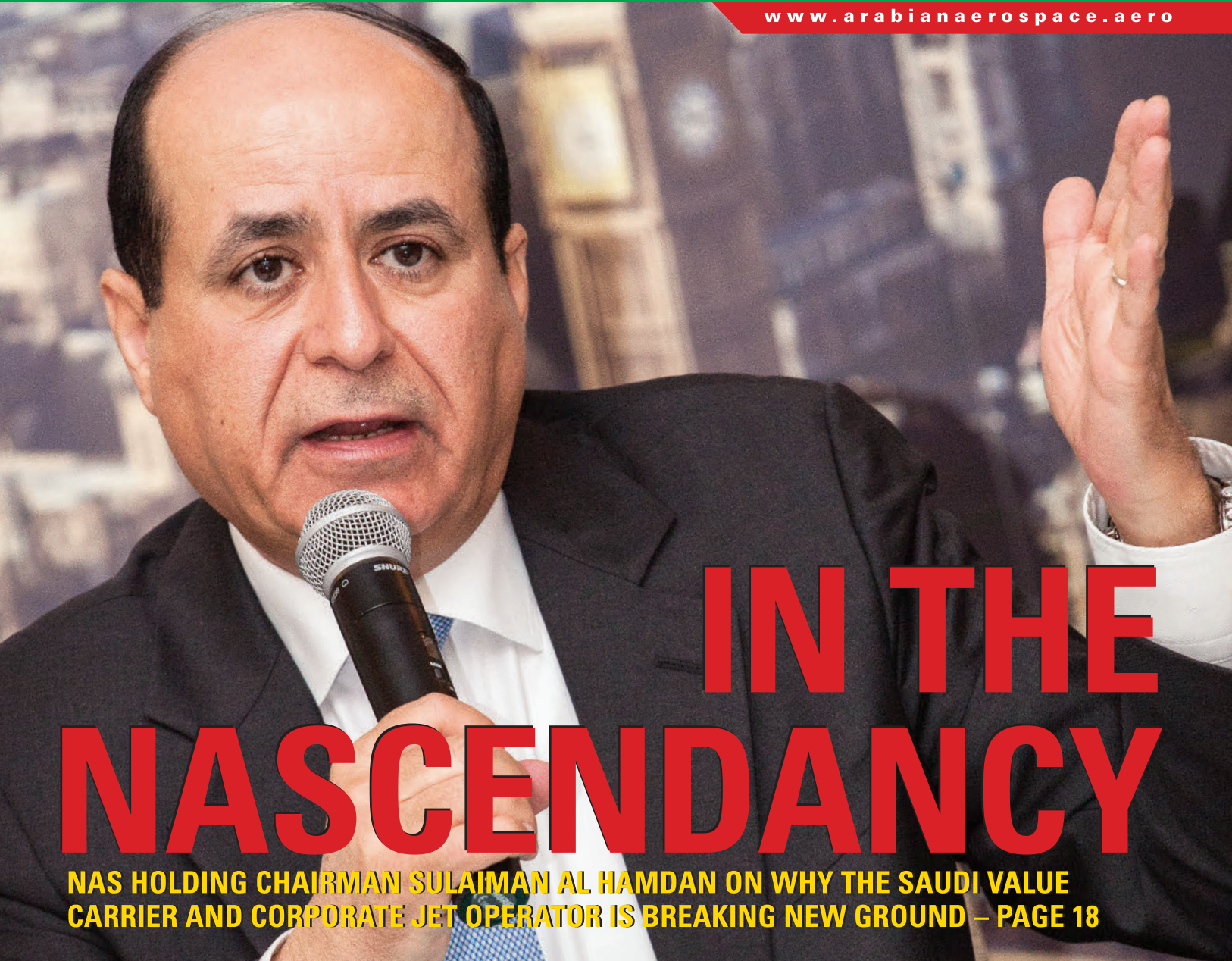




ARABIAN AEROSPACE

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IN THE NASCENDANCY

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TENTH ANNIVERSARY | 2014



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TIMES Aerospace Limited
3-4 Rumsey House
Locks Hill, Rochford
Essex, SS4 1BB
UK
Tel: +44 (0)1702 53 0000
Fax: +44 (0)1702 53 3088

Regional Office
PO box: 371391
Dubai Airport Free Zone
Building 6EA, Suite 222,
Dubai
United Arab Emirates
Tel: +971 4 603 3364

Website: www.arabianaerospace.aero

Directors:

Mark Brown & Kevin Sammon

Publisher:

Mark Brown
mark.brown@arabianaerospace.aero

Display Advertising:

Nick Hutchins
nick.hutchins@arabianaerospace.aero

Dave Winship-Evans
david.evans@arabianaerospace.aero

Production Coordinator:

Claire Silva
claire.silva@arabianaerospace.aero

Circulation Dept:

Ryan Everitt
ryan.everitt@arabianaerospace.aero

EDITORIAL

Editor-in-chief: Alan Peaford

alan.peaford@arabianaerospace.aero

Deputy Editor: Marcella Nethersole

ella@aerocomm.aero

Defence: Jon Lake

Air Transport: Alan Dron, Martin Rivers

Business Aviation: Liz Moscrop

Cargo: Tom Pleasant

Helicopters: Paul Derby

General Aviation: Liz Moscrop

Space & Technology: Steve Nichols

Aircraft Interiors: Marcella Nethersole

MRO & Propulsion: Geoff Thomas

Business: Ian Sheppard

Airports: Keith Mwanalushi

Picture Editor: Ian Billinghurst

Photographers: Paul Merritt,

Tom Gordon, Mark Wagner

Design: Chris Murray

Production Editor: Rick Haden

Sub-Editor: Steve Knight

Regional Editors: Jill Stockbridge (UAE),

James Wynbrandt (USA)

Contributors: Mohammed Ali Ahli, Martin Ferguson,

Kelly Clark, Ian Goold, Claire Apthorp, Alan Warnes,

Terry Spruce, Jamie Hunter

Editorial head office:

Aerocomm Ltd, The Gatehouse, 104 Lodge Lane

Grays, Essex, RM16 2UL UK.

Tel: +44 (0)1375 427014 Fax +44 (0)1375 404478

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Cooperation must be more than a buzzword

Cooperation is THE word that springs out of the Middle East right now. There are calls to bury old rivalries for good and work together for the benefit of nationals, global travellers and the economies of the MENA countries.

Leading the charge is Tony Tyler, the chief executive and director general of IATA, who will be heading to Qatar next month for the Association's annual general meeting.

He attended the Global Aviation Summit, once again hosted very successfully by Abu Dhabi, and made an impassioned plea for Gulf states, particularly, to help solve the challenge of congested airspace.

"Air traffic gridlock should not become the [Gulf's] Achilles' heel. Airspace is finite. So capacity can only grow with efficiency. Each country has invested in impressive technology. But effective management needs regional and international teamwork. The players in the region urgently need to buy into a vision for seamless airspace management in the region and then work together in a team effort to make it happen," said Tyler.

At the same event, Etihad chief, James Hogan, was outlining how partnership had brought benefits to a number of airlines invested in by the UAE national carrier – and had brought significant advantages to the Abu Dhabi airline as well.

Another visitor to Abu Dhabi was Ivor Ichikowitz, executive chairman of the Paramount Group – Africa's largest privately owned defence and aerospace business – who explained the need for collaboration between the UAE and Africa.

"Locally we see the Middle East, and especially the UAE, moving away from being simply consumers of



defence and aerospace technologies to manufacturers of products and leaders in technology. It is here where our countries can find important synergies that will act as a catalyst for innovation and industrialisation," he said.

On a more local scale, we see Falcon Aviation Services – a stalwart of the Abu Dhabi aviation scene – sign a deal to build the Middle East's first VIP wide-body completions centre in Dubai. DWC is the perfect spot and the decision by FAS leadership is an indication that the spirit of cooperation is really working.

We hope these positive stories of knowledge sharing, resource sharing, and shared goals will lead to others joining in and seeing increased benefits for all.

Safe landings.

Alan Peaford, editor-in-chief
Arabian Aerospace

COVER: NAS Holding chairman Sulaiman Al Hamdan. Picture: Billypix.

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Africa Headquarters

Postnet Suite #112, Pvt Bag X21
Johannesburg , 2021, South Africa
T: +27 11 514 0755
F: +27 11 514 0545
E: jnb@uas.aero

Americas Headquarters

2000 West Loop South, Suite 1500
Houston, TX 77027 USA
T: +1 281 724 5400
F: +1 281 724 5410
E: hou@uas.aero

Middle East Headquarters

UAS Building, DAFZA, P.O. Box 54482,
Dubai, UAE
T: +971 4 299 66 33
F: +971 4 299 67 77
E: dxb@uas.aero

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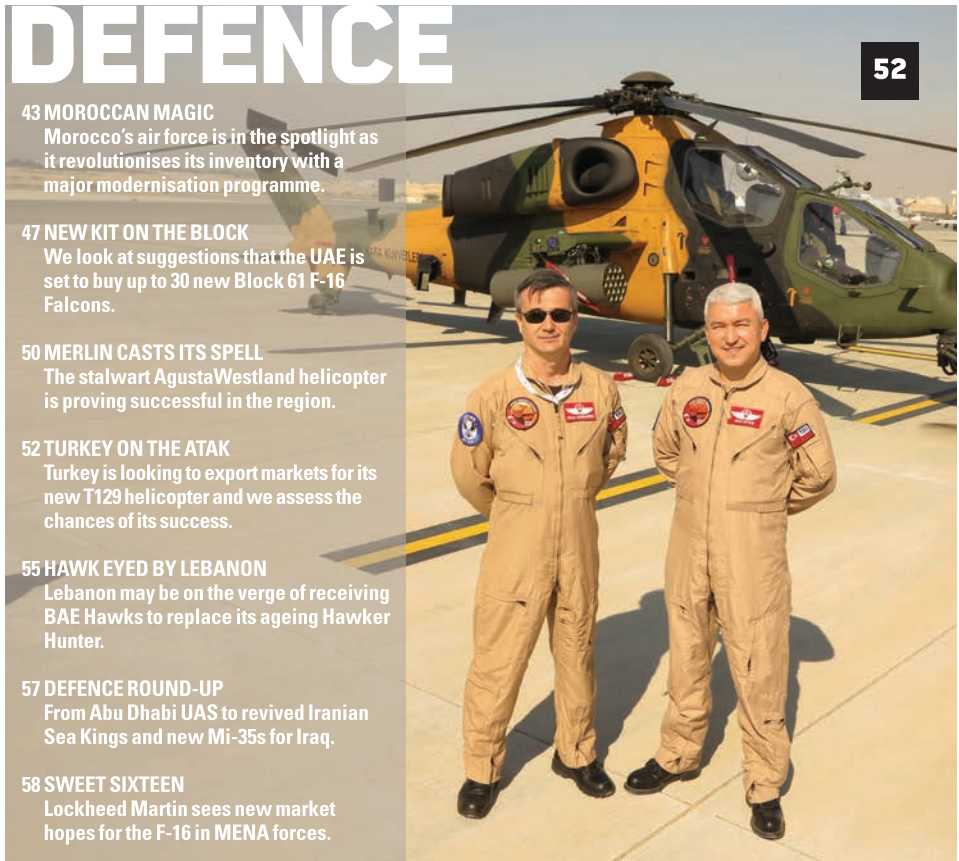
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The UAE Joint Aviation Command's Eurocopter AS565 Panther naval helicopters are now being overhauled and redelivered.



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Turkish Airlines Recruiting Captains and First Officers

Turkish Airlines invites you to take part in its exclusive road show in Dubai, on May 18-19, 2014

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- Valid Class 1 Medical
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Pilots Recruitment Roadshow Details

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Gulf Air CEO is "job no one wants"

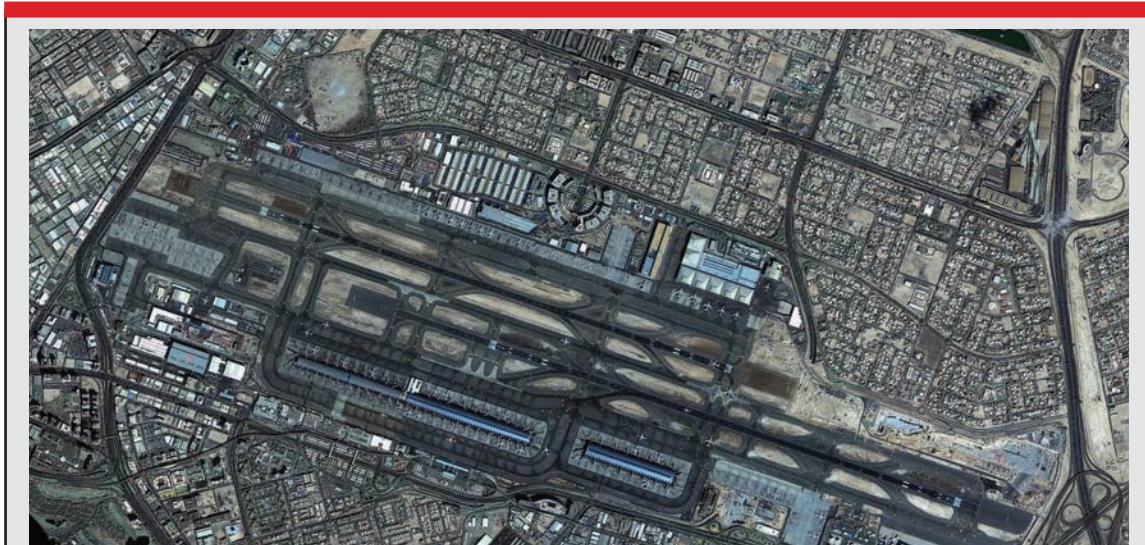
Gulf Air has been struggling to persuade candidates to step up for the chief executive's job because of fears of government interference, the minister of transport has warned.

Minister Kamal Ahmed told Bahrain's MPs that it was "a problem" for the airline's next stage of revival.

"For 12 months we have been searching for a chief executive officer but no-one wants to work because experts don't want interference from the government or parliament in their work. Despite assurances, no-one is willing to accept the job," he said.

Ahmed was also quoted in the Bahraini media as saying internationally acclaimed airline managers had been approached, but had declined the job.

"Top Bahraini experts have been approached but they, too, refused to accept, because they don't want to be powerless and want to be real decision-makers," he said.



Images that are out of this world

DubaiSat-2 demonstrated its high-quality one metre resolution imaging when it captured a picture of the Dubai International Airport from outer space. The Emirates Institution of Advanced

Science and Technology (EIAST) satellite is providing images with higher quality electro-optical imagery, which can be used for various applications like urban planning, disaster management and scientific research.

Saudia's Boeing link

Saudi Arabian Airlines (Saudia) has signed a collaboration agreement with Boeing that could see it developing partnership activities in the field of defence, as well as in its commercial operations.

The two companies said they would explore areas of cooperation in pilot and aircraft maintenance training, rotorcraft

support, management and leadership training, and manufacturing, focused on the expansion of local presence and aerospace skill development in country.

Licence to thrill

Jordanian MRO specialist, JorAMCo, has been given a licence to offer the AirVault Mx records management solution, which stores and

manages customers' growing aircraft maintenance records.

Flydubai double

Flydubai's in-flight entertainment system won two awards – Middle East content innovation, and best airline IFEC provider for the Middle East – at the Inflight Regional Awards 2014 held at the AIME event in Dubai.

Business 'first'

Qatar Airways will launch a new daily all-premium business-class service from its hub in Doha to London Heathrow. The service, the first of its kind in the Middle East, starts from May 15 with an Airbus A319 aircraft fitted with an all-business-class, single-aisle, 2-2 seating configuration offering 40 seats.

Typhoon agreement

The Kingdom of Saudi Arabia (KSA) has now agreed price escalation terms with the UK relating to the Typhoon aircraft under the Salam programme.

Kuwaiting no more

Kuwait Airways has signed a contract with Airbus to purchase 25 aircraft and lease 12 others.

The order includes 10 A350-900 and 15 medium-haul A320neo airliners.

Analyst Saj Ahmad commented: "Kuwait Airways finally seems to have in place a long-term re-fleet plan to help it better compete with its Arabian and international rivals."

Qatar satellite is a 'first' for radio hams

Qatar-based Es'hailSat has issued a request for proposals (RFP) for the design and manufacture of the company's second satellite, Es'hail 2.

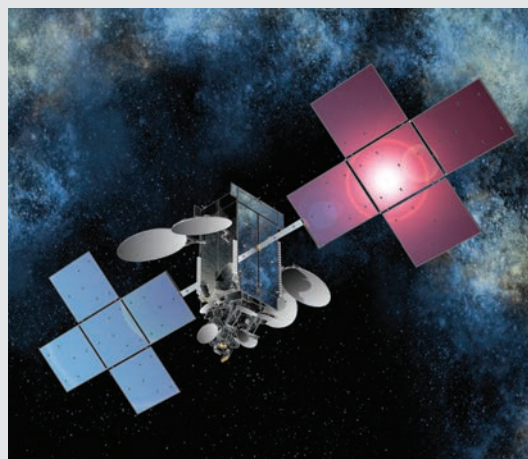
The new satellite will be positioned at 26 degrees east and used for direct-to-home TV broadcasting across the Middle East and north Africa.

Es'hail 2 supports Qatar's 2030 vision and commitment to meeting the sophisticated communications infrastructure the country is putting in place to host FIFA's World Cup in 2022.

Ali Al Kuwari, CEO of Es'hailSat, said: "With the success of our first satellite – Es'hail 1 – we are delighted to move forward with our satellite procurement programme.

"Es'hail 2 demonstrates both our commitment to providing premium satellite capacity for broadcasters in the MENA region and to building a sustainable satellite industry for the state of Qatar".

The new satellite will have Ku-band and Ka-band capabilities and will provide the first geostationary amateur satellite (Amsat) communication capability for radio hams, linking Brazil to India in one single hop and in real-time. This



has never been done before and will allow radio amateurs to experiment in the microwave region.

Proposals for Es'hail 2 were due as *Arabian Aerospace* was going to press. The satellite is expected to be launched at the end of 2016.



Homaid Al Shemmari, CEO, aerospace and engineering services at Mubadala Development Company; Saif Mohamed Al Hajeri, CEO, Tawazun Holding; and Obeid Al Mansouri, CEO, Emirates Advanced Investments Group; creating a new force in defence.

Brothers in arms

Mubadala Development Company, Tawazun Holding and Emirates Advanced Investments (EAI) have signed a memorandum of understanding (MoU) expressing their intent to explore the synergy that could be created by the unification of their defence services businesses.

The MoU, signed at the International Exhibition for Security and National Resilience (ISNR) in Abu Dhabi, will form the basis of discussions regarding the creation of a single integrated Abu Dhabi-based defence services platform.

The parties said that benefits that could be realised included economies of scale, supply chain rationalisation, and a single point of contact for customers.

The creation of an integrated platform could also help to accelerate the development of technological capabilities and drive additional employment opportunities for UAE citizens.

Homaid Al Shemmari, CEO, aerospace and engineering services at Mubadala Development Company, said: "Tawazun, Mubadala and EAI currently manage a range of complementary defence services businesses. There is a clear opportunity to combine our related assets to the benefit of the UAE's wider defence sector, as well as our local and international customers. We believe an integrated defence services platform can drive both technological advancement and job creation."

Qatar in new defence deals

Qatar has added to its defence spending with the agreement to buy helicopters from Boeing and the joint venture NH Industries, as well as missiles from Lockheed Martin and Raytheon.

Qatar ordered 24 AH-64E Apache attack helicopters and three B737 airborne early warning and control (AEW&C) aircraft from Boeing. Meanwhile, in Paris, the French defence ministry said Qatar would be buying 22 NH90 military helicopters from the Airbus-led joint venture, worth nearly \$2.8 billion. Twelve of the aircraft would be transport helicopters and the other 10 would be the frigate version.

NH Industries is 62.5% owned by Airbus Eurocopter helicopter unit, 32% by AgustaWestland, part of Italy Finmeccanica, and 5.5% by Stork Fokker. Qatar is also buying two MRTTs from Airbus.

TAV profits boost

Turkey's main airport operator, TAV, recorded a net profit of €133 million (\$45.4 million) in 2013, up

by 3% compared to the previous year.

CEO Sani Sener said: "Financially, we achieved all the targets we disclosed to our shareholders at the beginning of the year. Our revenue grew 7% and increased €904 million (\$1,244 million). Net profit increased 3% and reached €133 million, the

highest we have recorded so far."

On the operational front, Ataturk recorded an eye-catching 14% passenger growth, exceeding 51 million passengers, making it the fifth largest European and 17th largest global airport.

"We are truly proud to be operating this crown-

jewel of Turkey with such high standards to set an example to many airports in the world," Sener said.

Turkey's first A400M

Airbus has handed over the first of 10 A400M new generation airlifters ordered by the Turkish Air Force. The aircraft, which is the

third production A400M, will initially be used for training at the Kayseri air base in central Turkey.

It replaces the C-160 Transall, providing increased air transport capability to the Turkish armed forces.

Recaro sitting pretty

Recaro Aircraft Seating has opened its new customer centre in Dubai.

Along with the new partner logistics and spare parts specialists from Avio Diepen, Recaro services include on-site training and support in mechanical operations to customers.

Recaro chief sales officer Andreas Lindemann said: "With our customer centre in Dubai we are able to respond very quickly to urgent requests."

Timely good news

Analysis of 2013 data has shown that Oman Air has recorded its best-ever on-time performance.

Oman Air's 30 strong fleet, across all 43 destinations within its network, achieved an average of 90% on-time performance from March to December 2013, with the whole-year average coming in at a fraction under 90%.



THY cabin crew inspect the working environment in the first TCI-built galley.

Turkish cook up high cuisine

The first Turkish-manufactured aircraft galley has entered service aboard a new Turkish Airlines (THY) Boeing 737-800 NG.

It is the work of Turkish Cabin Interiors (TCI), a joint venture between MRO specialist Turkish Technic, THY and Turkish Aerospace Industries (TAI).

With the launch, TCI becomes the first Turkish company to design, manufacture and certify products for the international aerospace market.

Delivered in March, the aircraft is the first of 10 equipped with TCI galleys that join the THY fleet this year.

TCI was founded in December 2010 and is one of half-a-dozen joint ventures set up to

help Turkey diversify into the international aerospace supply chain. It has received assistance from Boeing in the development of aircraft interior products.

THY chairman Hamdi Topçu said the event underlines Turkey's determination to extend and develop its indigenous aviation industry through logistical support. Bernard J Dunn, president of Boeing Turkey and North Africa, said: "Manufacturing for aerospace is demanding in terms of regulatory compliance and certification. For TCI to design, manufacture and certify their galley product in just three short years speaks a great deal about the quality of their people as well as their product."

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Wind break

Boeing is to provide Qatar Airways with its wind update services over the next five years, which, the manufacturer said, would allow the airline to maximise in-flight operational efficiency.

Boeing wind updates provide customised, real-time wind and temperature information to aircraft. This data allows for more efficient trajectory prediction during pre-flight operations and continuous optimisation in-flight by providing tailored information for flight crews and the aircraft flight management system.

As part of the agreement, Boeing wind updates will be integrated fleet-wide, across all Qatar Airways Boeing and Airbus aircraft.

Globemaster boost

Kuwait has received its first C-17 Globemaster III airlifter from Boeing, with the new delivery set to expand the Kuwait Air Force (KAF) capabilities in military and civilian operations, including humanitarian aid and disaster relief.

KAF deputy commander, Colonel Abdullah Al Foudari, said: "With this airlifter we can more effectively participate in the operations we choose,

transporting large payloads across long distances, flying at high altitudes in hot climates such as ours, and landing on short, unpaved runways."

Turboprop boost

Abu Dhabi-based Falcon Aviation Services has signed a firm purchase agreement with Bombardier for two Q400 NextGen turboprop aircraft, worth about \$61 million.

Simulator ordered

Doha-based Gulf Helicopters has ordered an AW189 EASA CS-FSTD(H) FFS level C simulator to support the company's pilot development training needs for its recently announced purchase of 15 AW189 medium twin-engine helicopters.

Hercules tragedy

An Algerian Hercules C130 military transporter crashed in the mountainous area of Oum al-Bouaghi close to the Tunisian border in February. All 103 on board were killed.

The plane was said to have been carrying military personnel and family members from the southern Saharan city of Tamanrasset and had made a technical stop in Ouargla.



Thales and Qatar to develop optionally piloted aircraft

Thales and the Qatar Armed Forces are to develop an optionally piloted vehicle-aircraft (OPV-A).

The European contractor will also provide full end-to-end training for the high-performance intelligence, surveillance, target acquisition and reconnaissance (ISTAR) system.

The OPV-A to be developed is a hybrid between a conventional aircraft and an unmanned aircraft system (UAS). It is able to fly with or without a pilot on board the aircraft.

Unimpeded by a human's physiological limitations, an OPV is able to operate under more adverse conditions and for greater endurance times.

Retaining on-board controls, the OPV can operate as a conventional aircraft during missions for which direct human control is preferred.

Thales UK CEO Victor Chavez, said: "This is an exciting prospect that Thales is looking forward to developing with the Qatar Armed Forces. Our experience in mission systems and unmanned air vehicles will provide Qatar with a world-leading solution."

Applying Gore

A BBJ 787-8 has arrived at Gore Design Completions (GCD) in San Antonio, Texas and is being outfitted for an undisclosed Middle Eastern customer.

The company, acquired in May 2013 by an investment group led by Saudi Arabia's MAZ Aviation, worked with

Boeing to ramp up training on the product and started tooling for the aircraft.

Royal approval

Royal Jordanian, a long-standing AFI KLME&M customer, renewed its trust in the services of the MRO group by signing a new contract to provide its A320 fleet with component support.

Relentless pursuit

Abu Dhabi Aviation signed a letter of intent with Bell Helicopters for 10 Bell 525 Relentless helicopters at the Heli-Expo 2014 in California.

The UAE operator said it chose the Bell 525 for its versatility to support a number of missions, including offshore oil and gas, emergency medical support, VIP transport, fire-fighting and search and rescue.

It's all academic

Bahrain's aviation academy, Gulf Aviation Academy (GAA) is planning a collaboration with Bahrain Polytechnic for the development and delivery of various transport-based training and education courses.

This agreement is the first of its kind in Bahrain, and will allow GAA and the college to work together on combining and centralising aviation and maritime training under one roof.

As an authorised training centre, GAA will be providing IATA courses to the polytechnic's logistics programme. GAA, in turn, will benefit from the education partnership that Bahrain Polytechnic has developed with the Chartered Institute of Logistics Transport (CILT), with the potential for the future development of a full CILT centre based at GAA.



Iraq's own Toy story

Iraqi Airways, in conjunction with Boeing and US-based non-profit organisation Another Joy Foundation, have come together to transport a consignment of toys on board the airline's newly delivered B737-800 aircraft.

The shipment is part of Boeing's humanitarian delivery flights programme and includes boxes of dolls, toy cars and trucks that Another Joy Foundation will distribute to underprivileged children in Iraqi orphanages.

Bangen Rekani, Iraq's deputy minister of transportation said: "We are extremely happy to participate in this relief effort that is part of our celebration of adding another Boeing aircraft to the airline's fleet. Such joint initiatives with Boeing and non-profit organisations will enable us to help those in need in the future."

