was regional sales director at Zodiac Aircraft Interior Systems, responsible for the Middle East, North Africa and France accounts. Earlier he had been director, sales & product development, at Norbain Benelux and, before that, with Thomson CSF/Thales.

First for DANS

Dubai Air Navigation Services (DANS) has celebrated the graduation of its first batch of employees in a comprehensive one-year career development programme.

Helios expands

Global aviation consultancy, Helios, has expanded its team in the Middle East and moved to larger offices in Silicon Oasis, Dubai.

The company, part of the Egis group, announced the addition of principal consultant David Adebiji, formerly with NATS consulting, to its Middle East consultancy team. In addition, two further consultants are relocating from Europe.

FARID NAMED AS JET HQ CHAIRMAN



Ted Farid has joined aircraft sales consultancy, JethQ, as its first chairman.

He has 47 years of global aviation leadership experience from some of the world's leading OEMs, including Cessna, Learjet and Beechcraft.

"I really enjoyed working with Ted at Hawker Beechcraft," said JethQ managing director Garrett Jerde. "He is the proverbial font of aviation knowledge – always willing to lend his five decades of expertise and knowledge to help get a deal across the line."

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