This delivery to Iraqi Airways marked the third of the 30 737-800NGs that were ordered by the airline in 2008.

Emirates top brand

Emirates is the most valuable airline brand worldwide for the third consecutive year, according to The Brand Finance Global 500 report for 2014.

The airline is also the most valuable brand in the Middle East for the fourth consecutive year, and is currently valued at US \$5.48 billion, an increase of 34% over its 2013 value.

Fuelling futures

Abu Dhabi national oil company (ADNOC) has signed an agreement to supply fuel-related services at the three main Abu Dhabi airports: International, Al Ain and Al Bateen.

Both Abu Dhabi Airports and ADNOC Distribution will invest in the development of a new fuel hydrant system – the distribution pipeline network connecting the fuel farm to the fuel distribution points – supporting the new Midfield Terminal (MTC), as well as a new state-of-the-art fuel farm, which increases capacity in terms of storage from 47 million litres to 130 million litres.

Still in the Sched

EgyptAir continues to opt for the codeshare management solution SchedConnect from Lufthansa Systems. Both companies have renewed the contract on a long-term basis. The system offers a high degree of automation, calculating the optimum codeshare assignments based on the current flight schedules every day. Each month, the system processes up to 35 million schedule changes made by SchedConnect customers worldwide.

Baker award

Qatar Airways CEO, Akbar Al Baker, has been presented with fellowship of the Royal Aeronautical Society (RAeS).

RAeS fellowship is bestowed upon those who, in addition to making an outstanding contribution to the profession of aeronautics, have also attained a position of high responsibility or long experience of high-quality in the profession.

Achieving fellowship is the highest grade attainable within the Royal Aeronautical Society.



DAE's regional first with orders for up to 40 ATRs

UAE leasing firm Dubai Aerospace Enterprise (DAE) has signed a deal for 40 ATR 72-600s, which includes firm orders for 20 aircraft and options for 20 additional ones. DAE is the largest aviation leasing firm in the Middle East, with an aircraft portfolio of approximately \$3.3 billion, comprised of B737s, B777s, A320s and A330s.

This latest deal represents DAE's first order for regional aircraft. The 20 firm aircraft are scheduled to deliver between 2015 and 2018. The contract underlines the increasing interest of leasing firms from all over the world in the ATR aircraft family.

The ATR 72-600, equipped with new avionics suite and totally redesigned cabin interiors, has become, in recent years, the

preferred regional aircraft below 90 seats for lessors and airlines operating short-haul networks.

Khalifa AlDaboos, managing director of DAE, said: "We aim to diversify our portfolio and expand into regional aircraft to meet an increasing demand from airlines that are developing regional air connectivity.

ATR's are today operated by some 190 carriers all over the world, and this is clearly providing us with many potential opportunities to place this new fleet of regional aircraft".

He added: "The low operating cost of the ATR 72-600 makes it a compelling choice for operators that need to offer a differentiated product on short-haul sectors."



ADAC completes its own 'Arc de Triomphe'

Abu Dhabi Airports Company (ADAC) chalked up a milestone in the construction of its new Midfield Terminal Building (MTB) at the international airport when the first steel arch of the roof structure was assembled, thus launching the start of the mega project.

ADAC said the MTB would forever change the skyline of Abu Dhabi.

The iconic design of the MTB is directly connected to the engineering concept behind the steel arches. Each arch rises above its base at an incline, rather than the vertical design that is commonly used, and spans a considerable distance, with the largest arch reaching 180 metres in length.

ADAC CEO Tony Douglas, said: "This is a proud moment for Abu Dhabi Airports as it allows the whole world to witness the hard work we have committed ourselves to, and the masterpiece we are striving to deliver for Abu Dhabi and the UAE.

"The achievement, in spite of its architectural complexity, was delivered 20 days ahead of schedule, which again confirms that the MTB will be delivered on time and on budget."

Serco's success

Serco, the international service company, has signed a contract with Sharjah Civil Aviation Department to continue to provide air navigation services at Sharjah International Airport.

Serco will also be responsible for training Emirati nationals to become qualified air traffic controllers (ATC) and ATC assistants.

The three-year contract is valued at £7 million (\$11.7 million).

Avpro's rotary lift

Turkey's largest civil helicopter operator, the Kocoglu Group, has selected Avpro to remarket two of its pre-owned helicopters. These are a corporate Airbus Helicopters' EC135 T2+, and an EMS Agusta A109E Power. The deal was signed at the HAI Heli Expo show in Anaheim, California.

Black Hawk deal

Turkish Prime Minister, Recep Tayyip Erdogan, has

confirmed his government and US helicopter manufacturer Sikorsky Aircraft have finally signed a long-dormant contract to co-produce an initial batch of 109 T-70 Black Hawk utility helicopters. Erdogan blamed the delays on US bureaucracy.

BP seeing double

BP is doubling up at Sharjah International Airport following a successful collaboration with Gama Aviation's FBO, which the oil company said has resulted in a doubling of general aviation fuel sales year-on-year.

Bells rigged out

Egypt's Petroleum Air Services (PAS) has taken delivery of two Bell 412EP helicopters configured and fully equipped to meet oil and gas producers' requirements recommended by the leading international oil companies working in Egypt.

Banking on Swiss

Oman Air has selected Swiss-AS's AMOS MRO software solution to replace its legacy system.

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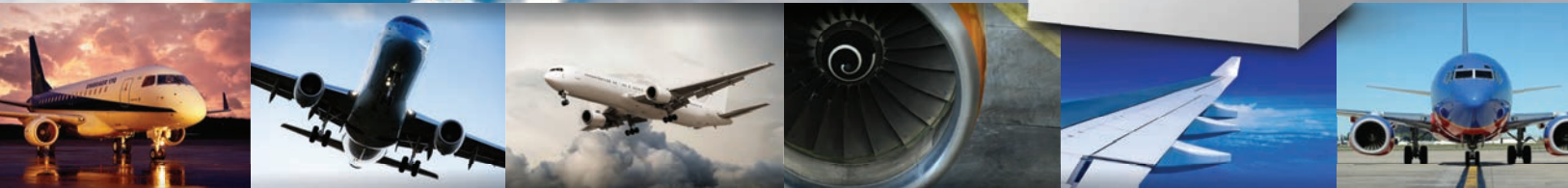
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Landing the deal

French landing gear specialist, Revima, has signed a non-exclusive 10-year overhaul service agreement with Emirates.

The Normandy-based company said the deal is an all-inclusive door-to-door arrangement and covers the removal and installation, logistics, engineering support, and landing overhaul services for Emirates' 777-300ER aircraft fleet.

Analysing a growth

Industry analyst TechNavio has forecast that the aviation market in the Middle East is set to grow at a rate of 6.32% over the period 2012-2016.

Qatar at Stansted

Qatar Airways will become the latest major airline to join Stansted Airport's global cargo network when it begins a new service from Doha this month (May 2014.)

Qatar Airways Cargo will operate a dedicated Boeing 777 freighter aircraft to fly five weekly services to Stansted, the UK's third busiest cargo airport, as the airline continues its growth strategy to increase its global reach and the number of destinations it serves.



Making a splash: Ahmad Badreddine, station manager at Jetex, celebrates the new partnership with Stuart Wheeler, CEO of Seawings

Jetex backs Seawings water taxi venture at DWC

Seawings, the Dubai-based seaplane tour operator, has launched a new air taxi service from Dubai World Central – Al Maktoum International Airport (DWC).

Working in collaboration with Jetex Flight Support, the unique product will provide clients with a luxury private transfer in a nine-seat Cessna 208 Caravan Seaplane from DWC to, among others, the Dubai Creek Park Hyatt Hotel.

It is anticipated this offering will be attractive to those wishing to save time and beat the Dubai traffic, as a car ride from DWC to Dubai Creek Park Hyatt takes approximately 50 minutes during off-peak times but, with the new Seawings air taxi service, would be reduced to a mere 20 minutes door-to-door.

Jetex will be offering the downtown air taxi flight as an added value to its private jet clients travelling through their FBO.

Seawings already offers sightseeing charter flights for clients wishing to experience the history and heritage of Dubai and, in conjunction with Jetex, will promote flights to destinations such as Emirates Palace and the Viceroy in Abu Dhabi, The Waldorf Astoria in Ras Al Khaimah, Anantara Resort in Sir Bani Yas Island, and Al Dana in Fujairah.

Clients can enjoy a thrilling water take-off and landing along with panoramic views of the city's stunning landscape and historic architecture in a 40-minute tour.

Web safety swipe

The Gulf Aviation Safety Council (GFSC) has called for greater cooperation and exchange of information by all aviation stakeholders, both regionally and internationally, and has also supported IATA's criticism of websites that create a ranking of air carriers on safety records.

Speaking after the first of this year's quarterly GFSC

council meetings – held at GCAS in Al Bateen Airport, Abu Dhabi – the council's chairman, Captain Mohammed Ahmed Malatani, said the GFSC strongly supports and encourages all possible mechanisms to exchange information that enhances flight safety. But he seconded IATA's point of view that it does not endorse the approach of safety ranking of air carriers conducted by some websites,

and agrees with the airline community that safety is not a competitive issue.

Tender years

TAV Airports submitted the highest tender – €717 million (\$987 million) – for the 20-year operating rights of Milas-Bodrum Airport, one of the most significant tourism destinations in Turkey.

Space auction

A Bahrain company will be playing a part in space history when the historic Soviet space capsule, Vozvrashaemyi Apparat (VA), goes to auction in Brussels on May 7.

A9C Capital, based in Manama, is the business consultant and technology advisor of Excalibur Almaz, which owns the space capsule to be auctioned along with additional heritage space hardware.

Excalibur Almaz plans to develop commercial manned and unmanned space transportation to Earth orbit and the lunar region, and

A9C Capital is maintaining Excalibur Almaz's business interests in the Middle East.

The Manama company is organising the sale of the capsule for Excalibur. This will be the first time ever that a space capsule is to be auctioned in Europe.

Off at a Tangent

The helicopter safety team for the Middle East and North Africa (MENA GST) has teamed up with international aerospace event organisers, Tangent Link, to launch a new event for the offshore and onshore helicopter industry. Called Onshore Offshore Aviation (OOA-2014), the first event will be held at the Armed Officers Club in Abu Dhabi on November 2-3.

Over here

America's General Aviation Manufacturers Association (GAMA) have a permanent base in the MENA region. Its new office will be co-located with MEBAA in Dubai.



Painting the town red... and green

RUAG Aviation has successfully completed a comprehensive and detailed narrow-body VIP paint project on an Airbus A320 for a Saudi client. Undertaken as a maintenance repaint, the project was carried out at RUAG's highly advanced paint shop in Munich-Oberpfaffenhofen, Germany.

The project comprised the stripping of the original livery off the aircraft's fuselage and the application of a new coat of paint. In order to minimise the aircraft's downtime, RUAG paint specialists invested approximately 1,500 man hours within a period of just 15 days.

Saudi low-cost carrier Flynas is striking out in a new direction, including religious tourism, in a bid to build critical mass. Alan Dron reports.

Flynas puts its faith in 2020 vision

The announcement by Flynas of long-haul services to a raft of European and Asian destinations is a tangible indicator of the switch in the Saudi carrier's business model.

From being a domestic and regional low-cost carrier (LCC), the Jeddah-based airline has adopted a hybrid model.

It believes that it has found a major new revenue stream in the form of religious tourism and it plans a rapid expansion that it hopes will give it the necessary critical mass to help fight off rapidly increasing competition in its domestic market.

Under its 20X20 business plan, it aims to carry 20 million passengers a year by 2020, an ambitious target considering it carried just 3.3 million passengers in 2013. It hopes to increase this to five million this year.

"The 20 million target is a bit of a stretch, but it's something we're aiming for. It's do-able," said CEO Raza Azmi.

That figure of 20 million does not include passenger numbers from its new religious tourism business. The airline believes that its first year of operations in this sector will yield around 50,000 Hajj passengers, rising to 200-300,000 by the end of the decade. With Umrah taking place over 10 months of the year, the numbers could be substantially higher.

"We're embracing a new chapter in our journey," said Azmi as he announced the launch of three-times weekly services between both London Gatwick and Manchester to Jeddah. "Initial demand has been very good. By this time next year, we believe we will have increased the number of flights. We're very optimistic we can fill up our planes."

The two new UK routes will join Paris Charles de Gaulle, Casablanca, Karachi, Lahore and Djakarta on the network. It is also looking at China, although no specific destinations have been decided upon.

Azmi, a Malaysian who was CEO of that

country's long-haul LCC Air Asia X, is particularly pleased that Kuala Lumpur is also on the list of new destinations, "so I can go home: I'm such a cheapskate at heart".

At present, around 60% of the carrier's flights are domestic, with 40% regional. That balance will shift as the long-haul operations gear up.

Previously a short-haul LCC, in November 2013 the company embarked on a major rebranding exercise and a switch to what Azmi calls a 'low-cost-carrier-plus' model. This involved a major revamp, not only of its image but also of its product.

It is following several other Middle East LCCs in installing business-class sections in its aircraft. Although small (just eight business-class seats in a 164-capacity A320), the premium cabin is not subject to Saudi Arabia's domestic fare caps, allowing Flynas to improve yields.

Flynas believes that religious tourism will play an important role in its future. In January, it set up





“We’re embracing a new chapter in our journey.”

RAZA AZMI

a new division, Flynas Hajj & Umrah, to cater for this. In the same month, it began flying pilgrims from Djakarta. These services are currently being flown by leased Boeing 747-400s operated by Malaysian carrier Eaglexpress.

“The Airbus A380 would be a wonderful aircraft for the Hajj,” said Azmi, “It can carry 880 – but I think that’s carrying things a bit too far.”

Apart from pilgrims, however, Flynas believes that Saudi Arabia can become a more conventional tourism destination. Achieving that aim requires, in part, a change in Saudi Arabia’s visa regime, commented Sulaiman Al-Hamdan, group chief executive of NAS Holding.

Obtaining business visas had become a lot easier over recent years and there was an established procedure for issuing visas to pilgrims, he said, but “for other [types of] visas, if you ask me, we are not ready”.

A new interior minister was making changes, not only to procedures but mind-sets, to improve

the situation, said Al-Hamdan. This would take time, but he was optimistic of progress.

One useful step would be the introduction of a new type of transit visa that would allow passengers to spend a few days in the kingdom before flying on to other international destinations, he believed.

The Saudi carrier plans initially to operate its UK and other routes with three Airbus A330s (two A330-200s and a A330-300), leased from Portugal’s Hi Fly.

Currently it operates 27 aircraft (all A320s except for the leased A330s) and has on order 20 A320ceo plus a further 18 options.

However, Azmi said Flynas was considering switching its A320 order to include at least some A320neo, plus more A330s: “There needs to be a discussion into the whole thing.”

He rates the A330 as “a very good aircraft”, particularly the latest version with the increased, 242tonne maximum take-off weight. “That will

have quite a bit of range and take us where we want to go.”

Later this decade, the airline would be interested in either the A350 or Boeing 787, he added. In the medium term, Azmi believes that the fleet will consist of around two-thirds short-haul, one-third long-haul aircraft.

At the moment, the entire fleet is leased, but this may change.

Funding for new aircraft will come from internally generated finances plus the private carrier’s shareholders, but it is looking at the option of taking the company public.

As well as business-class cabins on both the A320 and A330, Flynas intends to install premium economy cabins with greater legroom (35in compared to economy-class’s 32in) and other facilities.

Along with a 30kg baggage allowance (60kg in business-class), all passengers on the religious

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tourism services will be allowed an extra 10kg to allow them to return home with water from Mecca's holy Zamzam well.

Azmi hopes to make his airline's Jeddah base into a transit platform, particularly after the opening next year of the city's new, 70 million-passenger capacity airport. "We hope that we will have interconnecting traffic through Jeddah, for instance between Dubai and London."

Transit traffic should also be helped by Flynas's existing codeshare arrangement with Etihad, which opens up a much larger route network to the Saudi carrier's passengers. Further codeshares are being considered.

It is the short-haul market that will be particularly competitive in the next few years, as the Saudi authorities allow new entrants into the domestic arena. Newcomers SaudiGulf Airlines and Al Maha Airways, an offshoot of Qatar Airways, will be keen to wrest market share away from both Flynas (which has around 10% of the domestic market) and national flag-carrier Saudia.

"Competition is a way of life," said Azmi. "As long as everything is on a level playing field, it's fine. We just have to be better than the others."

"Flynas's ambition to leverage low-cost style operations into a long-haul model carries significant risk."

SAJ AHMAD

Some commentators take a less sanguine view. Saj Ahmad, chief analyst at London-based Strategic Aero Research, believes that "Flynas's ambition to leverage low-cost style operations into a long-haul model carries significant risk."

"While leasing A330s is a smart move, since they can simply hand the planes back if they do not work, they will need to look very closely at airlines like AirAsia X that have struggled to make the low-cost, long-haul model work."

At the end of February, AirAsia X reported losses of RM110 million (\$33 million) along with a 15% decline in yields.

"Factor in the higher fuel costs of the older A330 against current fuel prices and oil cost escalation, and Flynas's desire to achieve low-cost, long-haul success will not only test their managerial prowess but also their financial discipline," said Ahmad.

"In terms of the GCC, it is still a small player with just 23 destinations under its belt compared to Air Arabia's 89 and Flydubai's 68.

"Moving to secure A320neo slots is a good move for Flynas, since neither of its A320 operating rivals in Jazeera Airways or Air Arabia has yet done so – but its endeavours for the wide-body market leave a lot of questions to be answered as to why they think their long-haul strategy will work when they aren't even the biggest in the GCC for low-cost travel today."

Saudi Arabia's National Air Services is detecting a sea-change in the way the region's corporate jet owners operate their aircraft, which could lead to a substantial expansion of its NasJet division. Alan Dron reports.

A sea-change in the air for NasJet

NasJet handles the management and leasing of around 60 business jets for clients, as well as operating its own fleet of Gulfstreams and Hawkers.

The CEO of parent company NAS Holding, Sulaiman Al-Hamdan, believes the number of third-party aircraft managed by NasJet is about to grow. "There are a lot of people in the region who have their own aircraft and it's entirely managed by the crew. Slowly, people are realising that they can give their aircraft to someone who can cope with all the hassle.

"We're looking at expanding NasJet. As we speak, there are probably six or seven deals in the pipeline of people bringing their new aircraft [to us]. We can prove that we provide a more efficient operation than if they do it themselves."

The growth will be a welcome boost to the division, which was the first piece of National Air Services to become operational in the mid-1990s.

At one point, it joined up with NetJets to offer to launch a fractional ownership scheme in Saudi Arabia.

"That's worked extremely well in the US and Europe," said Al-Hamdan, speaking in London as airline division Flynas launched plans to start operating from London Gatwick and Manchester to Jeddah.

However, he admits that he had reservations about fractional ownership in the Gulf. "I made it very clear to our NetJets colleagues from the start that the programme might not work," he recalled.

Al-Hamdan's reservations were justified, which was one of the reasons behind the decision in late 2011 not to renew the agreement with NetJets. There were several factors behind the failure, but they included the pride and ego of local aircraft owners and a resulting reluctance to share their aircraft with third parties, said Al-Hamdan. The concept of fractional ownership also ran into some conflicts with Saudi Arabia's legal system.

Additionally, "Fractional is very expensive [for us] because you need to have aircraft on the ground to



Sulaiman Al-Hamdan: "We're recognised today as the largest private aviation provider in the region,"

cater for people. If you have eight owners to an aircraft and three people come at the same time and want an aircraft, we have to have one available."

However, this episode proved to be only a temporary setback for NasJet. "We're recognised today as the largest private aviation provider in the region," said Al-Hamdan. NasJet sells block hours on the aircraft it manages when their owners do not require them, to offset the costs of ownership. It also offers block hour arrangements on its own fleet.

That fleet includes 10 Gulfstream IV/450s, plus six Hawker 750XPs. The first Gulfstream 650 is expected by the end of the year.

Meanwhile NasTech, the group's engineering arm, continues to focus on the support of its fleet of executive aircraft.

The company has an on-going relationship with Lufthansa Technik, which approached the Saudi company in 2008. "We explored the possibility of working together, with a view that Lufthansa Technik would provide certain disciplines and

know-how and to spin this off into a separate company and to look at third-party businesses," said Al-Hamdan.

"One of our objectives was that, in two or three years, we might consider a joint venture together. Unfortunately, this didn't work as we had hoped. We couldn't get enough third-party work; it didn't justify running a joint venture. So, we operate with Lufthansa Technik, just focusing on the support of our fleet in terms of overhaul for engines, spare parts etc."

National Air Services has suffered financially from recent external problems but Al-Hamdan is hopeful of an improvement in its results this year. "Last year we had a good start but then had several issues because of losses in big markets such as Syria, Egypt – and now Lebanon.

"It's basically due to geo-political factors. We're seeing stronger growth this year; numbers so far are encouraging. The group should be profitable this year and next year."

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New Etihad equity partner, Air Serbia, makes its first commercial flight, arriving in Abu Dhabi from Belgrade to the traditional water-arch welcome.



ETIHAD CRACKS

At times, it seems as though the Gulf's 'big three' – Emirates Airline, Qatar Airways and Etihad Airways – are on a mission to funnel every passenger in the world through their networks.

Their fleets, route maps, codeshares and passenger numbers grow inexorably every year and their increasing presence arouses concern, even alarm, in the boardrooms of competitors in North America, the Indian sub-continent, and Europe.

Partly, this is due to Dubai, Qatar and Abu Dhabi effectively having made a decision to treat their respective carriers as instruments of national economic policy. Unlike many European countries, which regard airlines as, at best, a convenient source of tax revenues, at worst, an abetter of climate change, the three Gulf governments take the view that aviation can be a major driver of their economies.

This has led to a level of coordination between national regulators, airports and airlines of which most other national carriers can only dream.

The benefits to the 'big three' airlines' home bases are obvious. Increasingly, the centre of gravity of the world airline business is moving from North America and Europe to the Middle East.

The booming markets of the Far East are currently holding their own, but Etihad's recent 24% stake in India's Jet Airways and a new air

The seemingly endless expansion of Etihad Airways is now focused on Europe, as the Abu Dhabi carrier builds up an interlinking mesh of alliance partners and routes throughout the continent. Alan Dron reports.

services agreement between India and the UAE, will increasingly funnel more passengers from the fast-growing Indian market through Etihad's Abu Dhabi hub.

The agreement allows 50,000 seats a week to be offered between the two states, rather than the previous 13,600. It aroused considerable controversy in India among politicians and industrialists, who felt it was heavily weighted in favour of the Gulf airlines.

Currently, Emirates is the largest foreign operator to and from India, but Etihad is rapidly increasing its capacity on Indian routes.

However, it is Europe where Etihad has had the greatest impact in recent times.

Its policy of building up a combination of codeshare arrangements (rapidly approaching 50 worldwide) and, more significantly, taking equity stakes in other carriers, had already seen it chalk up a 29% shareholding in Germany's Airberlin and just under 3% in Irish flag-carrier Aer Lingus.

Etihad's president and CEO, James Hogan, has said several times in the past couple of years that no single airline can have a truly global reach and that it could only be achieved through strategic partnerships.

Indeed, of the 12 million passengers carried on Etihad services in 2013, these codeshare and equity partners delivered more than 1.8 million on to Etihad flights, 38% up on 2012's figure of 1.3 million.

Those figures will only grow in 2014, as more partners link into the Etihad network.

Last year saw a further growth of this policy of expansion into secondary European markets, which the 'big three' believe are under-served with international flights.

August saw the announcement that Etihad would take a 49% stake, plus a five-year management contract, in Jat Airways, the long-struggling airline of the former Yugoslavia and now the national carrier of Serbia. The Serbian



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From D to E: Switzerland's Darwin Airline became the most obvious manifestation of Etihad's expansion in Europe when it rebranded as Etihad Regional earlier this year.



THE EURO CODE

Government had been seeking investors for its national airline for several years, without success.

Immediately rebranded as Air Serbia, plans were announced for the replacement of Jat Airways' 10 elderly Boeing 737-300s with eight Airbus A319s and two A320s, initially leased. These, in turn, will be replaced by 10 A320neos from 2018, with Air Serbia buying them from the order for 36 A320-family aircraft announced by Etihad at last November's Dubai Airshow.

Appropriately, given its new linkage to Etihad, the company's first flight as Air Serbia took place from Belgrade to Abu Dhabi in October.

At the time of writing, Etihad seemed on the verge of also taking a major stake in another European lame duck, the perennially loss-making Alitalia.

Rapidly running out of hard cash, despite an emergency infusion of €300 million (\$415 million) from Italian investors last December, it was announced just before Christmas that Etihad was in talks with the Italian flag-carrier. In February, a joint statement by Etihad's Hogan and Alitalia CEO Gabriele Del Torchio said the two companies were in "the final phase" of a due diligence process about a possible investment by Etihad Airways in Alitalia.

"Any issues that may prevent the establishment of an appropriate business plan will have to be resolved to ensure the plan can be implemented to move Alitalia to sustainable profitability," continued the statement.

Assuming that any stake would give the Gulf carrier some say in the management of Alitalia, taking on the Italian flag-carrier – generally regarded in the airline industry as something of an economic basket-case – would be Etihad's biggest challenge to date.

However, it would give Etihad access not only to an extensive European network, but also

additional capacity on intercontinental flights, notably across the north Atlantic.

Specialist Middle East aviation analyst Saj Ahmad, of Strategic Aero Research, believes a pattern can be discerned in Etihad's rapid expansion in Europe.

"Personally, I think it's a clandestine way of accessing more European traffic without having to

be confrontational about accessing passengers directly under the Etihad brand. They will pluck passengers from other European carriers who want to go to the southern hemisphere, and route them through Abu Dhabi."

The acquisition of Jat Airways/Air Serbia he sees as a classic foray into an otherwise

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untapped resource. “A lot of these European countries have easier access to get into places like North America and Latin America.”

Ahmad believes that Etihad (and the other two members of the ‘big three’) are playing a long-term game. If they can get access to new regions through these proxies, they start to suck up traffic without having to make a major investment in setting up new routes themselves.

It means, in particular, that airlines such as Etihad can get increasing access to North America without encountering head-on opposition from US competitors. “US airlines are very Europe- and Asia-oriented,” noted Ahmad. “They generally don’t seem to want to service north or south Africa, the Middle East or Russia. So it’s easy for Etihad to make a play for the markets and get a foot in the door.”

And, with new aircraft constantly arriving to bolster Etihad’s fleet, “they need to deploy them somewhere”.

Same pattern

Etihad’s interest in Alitalia follows the same pattern, believes Ahmad. “Alitalia doesn’t just have transatlantic routes, it has one of the biggest European networks – even if it’s not making the company any money.”

However, Etihad’s biggest European coup to date – one a great deal more obvious to passengers and governments alike – was its deal late last year with Swiss regional carrier Darwin Airline, under which Etihad took a 33.3% stake in the company, which was then promptly rebranded as Etihad Regional, complete with new livery.

Darwin is headquartered in Lugano, in the Italian-speaking region of southeast Switzerland, but with a major hub in Geneva.

A relatively small company, flying 10 Saab 2000 50-seat turboprops, it operates into secondary, even tertiary, airports in which an airline like Etihad has no direct interest, but from whose catchment areas passengers can be attracted by connections to a wide spread of intercontinental destinations.

Passengers from as far apart as Poznan, in

New ATRs boost for Etihad Regional

Etihad Regional announced in March an agreement to lease four ATR 72-500 aircraft, which will see the carrier boost its regional fleet to 12 and support its rapidly expanding network. All four aircraft are scheduled for delivery by June 2014, with the first touching down at Geneva International Airport on April 1. The airline currently operates a fleet of eight 50-seat Saab 2000 turboprop aircraft.

Etihad Regional, operated by Swiss-based regional carrier Darwin Airline, will configure each aircraft with 68 seats and will feature large overhead bins.

Nordic Aviation Capital (NAC), the world’s largest turboprop leasing company, headquartered in Billund, Denmark, arranged the aircraft lease.

Maurizio Merlo, Etihad Regional’s CEO said: “This marks the beginning of our new fleet expansion programme. It is part of our strategy of matching our growing network and frequency requirements with the right aircraft.

“Choosing ATR for this transaction is a logical step. The ATR aircraft have the lowest seat-mile costs in their class, are ideally suited for regional operations, can operate in all-weather types, and have relatively low engine and airframe maintenance costs.

“The ATR 72-500s are not only known for their

reliability and technology but are also the top-selling turboprop aircraft on the market.”

Peter Baumgartner, vice chairman of Etihad Regional added: “The comfort and configuration of the new aircraft will help rejuvenate Etihad Regional’s fleet and further boost its product quality, while enabling the expansion of regional operations.

“These aircraft will allow Etihad Regional to expand the number of routes it operates, as they link key European regional towns and cities with the rest of our network, and with the hubs of Etihad Airways and its equity partners, thus being a key enabler in improving access for travellers throughout Europe.”

ATR CEO Filippo Bagnato added: “This is a brand on everyone’s lips at the moment. We are delighted that Etihad Regional has chosen ATR and we are excited to help support the carrier’s growth plans. With ATR 72-500, Etihad Regional will operate modern aircraft, which not only offer high economic efficiency and exceptional passenger comfort, but also have minimal impact on the environment.”

Etihad Regional has already begun crew recruitment for the four ATR 72-500s, and expects to hire a total of 40 cabin crew members to operate the new fleet type. The airline is also hiring 16 captains and 16 first-officers, bringing the airline’s total pilot count to 115.

northwest Poland; Cambridge in eastern UK; and Biarritz, on the Franco-Spanish border; are now hooked into the Etihad network.

That network is rapidly meshing together; in June, Etihad intends to start a daily service from Abu Dhabi to Zurich, which will become a major hub for its new Swiss partner.

Additionally, by the middle of this year, Darwin/Etihad Regional will have added 21 new routes and 18 new destinations. Its network will then include six European gateways served by Etihad – Geneva, Amsterdam, Paris, Düsseldorf, Belgrade and (from June) Zurich.

Further network connections will also be established with other companies in Etihad’s equity alliance network. Darwin/Etihad Regional will connect to the network of Airberlin through new and existing routes to Berlin, Düsseldorf and Zurich. Berlin and Düsseldorf provide Airberlin

connections to the US. Darwin/Etihad Regional will also be able to connect to the network of Air Serbia, through the latter’s Belgrade hub.

Announcing the creation of Etihad Regional at last November’s Dubai Airshow, Hogan described the move as: “A step-change” for Etihad Airways.

“With our new partner Darwin Airline, we are creating a unique approach to network development for global airlines. European travellers will now be able to connect from a far, far wider range of European towns and cities on Etihad-branded aircraft, through Abu Dhabi to our destinations worldwide,” he said.

“We are also linking the new Etihad Regional network into the key hubs of our equity alliance partners, bringing benefits to the customers of Airberlin and Air Serbia.

“This is not just a great new offer for European travellers, it is also great news for Darwin



Etihad CEO James Hogan has indicated that the Etihad Regional template may be repeated elsewhere.

Airline, which will see increased investment, greater sales and marketing opportunities, and the chance to benefit from Etihad Airways' global network."

Perhaps significantly, Hogan said the new approach could be extended to other markets over time, giving an indication of Etihad's future pattern of expansion.

The first Saab 2000 featuring Etihad Regional branding, new cabin interiors and crew uniforms,

was showcased to international media at Zurich Airport in January, positioned symbolically alongside an Etihad Airbus A330-300.

The new livery will adorn all 10 Saab 2000s by the end of June 2014.

The partnership also makes provision for a phased approach to introducing codeshare agreements, subject to regulatory approval. In phase one, Etihad Airways will place its EY code on 16 routes operated by Darwin Airline.

Darwin/Etihad Regional will adopt the Etihad guest loyalty programme.

Etihad Regional's first commercial flight took off on January 23, with a newly branded Saab 2000 operating from Geneva to Rome Fiumicino. This is one of the airline's strongest routes; since its launch in March 2011, the airline has tripled its frequency in the sector to meet strong demand from business and leisure passengers travelling between the two cities.

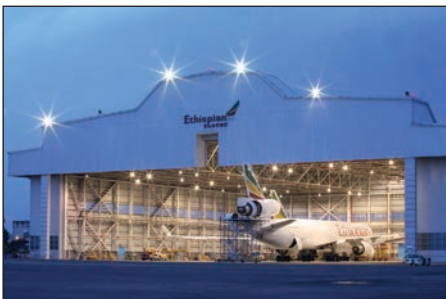
Major prizes

The Italian market is one of the potential major prizes for Etihad, although it faces stiff competition from both high-speed rail services and low-cost carriers such as Ryanair, which have made considerable inroads into an air travel market already badly affected by Italy's depressed economy.

Darwin/Etihad Regional CEO Maurizio Merlo said: "I am confident that this is the beginning of a very successful collaboration, which will benefit the customers of both airlines.

"Etihad Regional will gain significant connectivity opportunities, an improved brand experience, and benefit from the experience of Etihad Airways."

For Etihad, it is one more step on the road towards achieving global network coverage.



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Turks bond with US markets

Turkish Airlines plans to take advantage of a new window of opportunity in international aircraft financing to part-fund its ambitious expansion plans. Chuck Grieve reports.



Turkish Airlines (THY) is looking to the US investment market to help finance ambitious plans to double its fleet by 2020.

THY – Airline of the Year in this year’s CAPA Aviation Awards – is poised to join a growing list of non-US airlines tapping cheaper sources of finance in the US bond market, thanks to the Cape Town Convention.

That treaty establishes international legal standards to protect investors’ rights in signatory countries, including the right of a financier to repossess aircraft and aircraft engines in the case of default.

Turkey became a signatory in 2011, making it one of 59 states (plus the EU) to have ratified the treaty and associated aircraft protocol.

Reports indicate that THY has appointed Goldman Sachs and Citigroup to arrange the sale of bonds, called enhanced equipment trust certificates (EETCs), to a value close to \$1 billion, using aircraft as collateral. The bond sale is expected to be completed this year.

If successful, the EETCs will cover about 5% of the total list cost of \$22.7 billion for some 212 aircraft THY has on order from Boeing and Airbus.

EETCs are already an important source of finance for US carriers. One reason is their attractiveness to investors because ownership of the aircraft, which is the borrower’s collateral, is lodged with a special-purpose trust, not the operator.

The protection this affords investors in the event of default or insolvency makes EETCs similar to securitisation transactions.

As recently as February, THY chief executive Temel Kotil said the company was working on a plan to sell EETCs.

Efe Kalkandelen, an aviation analyst at Turkish brokerage IS Investment, told *BloombergBusinessweek*: “This is good for the company because it is sharing financing risks with the market instead of leasing through borrowing from banks.

Debt will be sold only to the investors in the US. This will reduce its borrowing costs.”

THY has been seeking to diversify its funding sources. Last year it issued yen-denominated bonds through the US Export-Import Bank and mandated BNP Paribas on a deal covering three aircraft.

In the background are problems with the declining value of the Turkish lira, which has dropped almost 7% since mid-December when members of the government and the head of a state-owned bank were accused of corruption. Reuters said the lira dropped a total of 17% against the US dollar in 2013, making it much harder for THY to support its growth plans from revenue.

Bloomberg says dollar-denominated EETCs, valued at \$6.8 billion, were sold by airlines in 2013, almost double the \$3.9 billion of 2012. Among that total were the issues floated by British Airways and Air Canada, the latest two non-US carriers to use this option to finance new aircraft purchases. Emirates was the first to employ it to finance four Airbus A380s in 2012.

Ronald Scheinberg, partner at the law firm VedderPrice, quoted by Reuters, said: “EETCs present an important road to capital for air carriers, and this market will likely stay robust.”

THY fleet expansion is part of an ambitious overarching plan to expand, using its home airport in Istanbul as a long-haul transfer hub. It is a model already successfully employed by the likes of Emirates and Qatar Airways.

The airline hopes to increase international transit traffic to 70% of its total passenger numbers by 2020 from about 40 per cent at present. In the same time frame, it is looking to double total passengers to 100 million.

The Turkish flag-carrier already has one of the world’s biggest networks in terms of destinations but is challenged by the size and constraints on the two current airports in Istanbul, Atatürk and Sabiha Gökçen. Plans to build the world’s biggest airport on a greenfield site near the capital have met opposition from various lobbies.



Temel Kotil: The company is working on a plan to sell EETCs.



Qatar tails soon to be green in Saudi.



Saudia currently dominates domestic.

As the countdown to new competitors entering the potentially lucrative Saudi Arabian domestic market ticks away, carriers in the kingdom are, according to Alan Dron, squaring up for a battle to attract passengers.

Saudis poised for domestic dust-up

This autumn, the first flight of one of two new contenders for Saudi air passengers is scheduled to lift off the runway, effectively firing the initial shot in what promises to be a hard-fought fight to attract customers in the Arabian Gulf's largest domestic market.

For years, Saudia has ruled the roost in the country and, even today, flies around 90% of domestic passengers.

In 2007, two new low-cost carriers (LCCs), Nas Air (now renamed Flynas) and SAMA, entered the market, but a combination of the Saudi Government-imposed fare caps for domestic sectors and the provision of subsidised fuel to Saudia meant that SAMA filed for bankruptcy in 2010, with chief executive Bruce Ashby laying the blame on those two factors for his company's demise.

Flynas continues to operate but has made it clear that this would not be possible if not for the revenue earned by its international routes; indeed, earlier this year, it announced a new batch of medium- and long-haul routes to destinations in countries including Indonesia, Pakistan and the UK, as well as concentrating, at least initially, on the religious tourism market.

In 2012, the Saudi authorities announced a liberalisation of the country's domestic services and in December of that year said that licences would be awarded to two new airlines. These were Al Maha Airways, an offshoot of Qatar Airways,



SAMA: filed for bankruptcy in 2010.

and SaudiGulf Airlines, a new venture by the Al Qahtani Group, a Saudi industrial consortium with no previous airline experience.

The latter was assisted in its licence bid and start-up efforts by Gulf Air, and former Gulf Air CEO Samer Majali came on board to head the fledgling carrier. However, the Bahraini national carrier has been at some pains to point out that it is wrong to describe SaudiGulf – as has been the case in several publications – as “the Gulf Air bid”.

The airlines seem satisfied that the market is large enough to cater for the new entrants. Several have told *Arabian Aerospace* that they accept the higher level of competition, so long as it is on a level playing field.

Given the combination of the kingdom's size,

which makes air travel a preferable option to a long car journey, together with a substantial middle class that has the disposable income to be able to afford to fly regularly, this optimism seems not unreasonable. And the marketing campaigns that will be unleashed on consumers, as the battle for passengers gets under way, are likely to grow that market.

Both new carriers used the Bahrain International Airshow in January to unveil details of their operations. SaudiGulf announced an order for 16 Bombardier CS300 jets (plus 10 options) for delivery from late 2015. Qatar Airways' CEO Akbar Al Baker revealed that Al Maha would build up to a fleet of 50 single- and twin-aisle aircraft, diverted from the parent company's order book,



with the company beginning operations in the third quarter of this year. He added that the first 10 aircraft would be leased, however, to enable the carrier to start operations rapidly.

In late March, a spokesman for Saudi Arabia's General Authority for Civil Aviation (GACA) indicated that Al Maha's launch date had slipped slightly. Khaled Al-Khaibari was quoted in the *Saudi Gazette* as saying that Al Maha would begin flying in November.

Asked if there was enough space in the market for four carriers, Al Baker replied: "We think so. If all the carriers are operating efficiently, with good control of costs, I think there's room."

He said initial destinations would be Riyadh, Jeddah, Dhahran and Dammam, with at least two other domestic points that he declined to name. He added that, after discussions with the Saudi authorities on the fare cap, it had been agreed that it would remain in place until 10 days before an individual flight, at which point it would be relaxed.

Qatar Airways has said relatively little about Al Maha since then. It is known that its livery will be a variant of the parent airline's colour scheme, but with the stylised Arabian oryx – 'maha' is the Arabic word for this member of the antelope family – in green rather than maroon.

Both Al Maha and SaudiGulf will be full-service carriers, with the latter promising a particularly high standard. Bombardier Commercial Aircraft

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Samer Majali: heads up SaudiGulf Airlines, a new venture by the Al Qahtani Group, a Saudi industrial consortium with no previous airline experience.

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(BCA) vice-president sales, Middle East and Africa, John Kassis, said SaudiGulf had “picked everything on the option list” for its new CS300s.

“It’s going to be one of the richest luxury interiors that our customers have ordered,” added BCA president Mike Arcamone. The aircraft will have a two-class interior – 16 first-class and 113 economy.

Bombardier promised that the latest delay to the CSeries delivery schedule until the “second half of 2015”, for the smaller CS100, to be followed six months later by the CS300 picked by SaudiGulf, would have no effect on the new carrier’s launch plans.

SaudiGulf said in Bahrain that more aircraft orders were planned and, in March, it announced a deal for four Airbus A320neos, for delivery early next year, to meet the Dammam-based airline’s planned March/April 2015 launch date.

Major Saudi cities

Like Al Maha, SaudiGulf will initially concentrate on major Saudi cities before adding secondary and regional destinations.

SaudiGulf’s chief commercial officer, Karim Makhlof, said it had chosen the CSeries for its new technology and fuel burn of around 20% lower than those of current models of the A320 and Boeing 737. Although the 737 MAX and A320neo families would have considerably better fuel-burns, their lack of availability until the latter part of the decade meant that they “were not really an option”.

“Of course it’s always a risk to go for a start-up aircraft, but we were in Canada to look at the development and had quite a good feeling about it,” he said.

Citing the aircraft’s composite construction and P&W PurePower 1500G powerplants, he added: “In principle, if you look at all the details, the CSeries is more modern than the neo or MAX because it’s been built from scratch.”



SaudiGulf’s entertaining move

The first of the new domestic airlines to operate in Saudi Arabia – SaudiGulf – has laid down a challenge to its competitors with its in-flight entertainment (IFE) offering.

The new airline, led by former Gulf Air and Royal Jordanian chief, Samer Majali, agreed a deal at the Aircraft Interiors Expo in Hamburg in April to offer Thales entertainment systems for passengers.

Its new aircraft will be equipped with individual IFE in both economy and first-class compartments. The aircraft’s economy-class cabin will feature 8.9inch displays at every seat and the first-class cabin will be equipped with 12.1inch displays, together with the award-winning Thales TouchPMU android-based touchscreen passenger media unit.

SaudiGulf will start to take delivery of its four Thales IFE-equipped A320 aircraft in February 2015. It is anticipated the airline will begin operations almost immediately afterwards.

Pockets of resistance

Airline analyst Saj Ahmad of Strategic Aero Research, who specialises in the Middle East, believes that the two winners – or at least, the survivors – in the new competitive environment in Saudi Arabia will be those airlines with the deepest pockets.

The Saudi and Qatari governments will bankroll Saudia and Al Maha (through Qatar Airways) respectively, he believes.

Riyadh, in particular, will not be prepared to see its national carrier lose ground in the battle for passengers.

“It is almost inevitable that Saudia will lose market share,” said Ahmad. “At the upper end of the premium market, they will suffer.”

However, he believes the losers in the fight will be Flynas and SaudiGulf, which will not have the resources for a financial slugging match.

Ahmad, who admits he is not a fan of the Bombardier CSeries, is sceptical about SaudiGulf’s choice of an untried aircraft as the mainstay of its fleet. He also believes that it will struggle to get route approval to other Gulf Co-operation Council (GCC) destinations.

Although an ‘open skies’ policy for the region has been talked about for years, he said: “Open skies for the GCC just isn’t going to happen. Everyone is far too territorial.”

Although Arabian Gulf passengers have shown themselves in the past to be averse to smaller airliners, he believed that factors such as the CSeries’ large baggage volume and cabin space would win them round.

Makhlof said SaudiGulf was being positioned as a premium carrier, with the latest options in areas such as in-flight entertainment and on-board internet connectivity.

While it was not focusing purely on premium-cabin clients, it aimed to set a particularly high standard in “the whole travel chain”, from call centres to internet booking and the check-in

experience: “We believe there’s a lot that can be done in Saudi Arabia to increase the service satisfaction of the customer.”

Like Al Baker, he believed there was plenty of space in the Saudi market for new contenders: “There are more than 40 airports in the kingdom. That means you don’t have to overlap on routes with the other competitors. I’m sure that GACA didn’t launch the liberalisation process to increase competition between airlines, they did it to develop traffic.”

He did not believe that Al Maha’s earlier market entry would give them a ‘first mover’ advantage. “Our strategy is probably focused on different markets than theirs. Obviously their parent company is Qatar Airways and the first thing which comes to one’s mind is that they will try to help their mother company by feeding traffic to Doha.”

Like Al Maha, SaudiGulf can drop the fare cap on domestic services 10 days before a departure. “That remains a challenge... but we’re confident this will change over time. We’re in talks with GACA and they’re looking into that.”

Flynas’s CEO, Raja Azmi, would prefer a market demand pricing system, but the current compromise was a step in the right direction, he said. At the time of writing, the problem with Saudia’s access to subsidised fuel was still outstanding. There was a lot of talk of a change in that situation, said Azmi, but nothing concrete as yet.

Hybrid business model

Azmi was also confident that Flynas, which in the past year has moved from an LCC to a hybrid business model, would find sufficient space in the more crowded marketplace. Forecasts showed 6% compound annual growth in the Saudi domestic market over the next five years, he said. There was likely to be extremely keen competition on certain routes.

“I think if anyone is going to lose out, it’s Saudia, because our market share isn’t that big. I think we have less to lose than them.”

In terms of holding or increasing Flynas’s market share in what were likely to be extremely keen competition on certain routes, he added: “We just have to be better [than our competitors].”

The one that the new entrants will have to beat is, of course, Saudia. It starts with the advantage of being the incumbent carrier on a domestic network that covers 24 cities.

Given the appearance of two new competitors almost certainly mounting attractive fares campaigns, it would seem almost inevitable that it will lose some market share, but it is likely not to sit back and allow its traffic to be poached without some reponse.

However, its plans remain unknown. Despite several attempts to elicit comments from the national carrier, it failed to respond to *Arabian Aerospace’s* enquiries.

For Saudi passengers, however, the next couple of years look like delivering a bonanza of choice and attractive ticket prices.



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*Suspensions that a commercial pilot deliberately downed his scheduled flight in southern Africa and that an unqualified flyer may have been at the controls of a crashed Russian airliner have focused attention on the medical and professional checks carried out on flight-deck crew. As **Alan Dron** discovered, this is a worrying trend.*

PILOT TERRORS

On November 19 last year, a Linhas Aereas de Moçambique (LAM) Embraer E-190 regional jet crashed in a remote area of northern Namibia with no survivors.

Just 48 hours earlier, a Boeing 737-500, operated by Tatarstan Airlines on behalf of Ak Bars Aero, stalled on go-around at Kazan International Airport on arrival from Moscow Domodedovo, resulting in the deaths of 44 passengers and six crew.

The two incidents have led investigating authorities to look carefully at personal and professional facets of the airliners' respective captains.

Some weeks after the Kazan crash, Russian investigators said they were investigating whether the aircraft commander, a former navigator who had re-trained as a pilot, may have had a fake licence from a small Russian training centre that had been closed down some time ago due to shortcomings.

Investigators said they were checking the licences of all pilots who had graduated from the former training school. The inquiry into the crash is continuing.

The LAM incident, which killed all 22 passengers and six crew, is also still being

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investigated and no definite conclusions can yet be drawn. However, in a carefully worded preliminary report three weeks after the crash, Namibia's Directorate of Aircraft Accident Investigation revealed that the flight data recorder, or 'black box', revealed several actions by the captain in the moments before impact that appear to indicate an intent to deliberately crash the year-old jet.

The report said that the aircraft, en route from the Mozambican capital of Maputo to Luanda in Angola, had been cruising at FL380 (flight level 380 is 38,000ft if in standard atmospheric conditions) with no apparent problems when the first officer left the cockpit to visit the toilet.

In his absence, the aircraft entered a rapid descent and the captain three times manually selected new, lower altitude settings – the last one just 592ft, below ground level of the terrain under the flight path.

"Auto-throttle was manually re-engaged and throttle level automatically retarded and set to idle. The airspeed was manually selected several times until the end of the recording, which remained close to the Vmo [maximum operating limit speed]," said the preliminary report.

During the descent, warning chimes could be



A rare case of pilot suicide is suspected as the cause of the crash of a Linhas Aereas de Moçambique (LAM) Embraer E-190 in Namibia late last year.

heard on the recording, together with banging on the cockpit door, apparently from the first officer trying to regain entry.

While the report is careful to say that the reasons for the captain's actions are unknown, it notes the sequence of actions "displays a clear intent".

Although a final determination on the captain's actions is still awaited, it would not be the first time that the crash of a commercial aircraft has been ascribed to the pilot's deliberate actions.

When recruiting, airlines obviously seek certain psychological qualities in their pilots, such as a calm demeanour and good problem-solving skills but, in general, they do not conduct

specific psychological evaluations of flightdeck personnel, according to André Droog, secretary general of the European Association for Aviation Psychology (EAAP).

Formed in 1956, EAAP has around 400 members working in aviation as psychologists or human factors experts.

Major carriers carry out 'psychological' tests on trainees to determine aptitude for flying and to uncover personality traits, such as their ability to work closely with colleagues and how they cope with stress levels, said Droog. However, detailed psychological evaluations would generally not be conducted during a pilot's career

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unless a potential problem was flagged up by medical staff or by a pilot's colleagues.

"It would happen only if there is some serious doubt about their state of mind and behaviour; it may be that they talk to a psychologist or psychiatrist. In European law, a psychological evaluation may be carried out if a medical person undertaking a check has some serious doubts about their mental fitness."

This, he said, was a rare occurrence.

Despite the stresses involved in their employment, such as being away from home regularly or operating over wide time zones or around the clock, pilots are not more prone to psychological problems than the general population, said Droog. Compensations included duty rosters that allowed them to be at home when most of the workforce was labouring during the day.

"They have the stress and fatigue of the job, of course, but there's no special vulnerability to psychological disorders."

There is some use of medication, drugs and alcohol in the pilot population, he admitted, but airlines monitor such risk factors very carefully.

"In general, they are fitter than the general population because, of course, they have these medical assessments every year, so they are well-



Pilots are generally resilient and not much affected by psychological pressures, says André Droog, secretary-general of the European Association for Aviation Psychology.

monitored. That means that if [psychological] problems are there, they are soon discovered. Something can then be done about it or they can leave the job. But I don't think there are many medical drop-outs."

The fact that there had been so few examples of commercial pilots deliberately crashing their aircraft over the past 20 years showed that pilots were more than usually resilient, said Droog. "Problems tend to be noticed by colleagues. For example, if pilots are under stress because of relationship or financial troubles they can get help – at least in well-organised, large airlines."

He added: "In many countries, pilots' unions have the means to offer help to all pilots, not just those in the big airlines."

Pilots are aware that help is available if they require it. "In general, pilots are not very prone to anxiety," he concluded.

The International Federation of Airline Pilots' Associations (IFALPA) believes that psychological evaluation or testing is "unacceptable" for routine licence renewal/revalidation purposes. "However, IFALPA supports flexibility regarding mental disorders of a temporary and/or treatable nature."

Individual pilots can obviously undertake psychological assessments

Continued
on Page 36



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CONTINUED FROM PAGE 35

voluntarily, IFALPA added, but it believes this should only be done following consultation between the national pilots' association and the appropriate medical authorities.

It sees situations where further assessments can be justified as, for example, "where the individual has exhibited long-term problems in the course of line operations, or when undergoing normal recurrent or training checks that, in the judgement of the local pilot advisory group, could have an adverse effect on flight safety; or where the individual is known to be under serious stress because of life-crisis type phenomena, such as divorce or financial problems."

"In many cases," added IFALPA, "it will be possible for the pilot to receive behavioural assistance while maintaining a regular schedule."

Appropriate qualifications

The possibility that the captain of the Tatarstan Airlines aircraft may not have had the appropriate qualifications for his position reawakened memories of previous incidents where unqualified pilots have taken the controls of commercial aircraft.

Such incidents are rare, but not unknown. Probably the most notorious of recent times came to light in 2010 when Swede Thomas Salme was arrested in the cockpit of a Corendon Airlines Boeing 737 that he was about to fly from Amsterdam Schiphol to Ankara. There have been other incidents – thankfully infrequent.

The rapidly growing airlines of the Middle East,

Suicidal pilots are rare

Instances of airline pilots deliberately crashing their aircraft are, thankfully, extremely rare.

However, the crashes of a Royal Air Maroc ATR 42 in the Atlas Mountains in 1994, a Silk Air Boeing 737 en route from Djakarta to Singapore in 1997, and an EgyptAir Boeing 767 off the east coast of the USA in 1999, were all attributed to deliberate pilot actions.

It should be noted that, in all three cases, these findings were strongly disputed – by relatives, the airline and/or pilot unions.

Another incident, in Africa in 1999, was indisputably a case of suicide, and involved an Air Botswana pilot – who had been grounded for medical reasons – commandeering one of the airline's ATR 42 turboprops.

He circled Sir Seretse Khama International Airport in the capital, Gaborone, for two hours, telling air traffic controllers he intended to kill himself in revenge for the airline's decision to ground him. When his fuel ran out, he deliberately crashed into the carrier's other two ATR 42s, destroying all three aircraft in the resulting fireball.

particularly in the Gulf, require large numbers of new pilots as their fleets expand by the month. Does this make them vulnerable to pilots with inadequate qualifications trying to ride on the coat-tails of their expansion? No, according to a senior training pilot in the region, who has discussed the issue with his peers.

The pilot, who asked to remain anonymous, said there have been instances of pilots from certain areas – notably Asia – turning up at Gulf carriers for job

interviews, with apparently legitimate qualifications that, on closer examination, were not what they seemed.

So many such pilots had appeared that recruitment departments in the region began to recognise patterns of certain flight schools, and tail numbers of individual aircraft on which the pilots said they had undertaken their training.

This led to the realisation that if all the pilots had undertaken the training they claimed: "Some of those aircraft would have been flying for more than 24 hours a day," he noted.

The airlines were now aware of the problem and will not accept pilots claiming to have undergone training at those schools.

The pilot added that he had seen others who were supposedly possessors of commercial multi-engine licences with an appropriate number of hours in their logbooks, but who did not have "any of the skills you would expect them to have" given their qualifications.

He said he had seen this phenomenon all over the world, not only in the Middle East. Instructors/examiners such as him had then to make a judgement: "Was it fraud, or was the guy just a lousy pilot?"

While not wishing to label any particular nation, the Philippines did seem to suffer from this problem more than most, to the point where it became a concern. "People need to know that if they are going to engage in that activity, there are some smart people at the other end who can probably see through them."



Fake pilot who flew for a decade

As the investigation into Thomas Salme unfolded, it was discovered that, incredibly, he had flown for several European airlines for more than a decade on the basis of forged documents, amassing 10,000 hours in his logbook.

Salme, who at one time had been a maintenance engineer with SAS, had held a commercial pilot's licence, but this had expired and in any case it had never qualified him to fly passengers. He had learned

to fly Boeing 737s after a friend allowed him to use an SAS simulator late at night.

He was quoted in the German magazine *Focus* as saying that it had been simple to get away with his fraud: "It was surprisingly easy. The documents look different everywhere in Europe. An Italian airline doesn't know what a Swedish licence looks like. And you can forge all the IDs you need."

A Dutch court fined him €2,000 (\$2,600).

In 2013, a UK court jailed a former US military pilot, Michael Fay, for three years and one month after he had forged his licence and medical certificates to fly Airbus A320s with Libyan carrier Afriqiyah Airways, taking advantage of the chaos in the North African nation following the overthrow of Muammar Gaddafi.

Ironically, several pilots who had flown with him over the years testified to his flying skills and knowledge of the aircraft he flew.

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IATA will be hosting its annual general meeting in Doha in June and the organisation's director general and chief executive, **Tony Tyler**, was at the Global Aviation Summit in Abu Dhabi in April, where he outlined his thoughts on the region to Arabian Aerospace.

Tony Tyler:
"Learn from
the mistakes
of Europe."

Global not local the key to success

Airlines in the Middle East are expected to contribute a record \$2.2 billion to the global aviation profit in 2014.

The fast-growing Gulf area is at the centre of the region's success. And the UAE is a great example of just how powerful the aviation industry can be as an economic force. Including the impact of aviation-related tourism, more than 430,000 UAE jobs are related to aviation and 14.7% of GDP is linked to it.

With numbers like that, there can be no doubt of the wisdom of the region's governments, which saw aviation as a strategic asset and created a policy environment to facilitate its success. And that success is making its mark globally. In just over a decade, the region's share of global traffic grew from 4% to 9%.

From June 1-3, we will host the world's airline community in Doha for the IATA Annual General Meeting – a great platform to showcase the Gulf success story. The summit includes respected global airlines, with Qatar, Emirates and Etihad among them.

No frills airlines are making their mark. Many of the region's carriers are integrating with the global industry through alliances, strategic partnerships and equity investments. And airline operations are being facilitated by airport partners, who themselves, are undergoing a massive investment programme.

Third ingredient

There is a third ingredient in the success story about which I am concerned – air traffic management. Airspace is finite. So capacity can only grow with efficiency. Each country has invested in impressive technology. But effective management needs regional and international teamwork.

There are some challenges. For example, between 40% and 60% of the airspace is reserved for the military. So we are trying to squeeze the fast growing civil aviation component into a fraction of the airspace.

One solution is developing partnerships and trust with the military to open more flexible use zones. That is happening progressively, but it is not keeping pace with demand for air travel.

And, over time, we have made management of the airspace more complex. Historically Bahrain was the one

flight information region (FIR) for the Arabian Peninsula. However, from the early 1980s it began to be fragmented and today there are six FIRs.

For an airline, the important thing is to get from point A to point B as smoothly as possible. The challenge for the air navigation service providers is to work together to make that happen as seamlessly across six FIRs as if there were one.

Congestion is a real and rising problem. And it grows with each aircraft that is delivered. Unless it is dealt with quickly, the efficient hub operations, which are supporting the region's success, will begin to unravel.

Learn from the mistakes of Europe. The single aviation market created enormous demand for air connectivity. But this was not matched with a single European sky. And the result is an inefficient and fragmented air traffic management system that is a burden on European competitiveness.

Air traffic gridlock

Aviation in the Gulf is a great success story and air traffic gridlock should not become its Achilles' heel. The players in the region need to buy-in urgently to a vision for seamless airspace management in the region and then work together in a team effort to make it happen.

Global standards are also a key concept. Global connectivity is possible because of global standards. IATA is a staunch supporter and defender of global standards. We make industry commercial standards in some areas and we support the International Civil Aviation Organisation (ICAO), which has the same mandate for governments.

Global standards provide a way for industry partners to work together. They form a common language, so to speak. And I would attribute a large part of the success of aviation in the Gulf to the importance that the stakeholders in the region – governments and industry – have placed on them.

I urge you to stay the course and resist the urge to fragment global standards with local variations. Be it passenger rights, requirements for advance passenger information, or the adoption of important treaties like the Montreal Convention, the more that we can place global standards at the centre of regulations, the more solid is the foundation for everybody's success.

**The players in
the region need
to buy-in
urgently to a
vision for
seamless
airspace
management.**



As Qatar welcomes the airline industry to Doha for the 2014 IATA annual meeting, many CEOs will be venturing on to the home turf of those they see as their biggest threat – the Gulf carriers. Industry analyst **Saj Ahmad** gives his take on why Europe's CEOs, in particular, feel they have so much to fear.

EUROPE'S FEAR FACTOR

A recent article in the *Financial Times* by outgoing Lufthansa CEO Christoph Franz absolutely catches the mood of the moment. "In the beginning we were talking about a competitive threat on paper – now we are talking about reality in our markets," he wrote.

Emirates, Qatar Airways and Etihad Airways, or the 'big three' as they are affectionately termed, have been blazing a trail in the global skies. They are, arguably, now dominating the markets they serve with high-quality premium products that leave competitors scratching their heads in wonder at what they'll do next to expand their appeal and further suck up international traffic.

Rewind just a decade and we saw Emirates' steady expansion into Australia come under a barrage of unsavoury and unfounded attacks by Qantas. It wasn't the first airline to take aim at Emirates' growing global presence and, even now in 2014, there are more carriers getting hot under the collar about the 'big three'.

In quick summary, the voices of discontent

about the growth of Emirates, Etihad and Qatar Airways, stink to high heaven of hypocrisy and sour grapes.

For the best part of some 50-plus years, European airlines revelled in lapping up "free money" from governments to prop up heavily inefficient business models that were, in effect, nothing more than glorified flying pension policies for employees.

One only needs to look today at the perennial disaster that is Air India to see that some markets still live in the mind-set of the 1950s and 1960s, while being bizarrely oblivious to the changing environment around them.

Ringstrue

And this rings true for European and US airlines. For years we've seen many CEOs, CFOs and other executives, complain that access credit via the European Export Credit Agency and Ex-Im Bank has allowed Arabian airlines to spend at will and still have the safety net of being state-owned to safeguard their far-reaching expansion plans.

This angle would hold some substance, were it not for the fact that Arab carriers today are doing nothing different from what European airlines were doing when state aid was being dished out like it was going out of fashion.

The difference now is that Arab airlines are investing, not squandering the liquidity they are being afforded.

Labour seems to be the biggest gripe that European airlines have vis-à-vis the 'big three'.

Arabian airlines have watched how labour and union angst provides nothing more than a hotbed of industrial militancy, when management and employee discord becomes too big a gap to bridge.

Strike action inevitably ensues – the grounding of planes, misalignment of staff, assets etc – and the financial cost of not flying becomes fatal, while passengers are inconvenienced to the point where they will refuse to fly with said airline ever again.

The likes of Emirates, Qatar Airways and Etihad have not had to face such hardship since unions (rightly or wrongly) do not exist and, consequently, the very notion that there would be industrial action at any of these three airlines would be as breath-taking as discovering that the Moon really is made out of cheese after all.

European airlines have only themselves to blame for the quandary they now face.

Myopic visions of how they thought air travel would develop, enmeshed with inept management teams that knew only how to drive asset values down and forget how to compete, have led to Arab airlines taking advantage of such shortcomings.

Controversially – in Europe more so than in the United States – the multi-billion dollar aircraft buys of Airbus jets provides a unique leverage point for Emirates, Etihad and Qatar Airways.

All three are big A350XWB customers; indeed, it was Qatar Airways that launched the programme, while Emirates holds almost half of the entire A380 backlog, with orders for 140 of the type (at the time of writing it had just taken delivery of its 47th example).

Access to the lucrative high-yield traffic market of Europe is the primary focus of Emirates, Etihad and Qatar Airways.

Just look at the continued airport traffic growth at Abu Dhabi, Doha and Dubai; a big chunk of passengers coming to, and flying through, those airports are European citizens – tourists,



Christoph Franz:
reality in the
market.



holidaymakers, families and, of course, the men in suits that carry the money and make the front part of the cabin effectively so cash rich that the rest of the aircraft could be empty and the airlines would still make money.

And, if European policymakers ever woke up one morning, slammed their fists on the desk and said: “No more European access for the ‘big three’,” then the pushback on those Airbus orders would hurt Europe in a huge way.

Hundreds of thousands of aerospace manufacturing jobs across Europe (and, indeed, the world) rely on those billion-dollar aircraft deals. If any of those airlines exercised the ‘cancellation trigger’, the reverberations would be devastating.

Acutely aware

As it is, EU policymakers are acutely aware that those Airbus jobs, highly skilled and highly paid – are worth far more than the structurally inefficient dinosaur Euro-airlines that bring headaches rather than profits to the wider European market.

British Airways (BA) managed to convince Qatar Airways to join the Oneworld alliance in 2013 and it stands to reason that BA fares better with Qatar Airways in the fold rather than having to compete with it on the outside.

Qatar Airways didn’t ‘need’ to join any alliance. It has enough strength to go it alone, like Emirates. But, in joining Oneworld, it has managed to tap into key markets like Latin America and Asia without having to stump up money to do so – economies of scale for codeshare partners work both ways.

Air France, although late to the party, realised that it was better off aligning itself with Etihad



Qatar Airways has joined the OneWorld alliance to bring in new customers, while inset: Emirates is in Munich with an A380 driving growth from Germany.

because the French carrier has no hope of ever usurping them on European-Arabian routes.

And, of course, Etihad’s controversial late 2011 purchase of a major stake in Airberlin caused immense consternation to European airlines.

Not content with being left behind for their abject cabin products, ageing aircraft and poor customer service, the Etihad dual strategy of buying stakes to complement its organic growth has been the wake-up call some needed to change the way they operate.

British Airways is still doing all the legwork in its operations, while Iberia convalesces – so things are, indeed, changing at some EU airlines.

Lufthansa now seems to be the odd one out – crowing and complaining, yet doing nothing to fix its own problems.

It’s all very well introducing a premium economy class of cabin (which is not present on any of the ‘big three’ I might add), but it’s not what customers are after.

Emirates’ policy of being independent, and not affixed to any grouping, means that its relentless growth strategy effectively forced Qantas to buckle into being the weaker partner of the Emirates-Qantas pact that started a year ago.

Until that juncture, Qantas didn’t have a single

flight that operated into the Middle East.

Emirates is now siphoning off Qantas’ international traffic in Dubai with joyous fervour, safe in the knowledge that the loss-making Australian flag-carrier is in no fit state to do anything about it.

For all the talk surrounding the perceived “inequity” that Emirates, Qatar Airways and Etihad have versus European airlines, the most glaringly obvious difference is that Arab airlines are being proactive, rather than reactive.

European airlines are spending far too much time and money criticising the competition instead of actually competing.

Just look at the launch of the 777X programme at the 2013 Dubai Airshow.

The ‘big three’ placed combined orders worth almost \$100 billion for more than 200 new Boeing 777-8X and 777-9X jets.

The heydays where European airlines were launch customers for major game-changing aircraft are long gone. The market today is a very different place – and as new airliners shrink global connectivity and give customers more reach about how, where and with whom they fly, European airlines, along with Asian and US airlines, are no longer the default choice.

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While the Rafale was hotly tipped as Morocco's next generation fighter, the RMAF acquired 24 F-16C/D Block 52s instead in 2007. Deliveries were completed in August 2012. The F-16s have been acquired to provide the RMAF with a deadly air-to-ground capability, which also covers the SEAD role. Picture: Lockheed Martin.



Formidable technology keeps Morocco on track

*Last month's Marrakech Air Show gave the Moroccan public and North African defence analysts the chance to see the Royal Moroccan Air Force (RMAF – Forces Royales Air Marocaines) in action and see just how it has been revolutionising its inventory with a major modernisation programme, as **Alan Warnes** explains.*

Today, Morocco boasts the most sophisticated net-centric air defence system; linked by its newly acquired Thales ground radar air defence technology. At the core of the network are eight AN/MPQ-64F1 Sentinel radars, offering protection at low to medium altitude, and providing an air surveillance range of up to 120km (75 miles) to support a multitude of advanced weapons systems like Hawk and Stinger.

The 3D system, equipped with a phased array X-band unit capable of automatic target detection and tracking, plugs into Morocco's highly autonomous command and control system.

Having also acquired eight Sentinel M1 152 high-mobility multipurpose wheeled vehicles (HMMWVs) to tow the radars, it is a highly mobile system aimed at protecting the country from airborne threats.

The MPQ-64 can be easily transported by one of the RMAF C-130s, or sling-loaded under a CH-47 Chinook helicopter.

Morocco and eastern neighbour, Algeria, who share a common border, have a long-standing dispute over Western Sahara and share a deep mistrust. The acquisition of this defensive screen in 2011, along with the purchase and upgrade of existing combat aircraft, go a long way to countering any attempted strikes from Algeria.

Territorial disputes over this region have seen the Moroccan military fighting the POLISARIO Front (POLISARIO is a Spanish acronym for Popular Front for the Liberation of Saguia al-Hamra and Rio de Oro), which is backed by Algeria.

Continued
on Page 44



The RMAF's fleet of 24 F-5E/Fs went through a thorough upgrade in the mid-2000s. Quite surprisingly, the contract was awarded to IAI Lahav. The bulk of the RMAF's F-5s are operated by three squadrons based at Meknes, although there is a detachment at Laayoun Hassan in the western Sahara. Picture: Alan Warnes.

CONTINUED FROM PAGE 43

Having previously been neglected by the former king of Morocco, Hassan II, the first step to enhancing RMAF capabilities came in 2003 when the entire fleet of 24 Northrop F-5E/Fs was upgraded with IAI Lahav's new modern EL-2032M radar, accompanied by Rafael Litening laser designation pods.

There has also been speculation that some Cruise missiles were also acquired, aimed at punching into Algeria's defence and radar system.

They were followed, somewhat surprisingly, by the \$2.4 billion acquisition of 24 new Block 52 F-16s, with the initial contract signed on May 30, 2008. The weapons fit included: AIM-120C-5 AMRAAM, AIM-9M Sidewinder, AGM-88B/C HARM, AGM-65D/G/H Maverick, GBU-31 JDAM, GBU-38 JDAM, GBU-24 Paveway II, GBU-10 Paveway II, GBU-12 Paveway II, and Enhanced GBU-12 Paveway II.

Four Goodrich DB-110 electro-optical/infrared airborne reconnaissance system pods and 12 Lockheed Martin AN/AAQ-33 Sniper targeting pods were also ordered for these aircraft.

The first four aircraft (two F-16Cs and two F-16Ds) were ferried to Morocco on July 30 2011 and were formally accepted into service on August 4 that year.

The handover took place at their new home at Ben Guerier Air Base, a previously disused former US air base, and emergency US Space Shuttle landing field, some 36 miles south of Marrakesh, which had been extensively refurbished and upgraded to house the F-16s. Deliveries were completed on August 22 2012, when the final three (two F-16Cs and a single F-16D) arrived.

There has been speculation that some Cruise missiles were also acquired, aimed at punching into Algeria's defence and radar system.

The F-16s have a powerful suppression of enemy air defences (SEAD) mission when their AGM-88 HARM missiles are combined with the Raytheon digital radio frequency memory (DRFM) electronic warfare jammers.

Morocco's fleet of Dassault Mirage F1CH/EH fighters has been in service since 1978, but a contract was agreed in September 2005 with Sagem and Thales joint venture company ASTRAC to undertake a wide-ranging modernisation of the 27 surviving aircraft. Reflecting this, they have been redesignated the Mirage F-1MIV.

Among the modifications and weapons acquisitions came the stand-off strike capability courtesy of the Armement Air-Sol Modulaire (AASM) new generation air-to-ground weapon, as used by French Rafales and Mirage 2000Ds, and also known as the Hammer.

The Mirage F-1VIMs have been described as "a striker on steroids with a powerful electronic intelligence (ELINT) capability". The latter has derived from four Thales ASTAC ELINT pods,

which has helped the Moroccan Air Force develop a powerful capability.

An upgraded prototype had commenced flight-testing by April 2010 and work is still under way in Morocco.

All Moroccan combat aircraft are now net-centric combat-capable and highly integrated via datalinks into the Thales ground radar air defence systems.

A €27 million (US\$37 million) contract to upgrade 22 of Morocco's surviving Alpha Jets was awarded to SABCA of Belgium and Thales in late-2009. The selected modification turns the original Alpha Jet into an advanced jet trainer, filling the gap in the training process between basic flying training and operational modern jet fighters.

The work primarily involves installation of improved Thales avionics in a new glass cockpit, with multi-function displays, hand-on throttle and stick (HOTAS), new head-up display (HUD), upgraded weapon and navigation system and new Martin Baker Mk 10 zero-zero ejection seat.

The upgrade is similar to that carried out on the French Air Force Alpha Jet fleet, although there is a requirement that the new system is compatible with the Al Ghait weather management system.

One prototype or lead-the-fleet (LTF) aircraft (serial number 246) arrived at SABCA's facility in Charleroi, Belgium, on October 4 2010 for the modernisation work to begin. After a full flight test campaign, the LTF was flown to Morocco during May 2012.

Development work was completed in mid-2012 and followed by two pre-production upgrades undertaken in-country under the supervision of Thales.



The need for a bigger tactical helicopter, particularly for operations in the western Sahara, has seen the RMAF order three CH-47Ds. This example is one of the earlier CH-47Cs, which are based at Rabat-Sale. Picture: Alan Warnes.



With a considerable amount of digitisation to the RMAF fighter cockpits, as well as acquiring the F-16s, a new more modern trainer was needed to replace the ageing T-37Bs. The Raytheon T-6 was ordered in September 2009 and by January 2012 all of them had been delivered to the pilot school at Marrakesh-Menara. Picture Raytheon.

Kits are now being supplied to Morocco, allowing the air force to complete work on the remaining 19 upgrades, assisted by SABCA specialists, by the end of 2015 at Meknes, home of the RMAF's 2nd BAFRA.

In order to replace its Cessna T-37Bs in the training role, Morocco selected the Beechcraft T-6C Texan II, signing a letter of offer and acceptance for 24 of the type in June 2008. A production contract was awarded in September 2009, following which deliveries commenced with the first four aircraft in January 2011. Twelve months later, deliveries were completed with the final four aircraft. All of them are operated by the Ecole de l'Pilote (flight school) at Marrakesh, which has led to the retirement of the T-37Bs.

A notification to US Congress in October 2009 first revealed plans by Morocco to boost its depleted Chinook helicopter fleet, with a planned foreign military sales purchase of three CH-47Ds for \$134 million.

A total of 12 CH-47Cs had originally been delivered to Morocco, commencing in 1978, from the Meridionali production line in Italy.

There have been reports the surviving helicopters were upgraded and re-engined to CH-47C+ standard, but it is unknown whether this work was ever undertaken. A contract is reported to have been signed for the three CH-47Ds and, although it is unclear when this was finalised, they have not yet been delivered. Morocco is also considering purchasing three more CH-47Ds.

A single Bombardier 415 fire-fighting amphibian was delivered in mid-February 2011, the order for which had not previously been announced. Bombardier then confirmed in

By Royale appointment

Morocco's Gendarmerie Royale has undertaken a modest expansion of its helicopter fleet of late, including the second-hand acquisition of five AS550C2 Fenecs within the last few years.

These were purchased after they had been retired by the Republic of Singapore Air Force and put up for sale.

A single EC225LP Super Puma Mk II+ was acquired in 2010, while other purchases from the Eurocopter stable included two EC145s that had entered service by early 2011 and three EC135T2+, the first of which also entered service in 2011.

March 2011 that a further four of these aircraft had been ordered by an unspecified customer, later confirmed to be Morocco.

The first of the additional aircraft was delivered in May 2011, while the final example arrived in Morocco in September 2013.

In order to supplement its transport fleet, four C-27J Spartans were ordered under a contract announced in September 2008. The first delivery took place in July 2010, with the fourth and final aircraft arriving in Morocco in September 2011.

Adding to its VVIP transport fleet, a notification to US Congress in May 2009 revealed plans to acquire a Gulfstream G550 for an estimated total cost of \$142 million. The aircraft was subsequently ordered from Gulfstream and it was officially handed over in the US at the manufacturer's Savannah, Georgia factory in November 2010, before being ferried to Morocco. It joins a Gulfstream IITT and Gulfstream III already in use for VVIP transport.

Reports in January 2014 suggest that Morocco has purchased at least three Harfang medium-altitude long-endurance (MALE) unmanned air vehicles from France, which developed the type from the IAI Heron. A contract for these UAVs, also including electro-optics, data links and communications systems, was said to have been signed in March 2013, with deliveries commencing the following month.

In 2010, General Atomics received an export licence to supply an unarmed export version of the Predator XP UAV to Morocco, with unconfirmed reports indicating that four may have been delivered.

During AeroExpo 2012 in Marrakesh, there were reports that Morocco was interested in purchasing two Boeing C-17A Globemaster IIIs to replace some of its C-130H Hercules. Although Boeing is remaining tight-lipped about customers for its remaining C-17As, as it heads towards closing down of the production line, it is still possible that two of them could go to Morocco.

The possibility of acquiring surplus US Air Force KC-135 Stratotankers to provide aerial refuelling for the F-16 fleet was also being mooted during AeroExpo 2012.

Unconfirmed reports in 2012 also indicate the Moroccan Air Force may have placed an order for 12 Eurocopter EC725 Caracal helicopters. No further details are known and the manufacturer has declined to comment.

US government documents from December 2009 had also indicated Moroccan interest in a possible purchase of an unspecified number of Sikorsky SH-60 Seahawks, but nothing further has been heard of this since then.

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Even as the US rebuffs its overtures over the Lockheed Martin F-35 Joint Strike Fighter, Jon Lake reports that the UAE looks set to buy up to 30 new Block 61 F-16 Falcons.

The UAE is shopping in the States for the new Block 61 from Lockheed Martin.



NEW KIT ON THE BLOCK

The United Arab Emirates has long expressed an interest in acquiring the Lockheed Martin F-35 Joint Strike Fighter and UAE AF&AD officers have even been briefed on the aircraft.

However, the USA has made it clear that the existing order backlog alone would keep the UAE from obtaining the JSF until after 2020. And programme insiders suggest that Emirati aspirations for sharing in technology and co-production would never be possible in the near or medium term.

So, while the UAE may aspire to become a regional hub for marketing and maintenance of the F-35 to other Gulf Cooperation Council states, and beyond, this is equally unlikely to happen.

With its ambitions to operate a fifth generation fighter effectively stymied, the UAE is continuing to evaluate alternatives to meet its long-standing fighter requirement.

It is again understood to be considering both the Dassault Rafale and the Eurofighter Typhoon, despite having publicly rejected both in 2011 and 2013 respectively!

The UAE is also evaluating the Boeing Super

Hornet and the Boeing F-15 Strike Eagle.

Whatever aircraft type is selected will replace the UAE's fleet of about 51 Mirage 2000-9s.

The UAE has also been planning to recapitalise its F-16 fleet, hoping to add aircraft (in case of attrition and for training and also as a maintenance reserve), but also building new capabilities via upgrade and modernisation. Now that plan looks likely to come to fruition.

On January 23 this year, the US Defense Security Cooperation Agency (DSCA) notified Congress of a possible foreign military sale (FMS) of training, logistics support and support equipment, weapons, and other items to the UAE.

This, the DSCA said, was to be supplied in support of a related direct commercial sale of 30 Block 61 F-16E/F aircraft, and an upgrade of 79 existing Block 60 F-16E/F Desert Falcons to a similar 'Block 60+' standard.

Some months before, in April 2013, the US Secretary of Defense, Chuck Hagel, had announced that the UAE would obtain 25 more F-16E/F fighters and unspecified "stand-off weapons." This led to an October 2013 DSCA notification

Continued
on Page 48

CONTINUED FROM PAGE 47

covering the possible supply of 300 AGM-84 SLAM-ER missiles, 1,200 AGM-154C joint stand-off weapons (JSOW) and 5,000 GBU-39/B small diameter bombs (SDB) for the F-16 fleet.

Because the aircraft themselves would be purchased via a direct commercial sale, and not using the more usual FMS process, there was no need for a DSCA notification of the aircraft sale. The US DoD has explained that a direct commercial sale option is available to some of its “more sophisticated customers”.

But some weapons, support equipment and services will always have to be supplied under a foreign military sale – thereby accounting for the DSCA congressional notifications associated with this deal, and explaining why the total expenditure listed in the notifications (about \$270 million) was so much less than one would expect for a package that includes 30 new aircraft, and nearly 80 upgrades, which might be expected to run into billions of dollars.

Between Hagel’s initial statement and the January DSCA announcement, the UAE had increased its requirement from 25 new aircraft to 30, while the US DoD had also revealed the new Block 61 designation.

Fourth generation

The Block 60 F-16E/F has been called “the ultimate fourth generation fighter”, and has been labelled as the most advanced F-16 variant in the world. Defence Industry Daily described the Block 60 as being “a half-generation ahead of the F-16 C/D Block 50/52+ aircraft that form the backbone of the US Air Force”.

The UAE invested almost \$3 billion into research and development for the Block 60 F-16 E/F Desert Falcon and, as a result, shares the intellectual property for the aircraft.

The UAE would be entitled to royalty payments if any other nation were to purchase an F-16 variant using technology that it had funded, although changes in international traffic in arms regulations (ITAR) and technology transfer regulations would make the Block 60 difficult to export.

The Block 60 incorporates a Northrop Grumman AN/APG-80 AESA radar, making it the first F-16 variant to be fitted with an AESA array, and still the only AESA-equipped in-service F-16 version. The introduction of the Block 60 F-16 made the UAE AF&AD the first fighter force outside the USA to field this revolutionary new radar technology.

The Block 60 also incorporated an internal Northrop Grumman AN/AAQ-32 forward looking infrared (FLIR) navigation and targeting system, derived from the AN/AQS-28 LITENING AT pod. Internal carriage of the system reduces drag and radar cross-section, and also frees up a hardpoint for the carriage of weapons.

Compared to earlier F-16 variants, the Block 60 has a new core avionics suite, a ‘glass’ cockpit



The UAE's Block 60 F-16s have additional 40% range.

with three colour liquid crystal displays featuring a picture-in-picture and moving map capability, a digital fuel management system, greater electrical power generation and cooling, a higher-capacity environmental control system, a new air data system, and an expanded digital flight control system, which incorporates additional modes, including automatic terrain following.

The Block 60 is powered by General Electric F110-GE-132 engines and also features a Falcon Edge integrated electronic warfare system (IEWS), as well as the conformal fuel tanks and dorsal avionics compartment associated with later Block 50/52 aircraft. As a result, the Block 60 has a mission radius of 1,025 miles – a 40% range increase by comparison with non-conformal fuel tanks (CFT)-equipped F-16 variants.

Vital software

The USA has never been willing to export the vital software source codes that can be used to programme the electronic warfare and radar systems on US-built fighters, but in the case of the Block 60 F-16, the US did provide “object codes”, which allow them to add mission and new data to the F-16’s threat library autonomously. This has allowed the UAE AF&AD to refine and improve the Block 60 aircraft exponentially, and to keep abreast of developing threats.

Though Lockheed did integrate the UAE’s GEC Al Hakim rocket-boosted glide bomb on the F-16E/F, the US State Department refused to let it change the weapons databus to allow integration of the MBDA Black Shaheen cruise missile (a derivative of the Storm Shadow). This was because the Black Shaheen was assumed to have a range of more than 300km, which is the current range limit for cruise missiles under the missile technology control regime (MTCR). At a stroke this meant that the UAE had to retain its Mirage 2000-9s to carry the weapon, if it wanted to retain the capability.

Lockheed Martin has thus far refused to comment on the Block 61 configuration, but it can be assumed to represent an evolutionary upgrade compared to the original Block 60.

Lockheed Martin Middle East regional director, Rick Groesch, said at the Bahrain International Airshow earlier this year, that the Block 61 designation had not been revealed, but he stressed that the UAE Block 60 configuration was still available and exportable, if a customer could prove “a genuine need” to the US Government.

Groesch confirmed that the 30 extra aircraft requested by the UAE would be new-build Block 60s with diminishing manufacturing sources (DMS) and obsolescence issues addressed, and with what he called “some interoperability enhancements”.

This describes the Block 61 pretty accurately, although, according to some reports, the new variant also features enhanced radar, avionics, and weapons capabilities.

The 79 or so surviving Block 60 F-16s are likely to be upgraded to virtually the same standard, under the designation Block 60+.

Though some reports have suggested that the additional F-16s now requested may cause the UAE to put its long-standing requirement for a new fighter on hold, this is unlikely to be the case, not least because a replacement for the Mirage 2000 (which has the UAE’s sole stand-off cruise missile capability) is still urgently required.

However, a decision may be delayed briefly, perhaps in an effort not to increase tensions in the Gulf following the UAE’s recent accommodation with Iran.

The F-16 procurement may also have afforded the UAE a breathing space to allow time for the Emiratis to see whether the US will make the F-35 Joint Strike Fighter available to GCC allies in the medium term, though this would seem unlikely. All the evidence is that, in fact, the UAE is already resuming contacts with Dassault for further consideration of the Rafale, and BAE Systems for the Typhoon.



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 **BOEING**

Although AgustaWestland's AW101 had a troubled start as a VVIP helicopter, this year will see VIP-configured Merlins being delivered to two Arab nations, as well as to Turkmenistan, and perhaps to India. Jon Lake reports.

Merlin proving magical for VVIPs

The AgustaWestland VIP-configured Merlin is battling back after a fairly mixed start to life. This began on January 28 2005, when the US Department of Defence selected the US-101 (a derivative of the Merlin offered by a Lockheed Martin/AgustaWestland team, powered by the General Electric CT7-8 engine) as the winner of the VXX competition to replace the US Presidential helicopter fleet.

The VH-71 Kestrel (as the US-101 was redesignated) was to have been built under licence in the USA, but a series of required design changes drove up costs and weight, and led to the termination of the contract on June 1 2009.

The nine cancelled VH-71s were purchased by Canada to support its own AW101 fleet.

Interestingly, the AW101 re-entered the running for a revamped VXX competition in 2010, this time being offered by a team led by Boeing.

The new VXX requirement was less ambitious, cutting the number of people the helicopter had to carry, reducing the required range, and simplifying the required communications suite. However, by 2013, Boeing, Bell Helicopter and AgustaWestland had all declined to take any further part in the project.

But the experience gained in the VXX programme helped AgustaWestland to refine its AW101 VIP offerings, and the result has been a steady trickle of new orders, the largest

coming from India in April 2009. India ordered 12 AW101s to serve as VIP (presidential and prime ministerial) transport helicopters, though the procurement was subsequently cancelled due to a bribery scandal, and may not be resurrected.

Less controversially, AgustaWestland has received orders for VIP versions of the AW101 from the governments of Saudi Arabia and Turkmenistan, and from the Algerian Air Force.

Algeria had already ordered six AW101-610 search and rescue/transport versions of the AW101 for the Al Quwwat Al Bahria Al Djazairia (Algeria Naval Forces) in November 2007, and followed this with an order for two AW101-642 VIP versions for the Al Quwwat Aljawwiya Aljaza Eriyya (Algerian Air Force). These were delivered to Newquay Airport in Cornwall, England, for crew training before departing to Algeria in December 2013.

Soundproof shell

A "customer" from Saudi Arabia (almost certainly the Royal Saudi Air Force - al-quwwawaal-gawwiyyah al-malakiyyah as-su'udiyah) ordered two AW101-640 VVIP aircraft in 2008. These were built at Yeovil, but were then flown to Italy to have a soundproof shell fitted inside the (already phenomenally quiet) aircraft. They then returned to the UK before delivery to Saudi Arabia.

Unlike most AW101 VVIP variants, the two aircraft are fitted with an under-nose FLIR/EO sensor turret. Further orders from Saudi government agencies are reportedly expected.

The aircraft offers a host of advantages over its main rivals. Faster, quieter than the Chinook, and easier to air-freight without major disassembly, the AW101 is also quieter, smoother and more capacious than Sikorsky's S-92, while the large in-service fleet of military utility, search and rescue (SAR) and antisubmarine warfare (ASW) Merlins makes the aircraft highly supportable.

AgustaWestland is currently exploring the potential of re-certifying the AW101 Series 600 for civil use. The Series 500 aircraft achieved civil certification in 1994 but only found one civil customer, in the shape of the Tokyo Metropolitan Police. Since then the AW101 has been progressively improved, and is now a more capable, more powerful, more reliable and more sophisticated helicopter.

AgustaWestland believes that a new European Aviation Safety Agency civil certificate could lead to new orders from VIP and offshore oil and gas operators, especially in the Middle East.

Arguably, the lack of such certification has already cost the AW101 some significant orders and opportunities – perhaps including the UK's 'harmonised' SAR requirement and perhaps even to equip the new, civilian, Queen's Helicopter Flight.

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*Turkey is starting to promote its T129
ATAK helicopter to the export market.*

Jon Lake *assesses its chances of success.*

Turkey on the ATAK for exports



One of the reasons that Turkish Aerospace Industries (TAI) selected the AgustaWestland A129 Mangusta to form the basis of its new tactical reconnaissance and attack helicopter (ATAK), was the perceived export potential of an improved A129/AW129 derivative.

This showed a degree of insight on Turkey's part, particularly as AgustaWestland's own attempts to develop and export improved A129/AW129 variants had met with little success.

Because of this, TAI could be confident that it would be able to have full marketing and intellectual property rights for the resulting T129 helicopter, and could be certain that it would be able to export or transfer it to any third countries, with the exceptions of Italy and the United Kingdom.

Now that the initial development of the T129 is almost complete, TAI is aggressively marketing its new helicopter, and is already experiencing a great deal of interest.

The T129 was closely examined by Royal Bahrain Air Force pilots when it made its international debut at the Bahrain International Airshow in January 2014, and many seemed to view it as a perfect replacement for the service's ageing Bell AH-1 Cobra attack helicopters.

Interest has also been shown by Libya, whose Prime Minister, Ali Zeidan, has said that his country might soon acquire both the T129 attack helicopter and the Hurkus turboprop trainer.

Pakistan has had a long-standing interest in the T129 to replace its ageing fleet of AH-1F Cobras, and there has been speculation that preparations may already be under way at the Pakistan Aeronautical Complex (PAC) at Kamra to build a new helicopter production facility for local assembly of the T129.

Meanwhile, other potential customers include Azerbaijan, Jordan, Malaysia, Saudi Arabia, and the United Arab Emirates.

At one time, smaller, cheaper armed helicopters were less popular among leading air arms than heavy-hitting tank-killers like the AH-64D Longbow Apache. Today, however, many operators are seeing the value and advantages of smaller, more compact, more agile and more rapidly responding helicopters, especially for use in urban environments.

Lighter and smaller is no longer necessarily viewed as being "second best", but rather as being "different", and the number of potential export customers now showing interest is a clear sign of countries appreciating this.

The T129's history goes back quite a way. Turkey's Savunma Sanayii Destekleme ve Geliştirme İdaresi Başkanlığı (SAGEB, defence industry development agency), now succeeded by the Savunma Sanayii Müsteşarlığı (SSM, Undersecretariat for Defence Industries), drew up an ambitious plan to procure 720 rotary-wing aircraft in the late 1980s. This included both medium and light multipurpose helicopters, and armed reconnaissance and attack helicopters.



Though local industrial participation had been wanted, the urgent need for armed helicopters to fight the Partiya Karkerên Kurdistan (PKK, Kurdistan Workers' Party) led to the procurement of 10 new-build AH-1W Super Cobras (diverted from US Marine Corps production) delivered in 1991-1992. There was also the subsequent acquisition of 36 second-hand AH-1S and AH-1P Cobras, purchased between 1993 and 1995.

Operational experience with the Cobras led the Turkish Kara Kuvvetleri Komutanlığı (KKK, Land Forces Command) to issue a new requirement for a helicopter capable of both the attack and armed reconnaissance roles, and the ATAK programme was born, with an anticipated procurement of 145 helicopters for attack and armed reconnaissance duties.

Bell proposed an AH-1Z derivative to meet the

requirement, while Kamov and IAI teamed to offer a version of the Kamov Ka-52. But cost increases and US export restrictions led to the programme's cancellation in May 2004.

A new ATAK requirement was immediately drafted, this one emphasising local content and participation. TAI was selected as the primary contractor, alongside Askeri Elektronik Sanayii (ASELSAN, Military Electronics Industries), even before an airframe was selected.

In the event, AgustaWestland offered its AW729 to meet the requirement, while South Africa's Denel bid the AH-2 Rooivalk.

The SSM launched the Aras tirma Geliştirme 2004 (ArGe, research and development) project on November 30 2004, to run in parallel with the ATAK II programme. This was planned to develop and integrate an indigenous mission computer, as well as the flight management, communications and targeting systems, and all other major avionics systems.

Turkey announced a cooperation and co-development project with Agusta Westland on March 30 2007, effectively down-selecting the Anglo-Italian helicopter. Under the terms of the agreement, TAI was to act as the prime contractor, responsible to programme manager SSM for the production of helicopters and the installation of avionics and weapons systems, with AgustaWestland (the main sub-contractor) providing an airworthy helicopter design that met performance requirements. ASELSAN was responsible for providing the mission computer and for the integration of avionics and weapon systems.

A formal agreement between TAI and AgustaWestland came into force on June 22 2008, by which time TAI had already received a US \$5.084 billion contract covering the supply of 51 helicopters (with an option for 40 more), signed on September 7, 2007. TAI received a \$556 million share of the \$3.084 billion contract, while AgustaWestland took \$1.7 billion and ASELSAN received \$700 million.



Test pilots Gokhan Korkmazturk and Arif Ates with the T129.

The selected helicopter, which was by now designated as the T129, was much more than just a licence-built AW129 Mangusta, and was designated as the AW729 by AgustaWestland.

The new variant incorporated an indigenously designed and integrated avionics suite, including the mission computer, weapons systems, self-protection suites and other equipment.

The aircraft was powered by LHTEC CTS800-4N engines (developed for the ill-fated RAH-66 Comanche programme), rather than the basic T800s used by the A129 International, or the Rolls-Royce Gem 2 turboshaft engines used by the production A129. The new powerplant allowed a 500kg increase in maximum take-off weight.

The T129 programme covered the supply of 91 aircraft, excluding four built at AgustaWestland's facilities in Vergiate, Italy. These Italian-built aircraft consisted of three prototypes (P1, P2 and P3), and aircraft P7, which replaced P1 after it was lost in an accident.

The first prototype (P1) made its maiden flight at Vergiate on September 28 2009, but was subsequently lost on March 20 2010.

The 91 aircraft consisted of 51 ordered under the original contract, plus 40 options. The 51 included a single Turkish-built prototype (P4, later redesignated as P6) which first flew from

TAI's Akinci facility on August 17 2011, and which will be retained by the Turkish Ministry of Defense and used for test and development. The balance of the order consisted of 50 T129Bs for the KKK.

The 50 will be built in two standards. The first 30 will be produced to T129B1, or Turkish unique configuration 1 (TUC-1) standard. They will be fitted with an indigenous ASELSAN mission computer, an ASELFILIR-300T forward-looking infrared, and a digital moving map. They will have a Thales Top Owl helmet-mounted cueing system, and will be armed with AGM-114 Hellfire II and Spike-ER ASMs and CIRIT laser-guided rockets.



The first T129B1 delivery was originally expected by the middle of 2013, but this has slipped. The remaining 20 are being built to T129B2 Turkish Unique Configuration 2 (TUC-2) standard. These have increased Turkish content, including an ASELSAN Avci (Hunter) HMCDS, which replaces the Top Owl, and an ASELSAN self-protection suite (RWR, radio frequency jammer and laser warning system).

The T129B2 will be armed with the new Roketsan UMTAS long-range guided anti-tank

missile, an indigenously developed Turkish weapon similar to the Hellfire II.

All T129Bs will eventually be brought up to the more advanced T129B2/TUC-2 standard.

The T129B1/TUC-1 will not be the first version in service.

To meet a KKK urgent operational requirement, nine of the 40 options have already been exercised under a US \$450 million contract signed in November 2010. These will be delivered to an interim standard as T129As, which are also known as T129 early delivery helicopters (EDHs).

The T129A/T129 EDH is powered by CTS800-4A (rather than -4N) engines. It is equipped with an ASELFILIR-300T FLIR and Top Owl helmet-mounted cueing system, and is armed with a 20mm gun turret and 70mm unguided rockets, while Stinger air-to-air missiles and gun pods can also be carried on the stub wing pylons.

Turkish Army acceptance tests began in July 2012, and first deliveries to the Turkish Land Forces are expected later this year.

Because the T129 is powered by LHTEC CTS800-4N turboshaft engines (even though these are being manufactured under licence by Tusa Engine Industries (TEI)), Turkey will require US permission to export the T129.



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Hawks from the UAE's fleet could soon be heading to Lebanon.

Lebanese hunt for Hawks may end in success

After six years of trying, the Lebanese Air Force may be on the verge of receiving BAE Hawks to replace its quartet of ageing Hawker Hunters.

Jon Lake reports.

The Lebanese Armed Forces have redoubled their efforts to acquire the BAE Hawk—a type that has been on the Air Force's wish-list since the early 1980s!

The country's aging Hunter fleet was formally returned to service in November 2008 but the aircraft were soon put back into storage, thanks to spares shortages, ejection seat servicing issues, and even difficulties in sourcing the isopropyl nitrate (AVPIN) used for starting their engines.

Notionally, the Hunters of No2 Squadron at Rayak could still be returned to flight-worthy status if circumstances required, but they are understood to have flown little since exercises in July 2010, and the primary fixed-wing type in service today is the Cessna AC-208B Combat Caravan.

Recognising that its primary requirement is for an advanced trainer and credible light attack/close support aircraft, the Lebanese Armed Forces have now abandoned efforts to acquire MiG-29s or F-16s, and are redoubling their efforts for the Hawk.

Serious efforts to purchase the aircraft began in 2008, when approaches were made to the UAE, whose Hawk fleet was larger than was required.

Widened its search

Renewed efforts were made in 2009, when the Lebanese Air Force widened its search, requesting Hawks from Saudi Arabia, as well as from the UAE.

In July 2009, it was reported that during a visit to Lebanon, General David Petraeus, then Commander, US Central Command, had conveyed approval of a transfer of 10 BAe Hawk T.Mk 63 aircraft to the Lebanese Air Force, while also expressing the USA's willingness to provide the air arm with 11 OV-10 Bronco light attack aircraft in a US \$13 million deal.

However, nothing further was heard until December 2013, when *Defense News* reported that the UK had given the green light to the UAE for the transfer of 10 Hawks to

the Lebanese Air Force, linking this proposal with a \$3 billion Saudi Arabian grant to the Lebanese Armed Forces to buy a range of military equipment, primarily from France. The following month, Lebanese sources suggested that the *Defense News* report was "unfounded at present".

With the UAE's advanced trainer competition seemingly having foundered, the UAE Air Force and Air Defence (UAE AF&AD) is currently relying on its ageing fleet of BAE Hawks for basic, advanced, and lead-in fighter training. Procured in separate contracts and delivered between 1983 and 1994, the UAE received 29 'first generation' Hawk Mk 60 series trainers (eight Mk 61s for Dubai and 16 Mk 63s for Abu Dhabi, augmented by an attrition buy of more Mk 63Cs) as well as 18 Mk 102 series "enhanced ground attack" aircraft.

Primary training

In the UAE AF&AD training scheme, Pilatus PC-7s (rapidly being replaced by the new PC-21) are currently used for primary training (following elementary training on the Grob G115TA), before pilots transition to the Hawk.

A standardised fleet of about 16 Hawk Mk 63A/63Cs are operated by the Hawk Conversion Squadron at Al Ain, which provides a basic flight course, while 12 surviving Hawk Mk 102s operate in the advanced and lead-in fighter training role from Minhad, where they are augmented by three Mk.61s (with two more Mk 61s long-term unserviceable).

Many expected the PC-21 to supplant the Hawk Mk.63, leaving some or all of these aircraft available for transfer to the Lebanon. However, in recent months, reports have emerged that the UAE may again be looking at upgrading all of its Hawks to a common standard, with a new glass cockpit, perhaps in lieu of procuring a new advanced trainer.

It is uncertain as to whether this might explain why the Lebanon is still waiting for its Hawks!



Both Russia and Algeria have signalled their interest in the UAE-developed Yabhon United 40 Block 5 Unmanned Aircraft System (UAS). An unusual tandem-winged medium-altitude long-endurance (MALE) UAS with a span of more than 65ft, the Yabhon United 40 is claimed to offer a service ceiling of 23,000ft, a cruising speed of 40-120kt, and an endurance of more than 100 hours. It can carry 2,204lb of payload, including a synthetic aperture radar (SAR), and a turret-mounted forward-looking infrared/electro-optical (FLIR/EO) package.

Though intended for intelligence, surveillance, and reconnaissance (ISR) missions, the aircraft can also be fitted with a range of weapons on its four under-

Interest grows for Adcom UAS

wing hard points and/or on an innovative rotating dispenser unit mounted in the fuselage.

Stores that have been linked with the type include torpedoes and sonobuoys, as well as Adcom Systems' own Namrod stand-off missile (two of which may be carried under each wing).

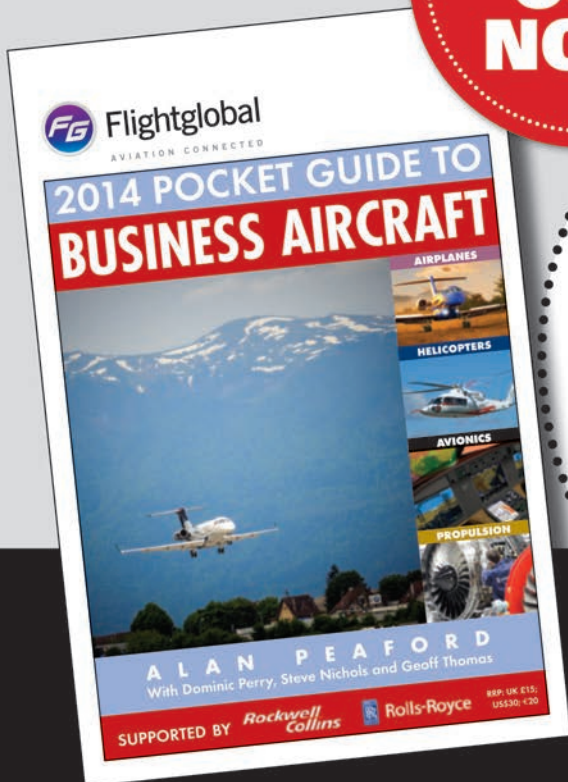
Adcom CEO and general designer, Ali Al Dhaheri, said the Yabhon United 40 has already undertaken test firings of the Namrod missile.

Algeria is believed to be interested in a MALE UAV for ISR roles, primarily to counter trafficking and insurgent activity in the Sahara Desert, though previously it was believed that Algerian interest lay mainly in the US-made General Atomics Aeronautical Systems Inc (GAASI) Predator/Reaper UAS.

Russia announced its interest in the Yabhon United 40 in July 2013, and had been planning to begin trials of the UAS during the first quarter of 2014.

It was announced in February that the Russian Army would delay its operational assessment of the aircraft until an unspecified later date.

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The Agusta-Sikorsky AS-61B Sea King: back in action.

'Oldest' Sea King is returned to service

The Islamic Republic of Iran Navy (IRIN) has returned the world's oldest Agusta-Sikorsky AS-61B Sea King to service, after retiring the aircraft in 1997.

Iran took delivery of 20 Italian-built Sea Kings between 1971 and 1981, comprising a mix of anti-submarine warfare (ASW) and utility-configured ASH-3Ds, and a pair of AS-61A-4 VIP transport aircraft.

Five of the 18 ASH-3Ds were fitted with a belly-mounted AN/APS-705 radar, and were wired for the carriage of Sistel Sea Killer anti-ship missiles, while the rest had a nose-mounted weather radar.

Seven ASH-3Ds were retained in service, while the other 11 survivors were stored and cannibalised for spares. But, in 2007, the Navy was tasked with returning the 11 stored aircraft to service in an ambitious 10-year programme.

One aircraft was returned to service in 2009, and single examples followed in 2010, 2011 and 2012.

The first aircraft delivered, 8-2301, was brought out of storage in April 2011, and then underwent a 20-month, 35,000 man-hour refurbishment and modernisation, which included a complete rewiring and the installation of new avionics, as well as 89,000 new parts. The aircraft finally returned to service on November 30 2013.

Three more ASH-3Ds will be returned to service in 2014 and 2015, bringing the fleet up to a strength of about 14 helicopters.

Iraqi Mi-35Ms enter service

The Iraqi Army Aviation Corps has put its new Mi-35M 'Hind' helicopters into service.

A new special forces recruitment video shows the aircraft in operation alongside armed Mi-17 'Hip' transport helicopters.

The Iraqis took delivery of the first four Mi-35Ms from the Russian Helicopters plant at Rostov on Don in November 2013.

The aircraft's arrival was announced by Iraqi Prime Minister Nouri al-Maliki on his official Facebook page, together with photos of the aircraft undergoing final assembly after unloading at the port of Umm Qasr.

The aircraft form the initial element of a \$4.3 billion arms deal with Russia, which will see the delivery of at least 40 attack helicopters.

It is understood that a contract for six Mi-35Ms was placed on April 16 last year and that these aircraft are an interim purchase, pending the delivery of 36 Mi-28NE Night Hunter attack helicopters.



Some sources have suggested that Iraq will receive 40 'Hinds' and only 10 Mi-28NEs.

Others believe that 23 Mi-28s have now already been delivered – the first batch of 10 arriving in country in September 2013, with another 13 in January this year.

An initial group of Iraqi pilots and weapons

systems officers have been trained by the Russian Air Force at Torzhok. In the longer term, Iraq is due to receive six Boeing AH-64D Apache attack helicopters (upgraded to a partial AH-64E Apache Guardian configuration) leased from the US Army for training, followed by 24 new-build AH-64E Apache Guardians to be delivered over a three-year period.

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Oman, Iraq and Egypt home in on F-16s

Though Lockheed Martin's Fort Worth site in Texas is increasingly moving over to production of the F-35 Joint Strike Fighter, the F-16 production line is continuing to produce aircraft, with many of them heading for the Gulf. Jon Lake reports.

Lockheed Martin is currently working on 12 F-16s ordered by Oman, plus 36 ordered by Iraq, with 30 more on order for the UAE.

However, work on upgrades for Taiwan and the United States Air Force (USAF) has been thrown into doubt following the USAF's cancellation of its combat avionics programmed extension suite (CAPES) upgrade in March 2014.

The Royal Air Force of Oman (RAFO) ordered 12 F-16C/D block 50 aircraft in 2002 under the Peace A'sama A'safiya I programme. In doing so, Oman became the 23rd global (and the fifth Arab) F-16 customer.

RAFO accepted the first of four two-seat F-16Ds and eight single-seat F-16Cs on August 4 2005, and the aircraft were delivered to No18 Squadron at Thumrait in 2005-6.

The Omani aircraft are among the most advanced Block 50s in service, and armament options include the AIM-120C AMRAAM, the AGM-65D/G Maverick ASM, the AGM-84D Harpoon Anti-ship missile, as well as GBU-10, EGBU-10, GBU-12 and EGBU-12 laser-guided and dual mode bombs, GBU-31(v)3/B JDAMs, and CBU-97/105 sensor fused weapons.

The aircraft were delivered with Lockheed Martin Sniper targeting pods but are understood to be upgrading to the improved Pantera – the export equivalent of the Sniper extended range (XR) targeting pod.

The Omani F-16 force also has four Goodrich DB-110 EO reconnaissance pods.

Ten further single-seat F-16Cs and two dual seat F-16Ds were ordered under Peace A'sama A'safiya II in August 2010, and the first of these made its maiden flight on January 14 this year.

Deliveries to Oman are expected this summer, neatly dove-tailing with the planned retirement of the last of Oman's ageing SEPECAT Jaguars on July 23 2014. They may equip No8 Squadron (currently operating the Jaguar), or the former Jaguar unit, No20 Squadron, leaving the No8 Squadron 'numberplate' vacant for the Eurofighter Typhoon.

Eventually, the F-16s are expected to move to RAFO Al Musana'a, a new airbase being built 120km west of the capital Muscat.

At one time, the second batch of Omani F-16s was expected to follow the last F-16s for Egypt. Some 20 F-16C/D Block 52s (16 C-models and four D-models), powered by the Pratt & Whitney F100 engine were ordered under the Peace Vector VII programme.

Political tensions

Deliveries of Egypt's seventh batch of F-16s have stalled, however, due to political tensions following the unrest and turbulence in Egypt following the ousting of President Mohammed Morsi last year.

Eight of the aircraft had been handed over by the time the order came to suspend deliveries, and four more, whose delivery had been authorised were delivered, leaving 12 aircraft in the USA. Eleven of these were stored awaiting delivery, while a 12th aircraft operated from Edwards AFB for test and evaluation.

The suspension also halted the delivery of 10 Boeing AH-64 Apache helicopters and a number of M1 Abrams armoured vehicles and AGM-84 Harpoon missiles.

Egypt had already received 220 F-16s under Peace Vector I – Peace Vector VI, including 46 built by TAI in Turkey. These formed the backbone of Egypt's tactical fast jet force, equipping 10 squadrons at Abu Sueir (Block 40 F-16C/Ds), Beni Suef (Block 32F-16C/Ds), Fayid (Block 40 F-16C/Ds), Inshas (F-16A/Bs), and Jiyanklis (Block 40 F-16C/Ds).

According to some media reports, Egypt's interim government is negotiating a \$2-3 billion arms package with Russia, and a deal may even have been signed during the February visit to Moscow by Field Marshal Abdel-Fattah el-Sissi, the head of the Egyptian army.

The reported deal (supposedly funded by Saudi Arabia, the United Arab Emirates and Kuwait) may include 24 Mikoyan MiG-29M2 fighters, as well as combat helicopters, anti-tank weapons and air defence systems.



More F-16s are heading for Oman.

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The Middle East is set to challenge the US and European domination of the VIP aircraft completions world with a major new investment. Alan Peaford reports.

Middle East now competing to complete

The Middle East is to get its first wide-body completions centre, marking a giant step for the VIP aircraft industry – and a major move for the region's private aviation market.

The agreement sees Abu Dhabi-based Falcon Aviation Services (FAS) building a new wide-body hangar – big enough to take at least a Boeing 747-800 aircraft – and develop a VVIP completions centre at Dubai World Central.

The deal also marks a significant link between the two, often competing, emirates.

The contract was signed by the chief operating officer of FAS, Mahmoud Ismael, and his counterpart from Dubai Aviation City Corporation, Rashed Bu Qara'a at the Abu Dhabi Air Expo in February.

For many years the completion of 'green' aircraft has been dominated by a handful of specialists in Europe and the USA. Two of the largest, Gore and Associated Air Center, now have Middle Eastern owners – Saudi Arabia's MAZ group and Dubai's DAE respectively.

"We have got the right people to get it established."

MAHMOUD ISMAEL



Rashed Bu Qara'a, chief operations officer (COO) of Dubai Aviation City Corporation, and Mahmoud Ismael, COO of Falcon Aviation Services, sign the agreement for the new venture.

But there has been demand for some time for the work to be done closer to the region.

In Europe, Lebanese-owned AMAC has been mounting a challenge against its Swiss neighbours, Jet Aviation, while Germany's Lufthansa Technik has been pressing hard to maintain its links with its Middle Eastern owners.

"This region is full of VIP aircraft and owners are having to go to pretty distant places to get them refurbished or have their new 'green' aircraft completed," said Ismael. "We have done studies and we know there is a large potential market."

The new centre could begin construction by the summer and be complete by the end of 2015.

A major barrier to entry for this level of completions work has been a lack of an available skills base. Historically, Basle, Hamburg and Texas have seen the craft and design skills pass from generation to generation.

"We plan to import a lot of people and use their expertise," Ismael said. "We will be cutting our teeth on refurbishment and then working our way up gradually. We are able to do this here. It is a myth it can't be done. It can. It just requires determination and drive. We have that and so does DWC. We are very keen and together it will happen."

Importing the talent

"There are a lot of aircraft from the region coming up for refurbishment and that's what we'd like to start with. We are importing the talent and there are some pretty well-known names among them. We have got the right people to get it established."

The investment is expected to be in the region of \$30 million and marketing of the new facility is beginning already, given the time lag between ordering a new aircraft and it being delivered to the completions centre.

"Basically, when an aircraft comes out of the factory it is called 'green'. It is green in colour because it has no paint. Inside there is nothing but an empty shell. We take this aircraft and we put all the goodies inside," Ismael explained.

"We put in the bedrooms, we put in the entertainment system, we put in the lounges, we put in the living rooms; we put all the fancy stuff inside."

Ismael said Falcon had been talking to other specialist suppliers who would provide cabinetry and leather skills. "We expect to outsource a lot of this skilled work and know that a number of these suppliers will be opening workshops in DWC to be alongside us. This is a tremendous opportunity to develop new skills and services for the region's business aviation and we expect to see business coming from outside the region too."

Jeppesen has been helping pilots to fly safely and efficiently for more than 75 years, not only in the MENA region but also around the globe. However, the tools that enabled those journeys have changed dramatically over the period. Steve Nichols looks at a modern option.

Jeppesen keeps on taking the tablets

According to Jeppesen, business aviation operators face unique challenges in consistently planning and executing the complex logistics of scheduling aircraft, flight crews and maintenance activities.

Coordinating trip and flight planning, dispatch, and tracking, can present a daily headache.

However, the company believes that the integration of solutions designed to meet these challenges, combined with new navigation and operations tools support for pilots, aircraft and operators, can help alleviate the problems as well as work towards enhancing efficiency and reducing fuel consumption.

In the near future, tight integration of scheduling and planning on to standardised platforms, with user-friendly interfaces, will streamline processes and increase efficiency by eliminating the need to enter data into multiple systems. It will also reduce the number of points at which errors can be introduced.

Consolidating critical processes will also streamline pilot and staff training requirements and system interaction by establishing a unified delivery platform that automates these elements.

Jeppesen, which offers a portfolio of services, support and solutions, including navigation information, crew and fleet management, and aviation training services, is now part of the digital aviation business unit within Boeing Commercial Aviation Services.

The company's Mobile FliteDeck on the Apple iPad is helping to lead a digital transformation across the business aviation community, as pilots are able to ditch paper-based flight materials for fully interactive versions that provide enhanced access to critical data.



The FliteDeck electronic flight bag (EFB) product for both Windows and Apple iOS is gaining traction in both the business and commercial marketplaces, according to Joerg Moerke, Jeppesen EFB product manager.

“Our feedback is very good – pilots say that the app has all the features and functionality they need and no distracting gadgets. The ability to integrate flight plan information is available too.”

Moerke added that the interface had been worked to make it easier to handle data that would otherwise all appear on one chart. The net result is a more user-friendly, data-driven application that keeps EASA happy too.

“The information is all there, it is all viewable, you just have to tap on it,” he said. “The iPad and Android devices are really opening up the market.”

With Jeppesen's mobile apps, pilots are able to choose what elements are displayed on screen, allowing for a de-cluttered experience when accessing information.

Additional app capabilities, designed to increase in-flight situational awareness, include the display of own-ship positioning on geo-referenced terminal procedures, and an integrated distance-measuring tool that minimises the need for pilot interaction with the app.

Mobile FliteDeck can also provide an automatic display of airport taxi diagrams based on user-configured speed settings. The switch to airport diagram display can occur directly from a standard terminal arrival route (STAR) procedure, or the en-route map, to better support a variety of flying needs.

Additional Mobile FliteDeck capabilities include an enhanced ability to preview and select charts, as well as a two-finger swipe function to navigate between them.

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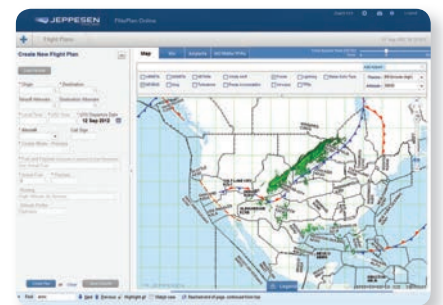
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NICE TO SEE EU

Keith Foreman: Increase in traffic.



Ties between the Middle East and Europe are more obvious than ever at the European Business Aviation Conference & Exhibition (EBACE) in Switzerland from May 20-22.

Liz Moscrop links in...

If there were any remaining doubts about just how important the Middle East has become to European business aviation, this year's show at Palexpo and Geneva International Airport, firmly puts paid to them. With a plethora of companies based in the Gulf exhibiting, and many more owned by entities from the region, the Middle East has carved a big and permanent swathe into the EBACE exhibit floor.

There'll be news aplenty emanating from that section, predominantly good news on traffic, and new initiatives from FBOs, as more companies vie to win business in that space.

The latest Universal Weather and Aviation statistics make interesting reading in terms of traffic increase between 2012 and 2013. Saudi Arabia was up 16.4%, the UAE saw a 19.5% hike, while Egypt took a 4.1% jump, despite the volatile political landscape.

Master trip owner Keith Foreman elaborated: "Saudi Arabia sees a mixed bag of travellers. We see business there between the Far East and Europe. We've also witnessed an increase in

traffic to Dubai, Abu Dhabi and Oman. Turkey is picking up business, too."

He added that people were travelling to the region for leisure and trade shows and said that the company's long track record of providing flight support services was helping it retain business, despite the mushrooming of newer local companies offering similar services.

The runway closure and traffic growth at Dubai International (DXB) has meant that many business aviation flights have been squeezed out or the airport, so fields such as Dubai World Central (DWC), Al Bateen, Abu Dhabi International and Sharjah International, have all picked up more business. Both runways at DXB are scheduled to undergo major resurfacing work this summer.

The FBOs have had to accommodate the closure. However, Mark Hardman, operations director for ExecuJet Middle East is optimistic, saying that last year his company experienced a 26% growth at DXB.

He added: "We are increasing

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our space at DWC and adding 2,600sqft of hangarage to the facility.”

The firm also has FBOs at Riyadh, which Hardman said had 800 movements last year, Sabiha Gökçen and Atatürk in Turkey. There are also new aircraft in its managed fleet of 20 jets, including three new Bombardier types: a Global 6000, a Lear 45, and a Challenger 605 in the offing. He hinted of more news at the show.

British firm Gama Aviation said it has seen an uptick in business at its base in Sharjah, with clients coming in for heavy checks.

It also has a new operation at the airfield, Sharjah Executive Aircraft Flight Centre. The FBO offers the ability for clients to drive directly to their aircraft, and the airport has no slot restrictions. Expect more on how the new lounge is doing at the show, as well as potential additions to the firm’s managed aircraft fleet.

Jet Aviation Dubai, meanwhile, has also moved operations to DWC. The company is offering full FBO, line maintenance and AOG services there, and says it will “resume full maintenance and FBO operations at DXB” from July onwards.

Meanwhile, other providers are expanding their services. Jetex Flight Support recently entered into an agreement with Seawings in Dubai to add a new service to its FBO in Dubai. Clients landing at DWC can enjoy air transfers to major locations across the emirates on board a Cessna seaplane kitted out with leather seats and a spacious air-conditioned cabin. This new service will help clients avoid road traffic heading towards the city.

Best experience

Operations manager Ahmad Badreddine explained: “Our main aim is to ensure our clients have the best experience. We are proud to collaborate with Seawings and to enhance our service offering in our home town.”

Other support service providers in the Middle East are proliferating, with Gulf Pearl, MoonJet, and Sonic Jet all taking booths.

Many of the companies offer a variety of services, such as ground-handling, catering, concierge, flight planning, visa and immigration assistance, obtaining arrival and departure slots and fuel.

They are also spreading further afield. Sonic Jet provides flight support services in Kabul, Kandahar, Herat, Mazar-i-Sharif and other remote and difficult locations in Afghanistan.

Over in Turkey, Gözen Air Services has a portfolio of a more than 800 commercial, military, cargo and private airlines, and general aviation enterprises, among its clients. It has an



Classic interiors with a Middle East audience in mind will be on display - like this Comlux A320.

ISO 9001 accreditation, as well as being a member of the IATA Ground Handling Council (IGHC), National Business Aviation Association (NBAA) and European Business Aviation Association (EBAA).

Even further away, TAG Farnborough Airport (part of the TAG Group, partly owned by the French Saudi Arabian-born Ojeh brothers) has, according to CEO Brandon O’Reilly, seen a 53% increase in traffic from Middle East-based operators – predominantly flying Boeing Business Jets, or Airbus Corporate Jets.

The Gulf region is renowned for using such types, so interiors play a huge role in the market. Dubai Aerospace Enterprise-backed Associated Air Center (AAC) has announced it is adding space to accommodate recent wide-body completion wins, including Boeing 747-8 and 787-8 projects during the last six months.

Expansions at the Texan base include the addition of a 7,200sqft mobile tail enclosure. AAC’s wide-body completion business has experienced a recent boom, having completed a complex Airbus A330 project in addition to winning the two new completion bids in the last year.

The company also has a new custom interior completion contract for a green Boeing 787-8 BBJ under way. The green aircraft is scheduled for delivery in mid-2014, so expect more on that at the show.

Around the middle of last year, Saudi aviation consulting firm MAZ Aviation bought San Antonio-based Gore Design Completions (GDC). Then, last October, GDC won the contract to complete two Boeing 787 types in VVIP configurations. At the time MAZ said it had “long-term plans to continue operation of the centre as part of MAZ Aviation holdings”. Indeed, there were two MAZ wide-body executive cabins in the shop at the time, so news on projects from Gore would not be a total surprise.

Another to watch out for is Canada’s Flying Colours (FC), which recently completed its first retrofit using nearly 100% carbon fibre technology, “a milestone project” according to the company. Doubtless more on that at the show.

FC also delivered a medevac CRJ ExecLiner conversion to Sharjah-based Eagle Aviation at last year’s Dubai Airshow, ahead of it going to Nova Airways.

Switzerland’s Comlux America operates the largest aircraft available for charter in the world – a Boeing 767, which has recently been upgraded.

Popular though the jet is, according to VP charter sales and aircraft management Claire Brugirard, the firm’s Airbus Corporate Jet is also “constantly busy.” The 12-seater ACJ combines the most spacious cabin in its class with intercontinental performance. It is one of the very few aircraft on the charter market featuring a private bedroom and bathroom with shower. She said: “These types are ideal for this market, where people like to fly large families and entourages.”

Completion contract

As *Arabian Aerospace* was going to press, Swiss-based AMAC Aerospace had just won its first completion contract from an Asian client. The aircraft, an ACJ A319, will undergo a complete nose-to-tail completion, using concepts by designer Alberto Pinto.

The project is scheduled to start this summer and will be re-delivered by the second quarter of 2015. AMAC has already completed two Boeing B777s and refurbished an Airbus A340 for clients in the Middle East.

Although they’re not exhibiting, another regional outfit setting up shop is Abu Dhabi’s Falcon Aviation Services, which announced a ground-breaking new VIP interiors shop – the first in the region.

If you’re visiting Geneva this May, make sure you get out to the static – there is so much to see in the ever-expanding Middle East corner at the show.



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Medevac missions form an important part of revenues for private aviation operators in the Middle East. Indeed, the sector is expanding exponentially. Liz Moscrop has her finger on the pulse.

A HEALTHY BUSINESS

The term ‘operations director’ took on a whole new meaning for Keith Foreman, one of Universal Weather and Aviation’s master trip owners, earlier this year.

One of his regular clients, a Saudi businessman, was two days into a 10-day trip to a remote region in southern Africa when he fell really ill. It was essential that the aircraft turn round as soon as possible and return to his home hospital.

Foreman explained: “We had 12 countries where we had to try to get permits. The problem was not getting the permits; it was getting through on the phone or internet where services are patchy. We have so many contacts throughout the region that we were able to get people out of bed to help when it came to such a mad scramble.”

The client was surprised and delighted he made it home so quickly. Foreman continued: “We have our own people, and we got him back within 12 hours. It is not the first time we had to deal with such a situation, but it keeps us on our toes.”

The story illustrates the burgeoning regional demand for medevac services, which is forecast to rise as huge investments in healthcare infrastructure and services continue to flourish across the Arab world.

While international missions used to involve mostly transport to medical facilities in Europe and the USA, the rise in the number of available high-standard medical facilities in the Middle East has increased patient options and, consequently, the frequency of medevac missions in the region.

Abu Dhabi-based Royal Jet is at the forefront of such services. Its medevac operation comprises a detailed pre-flight assessment to ensure that the patient is fit to travel. The in-house team includes experts in cardiology, paediatrics, neo-natal and intensive care, and is supported by advanced medical technology.

The dedicated fleet includes a fully customisable Learjet, plus a Gulfstream 300 and several of its Boeing Business Jets; capable of reaching far flung destinations.

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The Tempus IC: looks like a laptop but saves lives.

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The firm claims it can dispatch a fully equipped aircraft within two to three hours of a call, staffed by a highly trained medical team.

Iraq's Executive Jet Middle East, meanwhile, has partnered with US-based CHS World Services to deliver emergency medical evacuation services for US Government and commercial entities.

CHS has provided emergency medical response to major world events that affected the United States, including the September 11 attacks and the Hurricane Katrina disaster.

For emergency and non-emergency medical transport services throughout the world, the firm provides short-notice access to dedicated intensive care unit aircraft with the latest medical equipment and paramedic crew on board.

Elsewhere, Jordan Air Transport & Medical Evacuation Services was the first private helicopter operator and medical evacuation company to launch in the Middle East. Set up in

partnership with the Jordanian Royal Medical Services, it offers a wide range of services, using the latest helicopters and equipment to transport patients between Jordanian hospitals and airports.

Operators provide or manage the aircraft, but ideally private travellers have their own subscription to medical providers, such as Medaire, which provides a direct link to the ground when in flight. This is incredibly useful in an emergency. For example, kidney and gallstone issues are frequent and readily treated, but can pose problems when being diagnosed.

Consequently, Medaire provides on-board kits, attendant training and its on-board medical advisory service, Medlink.

Calls for help occur most frequently for neurological, neurosurgical, gastrointestinal, respiratory, cardiac, allergy and immunology incidents. Flight crew can connect by satellite phone or through a radiophone patch with an on-duty Medaire emergency doctor. Interpretation services allow

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communication in more than 140 languages and dialects. Medlink can advise on care and recommend whether to divert to a closer airport or not.

Medaire also acts as a test-bed for companies around the world wanting to introduce the first generation of remote medical diagnostic technology that can transmit a person's vital signs from any location. The company's global emergency response centres rely on the medical expertise of professionals from a network that includes 15,000 hospitals and clinics in more than 5,000 cities. Each month, its global emergency response centres manage more than 4,000 medical cases.

At \$65,000 a pop, the company's partner, Remote Diagnostics Technologies, provides the Tempus IC, which aims to "take the doctor on board". It looks like a laptop, but saves lives. The kit measures all the vital signs that emergency room equipment would, including: blood pressure, oxygen level, carbon dioxide, glucometry for diabetics, and a full, 12-lead electrocardiogram. A video of the patient can also be sent to the ground.

The device displays step-by-step instructions for measuring vital signs that crew can follow. Data is exact and transmitted without error directly to the ground specialist. It is proving a best seller. NetJets, for example, is to deploy Tempus on its Signature Series aircraft.

One fan is Britain's Stephen Clarke, who says that if he had not been 37,000 feet in the air when he had his heart attack, he might not be alive today.

Chest cramps

While travelling from Chicago to Manchester in a commercial aircraft, the 51-year-old started experiencing crushing chest cramps. Chief stewardess Karen Cornelius realised this was an emergency – he was clutching his chest and gasping for breath. With more than an hour left before they were due to land, she had to act quickly. Within minutes she had strapped Stephen to a special harness to perform an electrocardiogram heart trace.

Thanks to the RDTTempus IC, she was able to beam the results to doctors in Arizona via a satellite link. Following blood pressure, pulse and temperature tests, the casualty doctors on the ground diagnosed a heart attack, and advised Karen to spray underneath Stephen's tongue

with a medication that helps to open the arteries that feed the heart with oxygen, and to give him aspirin to thin his blood. They then monitored Stephen, who was rushed to the intensive care unit of the nearest hospital when he landed.

Along with telemedicine technology, dedicated interiors are important in the business aviation sector, and several companies have designed quick-change turnarounds to facilitate emergency and medical flights. North Dakota-headquartered Spectrum Aeromed, for example, designs custom VIP emergency medical interior suites for executive aircraft and heads of state.

Medical interiors

OEMs are also creating dedicated medical interiors. Back in 2010, French airframer Dassault was commissioned by the French Air Force to create a sophisticated ICU to install on the Falcon 2000LX and 7X. The idea is that the aircraft is easily convertible and ready to go within three hours.

The front four seats, plus two of the back seats, are removed, as well as a cabinet at the front, and the unit is installed without the need for special jigs or tools.

In Sudan, Nova Airways has bought a multi-mission Bombardier CRJ-200 type from Sharjah's Eagle Aviation. According to Captain Widda Nour, CEO, the aircraft will be used to offer medevac services, plus private charter in addition to providing supplemental lift when required to augment its fleet of Fokker 100 types.

Canadian completion centre Flying Colours fitted out the aircraft, which has a galley and three passenger cabins. The front cabin has two business seats and a couch, from which cushions can be removed and a stretcher installed. Oxygen ports are at both ends of the couch.

The same dual-use approach could support more medevac stretchers in more cabins, and the idea is starting to draw interest from several quarters.

Private aviation operators are at the cliff face of medevac missions, which form a lucrative part of their income.

The advent of greater communications capability heralds the dawn of far more sophisticated telemedicine services, and the opportunity to save more lives.

Both the Saudi businessman and Stephen Clarke must thank their lucky stars for that.



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Lose the inadequacy.
But never lose the opportunity
to save a life.**

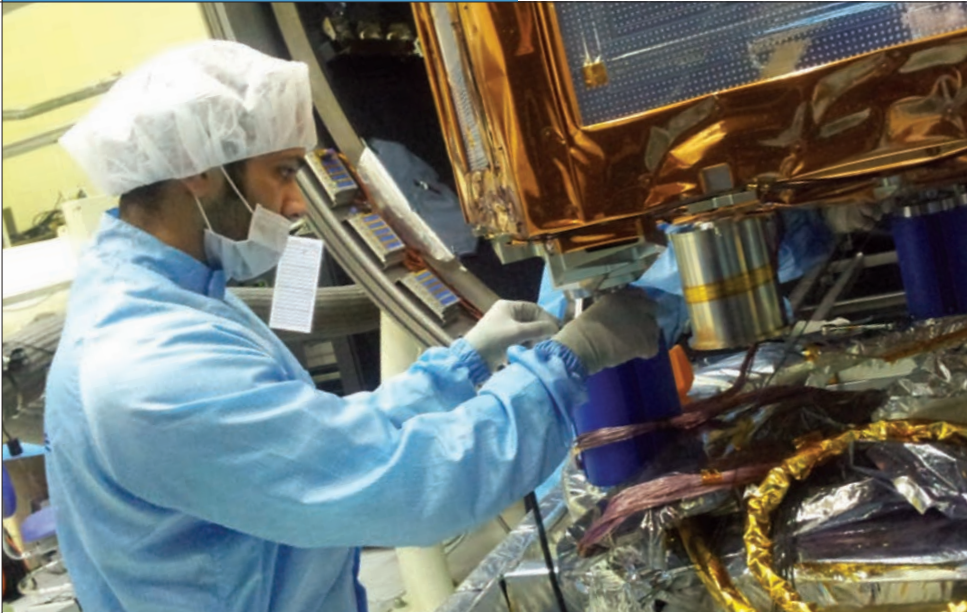
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An EIAST engineer at work on a satellite.

EIAST unveils plans for latest satellite

Dubai's Emirates Institution for Advanced Science and Technology (EIAST) has unveiled plans for its third satellite. As Steve Nichols reports, KhalifaSat will be launched into space by 2017.

KhalifaSat will be a 350kg Earth observation satellite, orbiting roughly every 90 minutes at a height of around 600km.

EIAST's first satellite, DubaiSat-1 was launched in 2009, and passes over the UAE four times a day providing two-and-a-half metre resolution colour images.

The much bigger DubaiSat-2 was launched in 2013, providing one metre resolution panchromatic (black and white), plus four metre multispectral (colour) photographs across a 12km-wide imaging swath.

KhalifaSat will better these resolutions, thanks to the rapid developments in imaging sensors and optics.

With its four solar panels, the new satellite will have a resolution of 0.7 metres for panchromatic images and 2.8 metres for multi-spectral imagery.

The satellite will be able to store 1,024 images, each representing a 12km x 12km area. The total image size storage capacity will be 12km x 1,350km.

Salem Al Marri, assistant director general for scientific and technical affairs, EIAST, said: "We have been making significant progress over the years through our ground-breaking DubaiSat-1, DubaiSat-2, and now the KhalifaSat programme.

"Through our projects, we hope to further inspire scientific innovation and technological advancement and sustainable development, not just in the Arab region but throughout the rest of the world as well.

"Even though KhalifaSat will be the first locally-made satellite, the first two years of its development work will take place at Satrec-I in South Korea as our cleanroom and labs in the UAE are still under construction.

"Once it is ready, we will move to our own facility in Dubai during the final year-and-a-half, where Emirati engineers will continue all the development work to complete its manufacture."

Al Marri said that right now, EIAST's team of 45 engineers and experts were focused on developing KhalifaSat and preparing the new facilities.

"We are on course to develop our own assembly, integration and testing (AIT) facilities at our headquarters in Dubai. These will have a clean room, a thermal cycling chamber, and an electronics testing and manufacturing area," he said.

He added that KhalifaSat will offer a great learning experience for EIAST. "By the end of the programme, we will have gathered enough expertise to develop a fourth satellite, which will be entirely manufactured in the UAE," he explained.

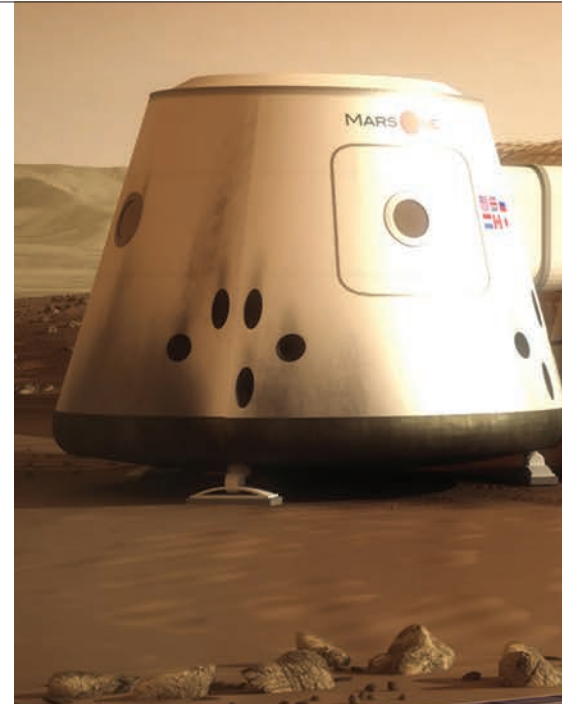
"After gaining hands-on experience and greater insight by working on KhalifaSat, we will be able to localise the development and manufacturing process of our future missions."

KhalifaSat will build upon the commercial opportunities afforded by DubaiSat-1 and DubaiSat-2.

"It will have commercial potential," said Al Marri. "We will work with third-party image distributors and resellers and KhalifaSat's imagery, like its predecessors, will be used for urban planning and development, disaster management, environmental forecasting, scientific research and by the UAE Government."

His Highness Sheikh Mohammed bin Rashid Al Maktoum, vice president and prime minister of the UAE and ruler of Dubai, recently visited EIAST. He said: "KhalifaSat is a message to all Arabs that the space era is neither out of reach nor impossible, and our state will be a leader in this industry as long as we have the confidence and courage to enter into competition with major countries in this field."

He also dedicated the new programme to the president of the UAE and ruler of Abu Dhabi, his highness Sheikh Khalifa bin Zayed Al Nahyan.



Khalid Al-Jaaidi, a digital marketer and designer/programmer, has been selected as one of 1,000 potential space explorers after applying to take part in the Mars One project.

Mars One is the brainchild of a Dutch not-for-profit foundation. It has conceptual plans to establish a permanent human colony on Mars by 2024. The mission plan consists of cargo missions and unmanned preparation of a habitable settlement, followed by human landings.

In the coming years, a demonstration mission, communication satellites, two rovers and several cargo missions will be sent to Mars. These will set up the outpost where the human crew can live and work.

Human colony

The plan is then to inhabit the human colony with new crew arriving every two years. There are no plans to return the Martian explorers to Earth.

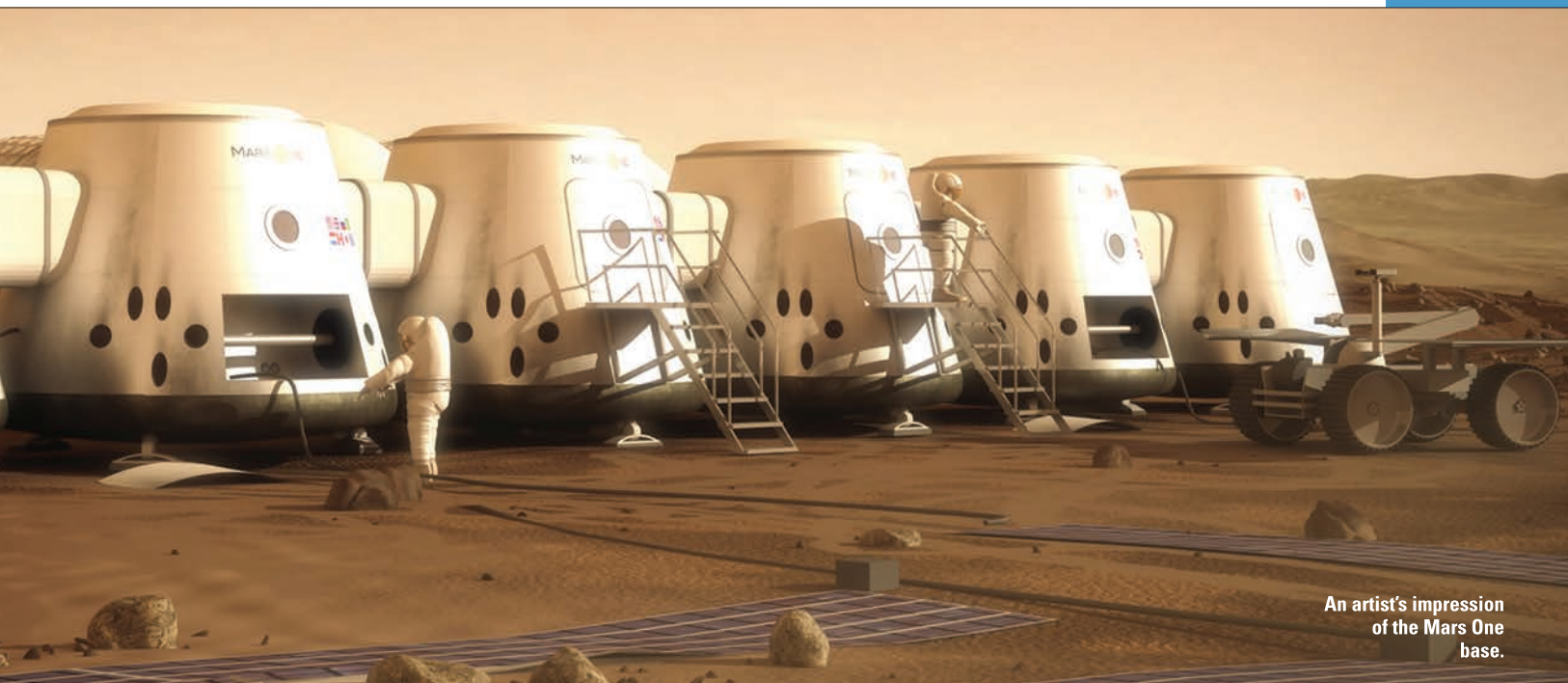
Al-Jaaidi, who is originally from the Yemen, said: "My interest in space goes with my love for exploration. Most of my school science/physics projects involved a rocket – or Mars!

"One of the hardest facts I had to grow up with as a kid was that all of Earth's land had been fully mapped out, leaving nothing left to explore, only visit."

The search for Martian astronauts began in April 2013, with more than 78,000 registering for the selection programme within two weeks of its launch. In total more than 200,000 people applied.

Al-Jaaidi managed to pass the first round and now faces three further selection processes.

He said: "When I got the e-mail in January



An artist's impression of the Mars One base.

Khalid aiming for life on Mars

An aspiring astronaut from the United Arab Emirates could become one of the first humans to walk on the surface of Mars after being shortlisted for an ambitious one-way mission to the Red Planet.

Steve Nichols reports.



Khalid Al-Jaaidi with his young nephew Saqer.

with the subject 'Mars One Round 2 Candidate Selection', I was too nervous to open it for three hours. When I finally read it I was ecstatic and it marked the first personal solid step towards this rather huge project.

"The next stage will be an interview with the Mars One selection committee."

The selection phases will include rigorous

simulations, many in team settings, with a focus on testing the physical and emotional capabilities of the remaining candidates.

The project has a 10-year timescale, with the first manned launch to Mars in 2024. In early 2015, 24 astronauts will be selected for full-time training and in 2018 a Mars rover and a communication satellite will be launched.

The first four astronauts sent will have the most important job, setting up and expanding the base for the next four, who will follow two years later.

The long-term vision is to have a small community of people living on Mars.

"If chosen, I'd be thrilled to represent the home I grew up in (UAE)," said Al-Jaaidi.

"After all, the remarkable progress and achievements by our forefathers have inspired and affected me directly to think big, to think beyond today, and to persist against the odds.

"We are a capable generation and a bold endeavour such as this will inspire generations to come.

"The sky is not the limit – if your dream does not scare you, it's not big enough."

Human colony

Unfortunately, not everyone in the UAE is as excited about the missions as Al-Jaaidi. The General Authority of Islamic Affairs and Endowment (GAIAE) in the emirate has issued a fatwa against Muslims going on a one-way journey to Mars.

The committee argued that an attempt to dwell on the planet would be so hazardous as to be suicidal; and Islam does not permit killing oneself.

The fatwa prohibits Muslims from going to Mars, but not from applying to Mars One's mission or training for the mission. In the next 10 years, Mars One says it is open to working with the GAIAE to assess the risk of the mission as the unmanned settlement is under construction.

The programme team hope that, before the departure of the first crew, the GAIAE will cancel the fatwa and support the mission.

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Vestergaard Company Inc.
1721 N. Oak Drive
McHenry, IL 60050 · USA
Tel. +1 815 759 9102
Fax +1 815 759 9103
Toll free +1 888 759 9118
Mail: usa@vestergaardcompany.com

Vestergaard Company Ltd.
Pinthong Industrial Estate
789/50 Moo 1, Nongkham
Chonburi 20230 · Thailand
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Airport Show looking Yankee Doodle Dandy

As Dubai gears up to host the 14th edition of the Airport Show, organisers are confident about increasing exhibitor and visitor numbers, and look forward to welcoming the US/Canada pavilion for the first time. Marcelle Nethersole reports.

The world's leading B2B event for the airports industry will take place at the Dubai International Convention and Exhibition Centre (DICEC) from May 11 to 13.

Last year's Airport Show attracted more than 6,500 visitors from 83 countries, generating substantial business for the 225 exhibitors who came from 35 countries.

Now show organiser, Reed Exhibitions Middle East, is confident this year will be the biggest yet.

For the first time, key aviation industry players from the US and Canada will collectively showcase a variety of products, services and solutions in a joint pavilion. Featured companies will include AccessAir Systems, Aviation Parts and Support Corporation, Bradley Corporation, Hall Technical, Nilfisk-Advance, WASP and Searidge Technologies.

Bilateral relations

Daniyal Qureshi, director of Airport Show at Reed Exhibitions Middle East, said: "We are very happy to have the participation of US and Canadian companies under the joint pavilion. This will help elevate their bilateral relations with the UAE and the GCC region. This will also add value to the appeal and reach of the Airport Show. These companies have cutting-edge technologies to offer to the region, which is keen on acquiring the best to meet the current and future needs for exceptional aviation infrastructure."

Danny Sebright, president of the US-UAE Business Council, added: "Commercial aviation is a key pillar of the US-UAE relationship. This has been recently highlighted by an increasing



Daniyal Qureshi: "Companies have cutting-edge technologies to offer to the region."

number of investments and partnerships. American companies, both large and small – are increasingly looking for long-term sustainable business and investment opportunities globally; and especially towards the Middle East and Asia.

"Demand is growing at a rapid pace and a common thirst for innovation and expansion is supported at the highest levels of government

and industry. Global platform suppliers are also more closely aligning with their supply chains in key markets around the world, like the UAE."

Other global exhibitors include eight companies at the French pavilion, showcasing a wide range of innovative products and technologies. UBIFRANCE, the French Agency for International Business Development, is the organiser of the pavilion, which made its first appearance at the Airport Show eight years ago.

Twelve companies, including three new exhibitors, will be participating under the Swiss pavilion banner. Switzerland has been a key player in the aviation industry in the region in a variety of segments.

The China pavilion will see the participation of eight companies, including five debutants. The new exhibitors are involved in airports security, one of the key areas of focus for the regional airports. The China pavilion was first featured at the Airport Show in 2010.

Largest pavilion

The largest pavilion, in terms of exhibitors, is reserved for Germany, with a total of 31 including, 11 debutants. The pavilion organiser is the Federal Ministry for Economic Affairs and Energy.

The show is supported by, among others, the Dubai Civil Aviation Authority, Dubai Airports, Dnata, and Dubai Aviation Engineering Projects (DAEP).

Co-located with the Airport Show will be the second edition of Global Airport Leaders' Forum (GALF) and the Travel Catering Expo (TCE), which is making its debut.



Going to extremes: Vestergaard moves from de-icing to de-sanding.

Grit expectations

For more than a quarter-of-a-century, Danish company Vestergaard has been involved in supplying pieces of motorised kit to assist in airport ground operations.

Now, it has adapted its Elephant de-icer kit to remove wind-blown sand, grit and dust from airliners operating in areas of the globe like north Africa, the Middle East and the Gulf.

Over the years, Vestergaard has delivered more than 450 aircraft washers and the company, based at Roskilde, just outside Danish capital Copenhagen, claims that the dual benefits of versatility, and the flexibility of its high-reaching telescopic arm, are the reasons for its international success – along with excellent reliability.

The unit features an elevated open-basket, where the operator stands and uses the controls, so that the vehicle can move around the aircraft without needing a separate driver in the cab. And as it doesn't need stabilisers either; it's simple and fast to move around, ensuring that the cleaning operation is carried out speedily just before departure from the gate or parking area.

Ideal platform

Vestergaard will be exhibiting its ground-support products at the forthcoming Dubai Airport Show, which runs from May 11-13 at the Dubai International Convention and Exhibition Centre. It will, according to Vestergaard's Lars Barsøe, give an ideal B2B platform for companies to present airport and aviation-related products and services.

He said: "We have produced more than a thousand of our Elephant family of de-icers and 350 vacuum lavatory and potable water units in Denmark over the past 30 years, and now our customers in Abu Dhabi, the Gulf and north Africa have the ability to wash aircraft up to Boeing 747s and Airbus A380s, so there's no size constraint."

Barsøe explained that aircraft were washed for a number of reasons, including general pollution and sand adhering to the lifting and control surfaces that could easily cost an

While snow and ice accumulation on airframes is a major safety challenge for airlines operating in winter in the northern hemisphere, a similar – but perhaps lesser-known issue – also occurs in hot countries, where wind-blown sand and dust can cause problems.

Geoff Thomas has been looking at one solution.

additional 1% to 2% in fuel; abrasion of painted surfaces that reduces the life of airliner livery; and the fact that a dirty-looking airframe doesn't enhance passenger confidence.

It's also possible for highly abrasive, clogging sand and grit to get into moving parts, such as ailerons, flaps, elevons, rudders and lift-dumpers, he added.

European carriers typically wash their aircraft a couple of times per year, whereas in the Middle East and north Africa, aircraft it happens much more often.

Godtfred Vestergaard founded Vestergaard in 1962 and the limited company is still owned and run by the family, although Godtfred retired in 1996. His son Stefan took up the position of managing director.

Small-scale engineering

After initially operating for some years in non-aviation related fields and small-scale engineering and manufacturing, the Vestergaard Company was approached by the SAS airline in the mid-1960s and asked to modify some existing aircraft de-icers. It was subsequently given an order by the airline for new Danish-built de-icers.

These innovative designs comprised a vertical, telescopic tower with a platform on top, from where the operator applied fluid to the aircraft using a spray gun.

When the wide-body airliners arrived in Scandinavia, SAS bought new US-made de-icers that had the ability to use hot water to save expensive glycol.

At the time, Vestergaard was not equipped to build such large units but when the US-sourced kit proved problematic, once more Vestergaard was asked to make a number of modifications.

Based on this experience, Vestergaard began in 1981 to build a new type of de-icer, named the Elephant Alfa, which was equipped with a telescopic spray boom. With assistance and input from SAS, this was developed into today's Elephant range of equipment that is well known and popular internationally.

Experience

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The increase in air traffic through the Middle East's major hubs has necessitated advances in automated baggage-handling systems. Keith Mwanalushi looks at the opportunities and challenges for vendors in this market.

THE CASE FOR INVESTMENT

The global commercial airport baggage-handling system (BHS) market is expected to rise annually by 8.01% between 2013 and 2018, according to a recent report by global technology research specialists TechNavio.

The Middle East will play a key role in that growth, particularly when the region's geographical position comes into play.

"Airports such as Dubai International (DXB) and Doha International provide aviation fuel to airlines at a lower price, as compared to other airports in Europe and Asia," observed Faisal Ghaus, vice president at TechNavio Research.

"An increase in aircraft movements results in more passenger flow in the terminal building, increasing the pressure on BHS. It is expected that air traffic in the Middle East will grow at a high rate during the forecast period."

The Gulf countries are expected to invest approximately \$310 billion over the next few years in airport infrastructure development to cater for the increasing air traffic, and an integral part of that will be for the latest advances in baggage-handling system integration.

Terminal 3 at DXB currently has the largest and deepest baggage-handling system in the world. The operation and maintenance is a joint activity between Dnata Airport Operations,



Simon Andary: investment in baggage handling will continue to increase.

Dubai Airports, and Siemens ME. The system can be enlarged in line with the growth requirements of base carrier Emirates, and the next planned major expansion is the integration of Concourse C into the system at the beginning of 2015.

"Dubai Airports and Dnata Airport Operations plan the expansion of the systems

according to the predicted passenger growth," explained Bernd Struck, Dnata's vice president for baggage services. "In 2013, passenger traffic at DXB grew 15.2% and the following years are unlikely to differ much. The Middle East remains one of the fastest-growing airline markets in the world, which translates directly into the growth rate of baggage-handling systems."

Vanderlande Industries has significant BHS market penetration in the Middle East and, according to Simon Andary, Sales Director Business Unit Baggage Handling, there are a number of factors that act as the catalyst for market growth in the region.

"Apart from the passenger increase, we see an additional growth in handling of baggage," said Simon Andary, adding: "We are noting a decreasing acceptance of lost bags by passengers, especially when bag fees are applied, because they expect a higher service level. Also, more and more connections are developed with shorter connection times at larger airports. As a consequence, investment in baggage-handling capacity, security and performance will continue to increase."

Vanderlande is currently upgrading a number of installations to the new industry 'standard three' screening regulations and Simon Andary said there was a strong demand for higher

Fewer bags are now going missing.
Photo - Dubai Airports



process quality, with full baggage tracking and tracing capabilities and “fewer hands on the bag”.

New tools were being developed to assist the baggage-handlers, not only in improving the working conditions but also in increasing their productivity, he added. “More specifically, in the Middle East region, a higher degree of automation is also driven by increasing passenger service levels and the anticipated long-term increase in handler wages.”

So how can the process be streamlined to handle extreme peak periods?

“We believe reducing peak requirements using a ‘pull’ strategy is an effective way to improve the productivity of scarce operational resources and available space, rather than designing for absolute peaks,” said Simon Andary. He explained that peaks could be smoothed out by applying different handling strategies to early, on-time, and late baggage. “This essentially changes the baggage-handling strategy from ‘push’ to ‘pull’. The first time in the world this innovative principle was applied was at Amsterdam Schiphol Airport. Here our new facilities incorporate 100% intelligent flight-build, using six robots; it has been operational for several years.”

A similar process is currently being implemented by Vanderlande in Terminal 3 at London Heathrow, where, he said, automation helped the different handling companies to improve their processes on a minimal footprint.

“Applying in-system buffers also enhances the experience of passengers, who can quickly drop their bags at self-service points, independent from the handler’s availability, after which they can enjoy the airports’ facilities and retail opportunities,” he added.

Automated sortation

In 2009, Crisplant joined the BEUMER Group, which provides automated sortation technology, control systems and integration services.

Crisplant has been working on a system based on an advanced development of early bag storage (EBS), under the name CrisStore. This is used in combination with the CrisBag tote-based baggage-handling system.

According to Crisplant, this means that every bag is placed in a tote immediately after check-in and all the information in the IATA barcode on the baggage tag is married to the embedded radio frequency (RF) tag on the tote, which is then used to track it all through the system.

“The basic concept is that the EBS is used not

only as a store for early bags in the traditional sense, but also as a ‘buffer’ or ‘staging area’ that enables bags to be built up into batches for rapid loading all at once into a unit load device (ULD),” said Christoph Oftring, international sales manager at Crisplant.

The use of dynamic bag storage also has the benefit of smoothing peaks in activity and enabling the system to cope with spikes in throughput.

“This is because, once bags are checked in, they do not enter what is essentially a queue that stretches to the baggage make-up area. All bags can go into the store, which can accept them as fast as they arrive,” said Oftring.

The measure of an efficient baggage-handling system is simple; it involves the ability for bags to reach their correct destinations quickly, safely and securely. However, in the real world it’s not always that simple.

“The main challenge for BHSs is that they are usually too small,” said Struck. “Providing the right capacity at the right time requires a good master plan with a modular concept for expansion.

“Capacity constraints at airports, on runways and tarmacs, are also becoming a challenge, as the BHS is

Continued
on Page 80

CONTINUED FROM PAGE 79

limited by hourly volume capacity based on pre-published flight schedules.”

Struck also noted that transportation times to and from aircraft stands tended to increase due to capacity issues and on-going expansion construction. He added that it was important that governments considered following the European concept of single point of baggage screening to avoid the double, and sometimes triple, screening throughout a passenger’s journey from A to C via B.

“In turn, this could relieve the BHS requirements substantially,” he said.

Vanderlande Industries believes that new technologies, such as individual carrier systems (ICS), could provide fast, reliable end-to-end transportation of large baggage volumes over increasing distances at high speeds, from check-in to flight make-up, between connecting flights or from arrivals to reclaim.

High-volume

“While using high-volume mainlines or ‘highways’ between concourses, these systems can be even extended to the apron, close to the aircraft, to give full priority for handling time-critical bags, both outbound and inbound,” said Simon Andary.

He admitted that implementing these high-volume systems within compact areas was a real challenge but pointed out: “Recently we achieved a 40% reduction in baggage-handling space at a large hub in the Middle East by a combination of smart layout design and high-capacity equipment.

“Workload management of the flight-build process, with integrated baggage reconciliation, ensures that bags of passengers who are not on board are not loaded, unless explicitly screened,” he explained. “Performance monitoring and on-site system support is the basis for continuous



Christoph Oftring: 25 scenarios were tested for Abu Dhabi’s Midfield Terminal baggage handling system.

improvement of the operational process and guarantees accurate, fact-based decisions to achieve world-class performance.”

Crisplant won the contract for baggage-handling systems at Abu Dhabi International Airport’s new Midfield Terminal building back in October last year. By the start of December 2013, the Crisplant team had passed a major milestone with the finalisation of the design, which will employ the ‘CrisBag’ tote-based system and have a processing capacity of up to 19,200 bags per hour.

Mr Oftring reported that his team conducted computer-based simulation to verify that the system would achieve all the specified requirements, such as travel times and sortation capacities. “Twenty-five scenarios were tested, not only to prove the general requirements but also to ensure that the system could cope under a range of adverse conditions.

“Also signed off was the test loop, which had been constructed to include one example of

every single component that is included in the Midfield Terminal baggage handling system.” Oftring confirmed that Crisplant is now moving into the next phase of the project – emulation. “This is where the computer simulation is linked up to real controls, which enables the team to ensure that all 27km of the baggage-handling system will work perfectly on site,” he said.

Similarly, Vanderlande Industries clinched the contract to supply and install the baggage-handling system for the new terminal at the on-going King Abdulaziz International Airport project in Jeddah, Saudi Arabia.

“Progress is as we anticipated,” Simon Andary reported. “In January this year, Vanderlande and the airport authorities conducted the first operational testing of the system and this test was highly successful. To date, the progress is at a level of about 70% of the project, ensuring it will be finished on time.”

The growth of the global commercial airport BHS market is inhibited by certain challenges. As Ghaus explained, the increasing cost of airport operations is one of those major challenges. “An increase in operational cost reduces the profit margin for commercial airports, thereby preventing them from upgrading their current BHS,” he said.

Increasing cost

Also, the increasing cost of raw material was another problem. “A BHS consists of conveyors, belts, motors, programmable logic control (PLC), and super visor control and data (SCADA) systems. As a result of the rising price of raw materials needed to make these systems, the overall cost of BHS solutions has been increasing over the last few years.”

Ghaus added that the raw material price increase was mainly due to the high cost of semiconductors and other components. As a result, he said, vendors faced difficulties in marketing their BHS to customers.

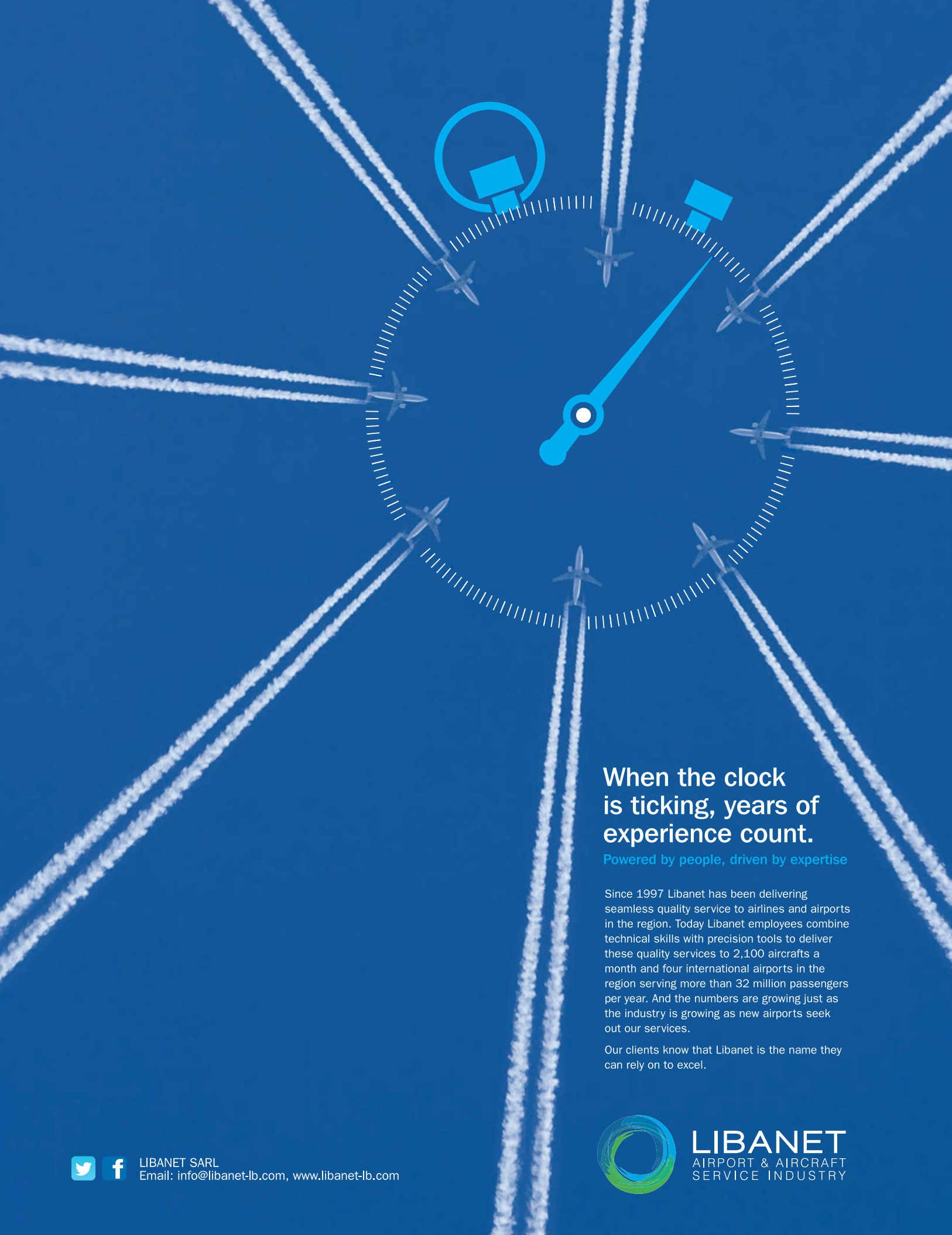
“To sustain a competitive market share, vendors are selling at a low cost, which leads to an increase in pricing pressures and reduces profitability. This is one of the major challenges for vendors as they cannot transfer the additional cost directly to customers,” Ghaus said.

In addition, according to Ghaus, a BHS comes with hidden costs, such as high maintenance, periodic servicing, and other manpower-related issues. He said all these factors were contributing to the high cost of deployment, which was a major challenge for the growth of the global market.

In the Middle East, however, the airport business is growing fast and Simon Andary is optimistic about the future. “Adapting to the local way of working is key, as well as a full commitment to our customer value proposition – or what we tend to call within Vanderlande ‘delivering certainty.’”



Peak demands at major hubs such as Dubai require advanced baggage handling techniques.



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Comprehensive and easily accessible information keeps the airport, airlines and its other stakeholders in the picture at all times.

Making this a reality means investing in business intelligence (BI) and analytics. Already a sharp focus area for the industry, 80% of airports plan to invest in BI by 2016, according to SITA's Airport IT trends survey.

“It’s an environment where agility is the new normal, driven by the need to achieve ‘Google fast, Apple easy’ and do-it-yourself approaches that produce rapid results,” said Jihad Boueri, vice president business management airport solution line, SITA, Middle East, India and Africa.

“That demands advanced easy-to-use BI and analytics tools to give business users easy access to consolidated information gathered from multiple sources and touch-points across the airport, such as airport operational databases (AODB) and systems for passenger tracking, baggage and security.”

Agile airport environment

According to SITA, an agile airport environment demands equally agile IT, capable of keeping everyone in the picture with up-to-the moment quality information, fostering collaborative decision-making (CDM) and common situational awareness among all stakeholders.

Next generation BI and analytics tools, by their nature, are more agile in their development lifecycle. To make the best impact, they demand real or right time insights into complex questions. That means gathering data across financial, commercial and operational systems, as well as increasingly tapping into big data and social media.

But, getting the right data is a big challenge. Not just because it’s siloed, but also because data can be inconsistent, incomplete, and inaccurate.

“Comprehensive airport-specific BI and analytics tools, such as SITA’s own next generation airport business intelligence, are now able to consolidate data in near real-time, manage data quality and enable rapid analysis, timely intervention and a more focused strategic response to opportunities and challenges,” said Boueri. “We can now speed up collaborative decision-making at the airport like never before, creating ‘a single version of the truth’ for everyone involved.

“Instead of home-grown spreadsheets and individual application aggregation, today’s BI and analytics tools pull together data from sources across the airport, warehouse it, and then allow



SPEED DATAING

In the quest to exploit analytics, airports need to gather data from multiple systems and touch-points, interpret it and share it. Only then, SITA’s Jihad Boueri tells Mohammed Al Ahli, will they see the bigger picture.

everything from long-term predictive analysis to immediate ad-hoc reporting and decision-making. These tools are amazingly powerful.”

Airport managers are welcoming next generation BI, with its easy-to-use, self-service access. With it come instant analytics, ad-hoc queries and executive level dashboards that utilise the latest rich data visualisation tools on workstations and mobile devices.

- For airport management, that means:
- Daily, weekly, monthly and yearly reports and statistics covering multiple areas of the business;
 - Ad-hoc analysis of performance and trends based on data from multiple sources;
 - Performance and status dashboards;
 - Predictive analysis;
 - Analysis of unstructured data.

Many airports are taking things further – such as Sao Paolo’s GRU Airport and Miami International – by setting up Airport operations control centres (AOCCs) to reap the benefits of centralised situational awareness. AOCCs give stakeholders a bird’s eye view of airport activities.

Key developments in passenger flow monitoring are playing a part too. Monitoring passenger flow through geolocation tools improves the bottom line, with better resource allocation and on-time departures, as well as top-line growth.

New location-based technology helps airports to make better-informed decisions and reallocate staff and resources to optimise passenger flow. “If you can ensure staff are on hand as passenger flows increase, or if you can enhance the retail



Jihad Boueri: "It's an environment where agility is the new normal, driven by the need to achieve 'Google fast, Apple easy' and do-it-yourself approaches that produce rapid results."

offer through a better understanding of where and how people are moving about the airport, then everyone stands to win," explained Boueri.

At one airport in North America, where SITA has installed a predictive system to collect information on passenger flow, wait times are posted on flight information screens landside, which reduces passenger anxiety. When passenger flow monitoring includes airport car parks and public transportation, and when even more travellers use mobile devices, new opportunities arise. More data points mean better quality information and better decision-making.

Geolocation technologies

According to SITA's research, more than 60% of airports plan to refresh their IT infrastructures by introducing Wi-Fi, 4G and a range of geolocation technologies. Near field communication (NFC) is also under close scrutiny, as is Bluetooth 4.0.

SITA's own passenger flow monitoring (PFM) portfolio exploits these infrastructures with tracking technologies for counting and tracking passengers, as well as bar-coded boarding pass (BCBP) validation to improve security (Airport iTrack and Airport iValidate); managing queues at security and immigration, based on sampling passenger movements through Bluetooth-enabled

devices, and counting passengers with thermal sensors (Airport iQueue); and tracking passenger movements based on Wi-Fi infrastructure through the airport (Airport iFlow).

Airline and airport application developers can make the journey even smoother, using an application programming interface (API), taking passenger movement data from BCBPs, Bluetooth, people counters, and Wi-Fi, for the development of B2C customer journey portal apps, Boueri said.

Data collected can be correlated via BI tools to provide usable information to streamline the journey, reduce anxiety, enhance operational efficiency through better manpower resource planning, and increase retail revenues.

Boueri said one major Asia Pacific-based airport is pioneering way finding, location-based push messaging, enhanced operational management and retail optimisation.

A similar approach is being followed at Miami International Airport, where SITA is in the early stages of a seven-year deal to use IT to transform the experience for 40 million passengers a year. "What's clear is that BI, analytics and passenger flow monitoring tools are now coming into their own and several of our airport customers are leading the way," Boueri said.

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Currently solar power provides only a small portion of the market for airfield lighting. However, the Middle East, with solar energy sources in abundance, is offering increasing opportunities to boost alternative airfield lighting sources.

Keith Mwanalushi reports.

According to airfield lighting specialists ADB Airfield Solutions, the global solar airfield ground lighting (AGL) market is currently estimated to be worth only around \$25 million. However, interest in the technology is growing, as airports around the world are now actively making a concerted effort to explore new ways of cutting energy emissions on the ground.

Solar energy in the Middle East offers one of the biggest, untapped energy resources and new developments in this sector continue to increase its attractions.

Solar power and solar light emitting diode (LED) technology is being considered by an increasing number of airport operators, with growing potential for taxiway, runway and obstruction lighting.

“Most locations in the Middle East are excellent for solar and we’ve had a number of orders for this region,” said Mimi Drabit, division manager, signals at Carmanah Technologies. “We actually got our start in solar airfields in the Middle East, supplying the US Department of Defence with deployable airfields for use in the field.”

Taxiways and runways

Drabit explained that there were a few things to consider when looking at solar application for an airport. However, focusing strictly on airfield lighting (taxiways and runways and associated directional signs and wind cones etc), solar lighting would be ideal for anywhere where tying into a grid was difficult or excessively expensive.

“This means that we see demand mainly from areas where the grid is still being developed or areas where there’s a need for rapid expansion,” she continued. “We also see a great deal of demand where there is need for quick or temporary deployment – military applications or emergency airfields in disaster relief, for example. Currently, solar airfield lighting is only

Solar powered airfield lighting is showing steady market interest.



Airfields shine

a small portion of the market for airfield lighting in general.”

Due to current regulatory requirements, large commercial airfields still require a certain amount of traditional wired lighting. “But, because of the practicality of the use-case for smaller or more remote airfields, or helipads, there is definitely growing demand, particularly in Latin America, Africa and Southeast Asia,” Drabit added.

Airports have additional opportunities to make use of solar technology by contacting a solar engineering, procurement and construction (EPC) service provider to add rooftop or ground-mounted systems to supplement grid power.

“Existing power or street lighting poles can also be fitted with solar arrays, further reducing the daytime draw from distant energy sources,” said Drabit. “Further, these systems can be added organically over time, scaling up with the airport’s power-generation needs. On top of this, solar can be used around the airport in car park lighting, traffic signals and so on. All of this helps to reduce pressure on the power grid, while also positioning the airport as an environmentally aware and responsible transportation hub.”

Solar power and solar LED lighting should ideally provide cost-efficient, durable airfield lighting that can be easily installed in a few hours and include multiple power and wireless radio control options. They should also have no energy costs, virtually no infrastructure requirements and little or no maintenance.

Understand the concept

Sheikh Waqas Ahmad, regional head for the Middle East at ADB Airfield Solutions, believes it is important to actually understand the concept of solar LED lighting. “Solar LED is all about the collection, storage and use of funds but, rather than money, it uses energy,” he said, adding that the energy budget for solar LED lighting systems was determined by three main variables.

“Where you are in the world determines how much solar energy your system is able to collect,” he said.

“Secondly, the application you are lighting with your solar LED system will affect how much energy you need to spend from your energy collection.”

Thirdly, Ahmad said, operating profiles change the way light is applied. “Operating profiles allow you to dim the light or turn it off when it is not needed. By being purposeful with

Middle East airports have the greatest potential for solar powered AGL technologies.

Inset: Sheikh Waqas Ahmad:
The market is still growing.



a light for solar power

the application of light, energy is conserved, allowing system size and overall project cost to be reduced.”

Drabit agreed on the need to fully understand the technology in order to realise its full potential. “The solar panels charge a battery on the inside of the light throughout the day,” she explained.

“There are typically two modes of operation. The first would be an automatic setting. In this case, a photo sensor detects the changing light levels in the surrounding environment. At dusk, when it passes a pre-determined threshold, the light automatically turns on. Similarly, it turns off again at dawn, when the photo sensor determines it is light enough outside.

“The second mode of operation is activated by a wireless controller, or aircraft radio control of aerodrome lighting (ARCAL). This allows the airfield operator to turn on a set of lights or the entire runway as needed. There are typically multiple settings programmed to meet various airfield standards.”

Whichever operating mode is used, the solar provider would typically run a simulation for the airfield installation location. “They’d take into account the amount of solar energy in the region and the working requirements for the lights and then recommend the product that has the

correct battery-to-solar-panel ratio to support the predicted energy consumption,” said Drabit.

She added that solar charging from the daytime would be enough to ensure that the light could perform to the requirements without draining the battery.

“Having the correct product and the correct panel-to-battery ratio ensures that you can have a viable, low-maintenance light for a very long time. Our typical product life is upwards of five years, but we’ve seen instances of our lanterns lasting two or three times as long in some markets, even under tough conditions.”

Amount of sunlight

Ahmad said the high amount of sunlight the Middle East received made it an ideal area for solar power. “However, the desert conditions can cause unique challenges and for this reason our products are designed and tested to meet harsh environmental requirements,” he added.

ADB solutions are able to withstand and operate at temperature extremes of -40°C to +80°C (-40°F to +176°F). The system is dustproof, waterproof and resistant to shock, vibration, corrosion, and ultraviolet (UV) degradation.

Extreme heat can be a challenge, particularly for the batteries, explained Drabit. “Once you

get into high temperatures you need to be careful about how the battery is charged.” Carmanah chooses batteries that are temperature-rated for operation up to 50°C – and as much as 80°C for storage.

“High temperatures can cause more hydrogen off-gassing, which can lead to failure. Good venting can help here, but introducing temperature compensated charging, which adjusts the battery charging voltage based on the battery temperature, also helps to minimise the problem.”

Ahmad clearly sees a growing interest for solar powered solutions in the MENA region. “The technology has been around for a while now and has become very stable and reliable. This, and a fast-growing consciousness to think ‘green’, has led to stronger interest in solar powered solutions”

In a survey carried out by ADB Airfield Solutions last year, 70% of respondents believed that solar would be a substantial part of AGL solutions in the near future, according to Ahmad.

“We have been successful in the Middle East in the last couple of years with contracts for the military, but also for airports that seek a solution in case they face a power outage, for emergency relief purposes or for temporary airports or heliports,” he said.



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Richard Deakin: "Emirates, for example, has ordered 100 Boeing 777s. Those are big aircraft that need separation. They're going to spend most of their lives on the ground if there's no change."



Airspace talks must be grounded in reality

Abu Dhabi's Global Aerospace Summit brought together senior executives from around the world to discuss the industry's future. Alan Dron asks whether that future in the Gulf is increasingly threatened by the continuing inability to find more airspace availability?

For the past decade, the fulcrum of growth in the worldwide airline industry has been the Arabian Gulf. That pattern is set to continue for the next 10 years as airlines in the region – particularly the 'big three' of Emirates Airline, Etihad Airways and Qatar Airways – amass ever-larger fleets.

Airport infrastructure is catching up with this growth, with vast new airports in Dubai, Doha and Jeddah coming on stream.

But will the new aircraft actually be able to operate in the region's increasingly congested airspace? Some industry insiders are beginning to doubt it.

"I look with some bemusement at the number of aircraft being ordered and wonder how they are going to fly," said Richard Deakin, CEO of the UK's air traffic control organisation, National Air Traffic Services (NATS), which holds ATC management contracts in four Gulf nations.

"Emirates, for example, has ordered 100 Boeing 777s. Those are big aircraft that need separation. They're going to spend most of their lives on the ground if there's no change." Etihad, Emirates and Qatar Airways between them have several hundred more airliners on order, with deliveries due by the end of this decade.

Speaking after a round table discussion in London, in advance of the Global Aerospace Summit, he said that reducing delays to air services in the Middle East required a political solution, not a technical one. "At some point, all the countries in that part of the world are going to have to sit down and hammer this out.

"It's holding back aviation," he added. "There's an urgent need to address the efficiency. "Traffic flows in and out of Dubai International Airport, the region's busiest, are determined by what's happening in the neighbouring countries and that's what needs to be addressed," he added.

"I was talking to a Middle East airline CEO recently. One of his A320s heading for

Continued
on Page 88

CONTINUED FROM PAGE 87

Dubai was held up by an hour by an ATC problem... and eventually had to return to its departure airport to refuel.”

A major problem in the Gulf is large areas of restricted military airspace, which account for around 50% of available manoeuvring capacity. This problem was aired during last November's annual meeting of the Arab Air Carriers Organization (AACO) in Doha, Qatar. Asked if any solution was in sight, AACO chief executive, Abdul Wahab Teffaha, said that the region's militaries “are listening to us”.

One solution would be that adopted in the UK, which had similar problems of extremely busy airspace and substantial areas of restricted military airspace. An agreement had been reached where military airspace could be open or closed, depending on needs on any particular day. “I think that's very much the route that the Middle East needs to go down,” said Deakin.

Another of the preview session's participants, Mubadala Aerospace and Engineering Services' CEO, Homaïd Al Shemmari, commented that, perhaps ironically, the huge growth of the civil aviation sector could solve the problem. “Countries will eventually find out that growth means a lot of business and is a much healthier use of the economy [than for military aircraft].

“That's going to force governments to open more of that defence airspace, opening it up when they do not need it. I think it's just a matter of ‘when’, not ‘if.’”

He pointed out that airspace remained closed in many regions of the world: “It is a sovereign control issue for many governments. The

highways of the air are quite restricted and governments look on them as part of their sovereign control. They ask, ‘Who has the right to pass over my airspace and, if I give it up, do I ever control it again?’

“How do we reduce the fear of losing that sovereign control?”

Deakin noted that sharing airspace between nations was not impossible; experiments had recently been held between the UK and Ireland in which the air traffic controllers of both countries had temporarily taken over control of aircraft in the other's airspace. Those trials had “gone very well”, he said.

Chief in their title

The Global Aerospace Summit attracted around 1,000 ‘C-level’ managers – those with ‘chief’ in their title, such as CEO, CFO and CCO – to discuss issues facing the aviation sector. These ranged from the need to create a qualified workforce for the industry to future business models for aerospace manufacturing and liberalisation of the market.

The UAE, at both the federal and individual emirates level, has adopted aerospace as a strategic driver of its economy. “Our 2030 vision says we will get into diversifying sectors in the country. It's all about diversifying away from oil and gas,” said Al Shemmari.

Adopting aerospace as one of the economy's strategic pillars had been challenging, requiring it to be built from scratch in a country with a small indigenous population. The government was trying to turn this into a positive by exposing UAE workers to a multi-national workforce, with

international standards, within the country's borders.

As in the west, enthusing UAE youngsters to take up science, technology, engineering and maths (STEM) subjects at school and college, with a view to encouraging them into aerospace-related jobs, was a challenge, the round table heard.

“I think we in the industry need to tell the story better than we've been telling it,” admitted Lockheed Martin International executive vice-president Patrick Dewar. “It would help if there was some national objective that drove people forward, but veterans in the industry had been searching for 20 years for ‘the next Apollo moment’,” a reference to the US space programme that had attracted thousands of the brightest and best into the aerospace sector in the 1960s.

Trying to create an aerospace industry “sets the bar very high”, said Paul Stein, Rolls-Royce's chief scientific officer. Quality requirements were extraordinarily high and the industry was more highly regulated than virtually any other, apart from the nuclear sector.

Cascade effect

However, if that sort of high-grade manufacturing capability could be achieved, a country would benefit from a cascade effect, with people spinning off from aerospace companies into other areas, but taking with them the same sense of rigour and applying it to new organisations.

Although the Gulf airlines have become some of the most competitive carriers in the world, Al Shemmari added that it was important also to be collaborative. There was no point “in cutting the knees from under each other. If we try to compete between ourselves all the time, we will just kill ourselves.”

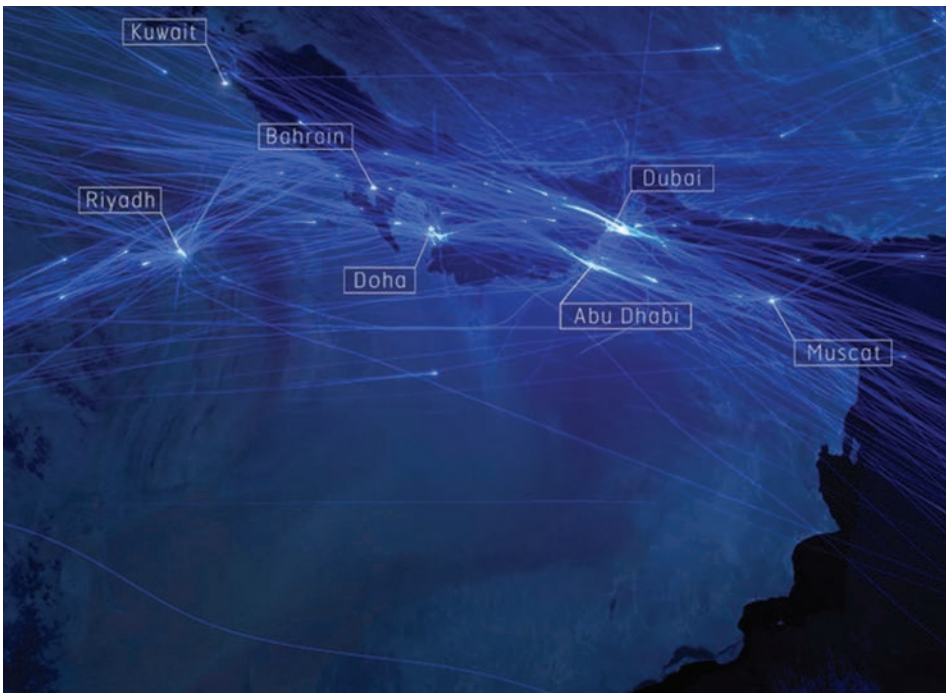
For example, Mubadala sought to work with Rolls-Royce but at the same time to have a good relationship with its great rival, GE. “It's a delicate balance.”

That point was echoed by Dewar: “If you think of us and Boeing, we compete in many places, but we were a huge partner on the F-22 Raptor and are teamed on the US's future Long Range Strike-B bomber.”

He described their relationship as that of ‘competamates’ and added that the Global Aerospace Summit was unusual because, unlike an airshow, nobody was coming to it in order to buy or sell products. Aerospace was an ecosystem, coming together to create value, partnerships and supply chains.

The UAE wanted to play its part in this ecosystem, while simultaneously building up its aerospace sector and creating economic value. It could offer space and infrastructure, then partner with others to build capabilities.

“How do I create value?” Al Shemmari asked. “I can offer a huge area of open sand next to an airport and then ask others, ‘How would you develop your optimal composites factory there?’”



Artform: To show how aircraft movements work at peak times across the region, NATS has produced a short dramatic video. See it on www.arabianaerospace.aero

The opening by National Air Traffic Services (NATS) of a new regional office in Dubai in April was the latest indicator of the company's long-term engagement in the Arabian Gulf. Alan Dron reports.

NATS the way to do it!

NATS, which is the air navigation service provider (ANSP) for the UK, one of the most heavily-used blocks of airspace in the world, has become a major supplier of consultancy and technical skills to other nations, with the Middle East being a prime area of interest.

Currently it has contracts with four of the Gulf states, helping keep traffic flowing in an increasingly congested region, said John Swift, NATS' director, Middle East.

"We've had a team working in Qatar for about two years. Basically, we were contracted to redesign and implement the new airspace system for the opening of Hamad International Airport, creating arrival and departure procedures."

NATS personnel have also been involved in training local controllers in their use.

In Kuwait, a team of engineers is supporting the expansion of Kuwait International Airport, focusing on air traffic, nav aids and communication systems.

At the lower end of the Gulf, NATS has been in Oman for some years, implementing new air traffic systems, particularly around Muscat's greatly expanded airport. As in Qatar, it is also providing specialist engineering training to Omani personnel – both for new entrants to the air traffic business and for senior staff, who are studying techniques and procedures used in the UK.

Safety research

The organisation is also involved in safety research in the region. "We're supporting a project at Dubai international Airport, which is to fully understand the impact of wake vortices from arriving aircraft on those following," said Swift.

For decades, aircraft have been constrained to keep set distances from each other in order to avoid the sometimes-violent turbulence that can be created by wake vortices. However, using these fixed distances is "a very blunt tool" that does not make the maximum use of airspace, he said.

"Our ultimate aim would be to see if you could have a more dynamic wake vortex measurement system," he explained. If factors such as the effect of certain wind conditions on vortices could be identified, air traffic controllers would be able, in certain cases, to reduce the separation between an aircraft and those following it. In other circumstances, the amount of separation might have to be increased. But the ability to vary distances, depending on conditions, would bring new efficiencies to the process.

Elsewhere in the safety field, a small NATS team is based at Abu Dhabi International Airport offering safety management consultancy, notably looking at tools and processes that could be implemented to give advance warning of aircraft not complying with instructions.

Another area of growth for the organisation has been post-conflict nation building. There has been a spike in such

activity in Iraq in recent years, where the country has been investing heavily to get back on its feet. That investment includes restoring or improving air traffic management support. Post-Gadafi Libya is another such example.

Currently, NATS has a sizeable number of UK-based personnel in the Middle East but the aim, as with most areas of the civil aviation business in the Gulf, is increasingly to replace these with indigenous staff as their skills develop. NATS' aim is increasingly to provide knowledge transfer rather than physical equipment.

"We don't want to be seen as a company that comes out from London to fix things and then goes home. We want to be seen as bringing our international experience, but we want it to be on a sustainable business."

Speaking before April's Global Aerospace Summit in Abu Dhabi, Swift said that cooperation was vital in maximising the potential of the region's airspace. Given the senior status of attendees, he hoped there would be a chance to talk about data sharing, civilian-military cooperation and to gain a better understanding of the other's issues.

He also hoped there would be discussion on using new technologies, such as performance-based navigation, where controllers not only told pilots where to fly but when to fly there. Creating that level of accuracy in aircraft would unlock considerable capacity in a given block of airspace, he said.

John Swift: "Our ultimate aim would be to see if you could have a more dynamic wake vortex measurement system."





The Middle East is booming, new airports are proliferating, but how much progress is really being made in tackling the region's biggest barrier to growth?

Alan Corner *explains why he is beginning to feel more optimistic, despite the scale of the problem...*

How do we get the camel across the ditch?

Whichever forecasts you look at, the numbers are impressive. According to the International Civil Aviation Organization (ICAO), the Middle East is expected to continue growing at more than 10% year on year. The International Air Transport Association (IATA) is predicting international passenger growth of around 6.3% and expects that the UAE alone will add some 29.2 million passengers in the period to 2017; that's nearly as many as China!

All this means that, for much of the region, aviation will continue to be a key contributor to the economy.

This is no more evident than in Dubai, where the aviation sector's contribution to gross domestic product (GDP) is forecast to rise from 19% today to an incredible 32% by 2020.

It is all good news but, while it is relatively easy to lay tarmac for new runways and write cheques for new aircraft, one issue that poses a real threat to the growth has not yet been addressed and, finding a solution to it is, according to a colleague, "like getting a camel to cross a ditch"!

I am, of course, referring to the need to resolve the Middle East's airspace capacity issues.

The airspace challenge is not new. People have been writing and talking about the problems for many years. However, that's the point. They have been writing and talking rather than really 'doing'.

Of course, many states have undertaken their own projects or initiatives. Saudi Arabia, for example, has invested heavily in communication, navigation, surveillance (CNS) infrastructure, and is redesigning its airspace. The UAE has worked with its immediate

neighbours to tackle the infamous 'Bahrain hotspot' and Oman has also recently completed its own airspace review. This is excellent. However, the benefits are inevitably limited and often end up just moving the problem to the next boundary.

A number of regional initiatives have also been tried. As long ago as 2005, the Arab Civil Aviation Commission (ACAC) undertook a regional airspace study; in 2011, the Civil Air Navigation Services Organisation (CANSO) launched its Middle East regional airspace review (MIDRAR) and, most recently, the GCC has initiated a feasibility study to establish a virtual upper flight information region (FIR). It is too soon to say whether or not it will be successful, although it is certainly a promising concept.

Buy-in support

What was missing from almost all of the regional initiatives was the buy-in and support of the necessary stakeholders - the states, air navigation service providers (ANSPs), military, airspace users and others.

While some form of regional approach is inevitably the solution, it must have the political support and the funding necessary to succeed. This is where the ICAO has a particularly important role to play.

While in many regions the ICAO is more focused on planning, in the Middle East, where there is no other single aviation organisation to which all states belong, it plays a critical role in establishing regional initiatives. Its past successes include the Middle East Regional Monitoring Agency (MID RMA) and the early stages of MID Region AIS Database (MIDAD). Today the ICAO is supporting the establishment

of the new Middle East air traffic management enhancement programme (or MAEP).

The programme was initiated by the ICAO Directors General of Civil Aviation Middle East Region (DGCA/2) meeting in Jeddah last year, but was arguably the result of lobbying by organisations such as IATA, CANSO, the Arab Air Carriers Organization (AACO), as well as individual states and ANSPs.

An initial MAEP meeting took place in Cairo in February 2014 and was well attended by most Middle East states and organisations representing ANSPs and airlines - a real example of the aviation community coming together. It was also clear that everybody at the meeting was equally determined to find a way of 'moving the camel'.

In Mohamed Khonji's (the ICAO MID regional director) own words: "In all my years at ICAO, this is the first meeting I have hosted where we received more working papers from participants than produced by the secretariat." Impressive indeed, as was the fact that almost all of them proposed broadly the same thing: the need for a more coordinated regional approach to planning and implementation of airspace and technology projects and even some joined-up thinking in terms of how it might happen.

In fact, by the end of the three-day meeting, the arrangements for the first 'MAEP board meeting' were already agreed.

So, in order for traffic to flow seamlessly, what needs to happen?

Well, to be successful, MAEP must play a central role in agreeing and prioritising regional objectives and then developing and implementing a single programme plan that considers the greater good of the region. The plan must include the commitment of



Left: Political support is essential to get cooperation while (above) CANSO met in Amman to help create change.

participating stakeholders and should ensure that all are working towards the same objective in a structured and coordinated manner.

It is unlikely, and probably even undesirable at this stage, for MAEP to be responsible for all projects; rather, it will work closely with stakeholders to ensure that projects already planned and funded by stakeholders (such as ANSPs, airlines etc) are, where possible, coordinated more effectively to leverage greater benefit. This has been made more straightforward by the ICAO's aviation system block upgrades (ASBU) initiative, which now provides a much clearer roadmap for future development.

There is also an opportunity for MAEP to be the long-requested focal point for the wider air traffic management industry that can help innovate and problem solve for ANSPs.

In other parts of the world, the supply industry plays a critical role in the development (and even to some extent the funding) of operational and technical solutions. This is most prominent in the single European sky ATM research (SESAR) and next generation air transportation system (NextGen) programmes. While it is not suggested that MAEP becomes another SESAR, it is possible that relevant industry representatives could participate in MAEP. As a minimum, MAEP should provide a

single focal point for the air traffic management industry. It could also provide a vehicle for the region to exploit other research and development programmes and for industry to help develop solutions to address some of the more unique challenges of the region.

While MAEP can probably develop, coordinate and even deliver operational and technical solutions, it cannot guarantee political support for a regional project, or overcome issues such as how to fund projects in less wealthy states or those on the other side of a 'political divide'. In that sense, the Middle East shares another of aviation's eternal conundrums: how to achieve progress when effort is exerted by one party and the benefits are enjoyed by another? The promise of 'regional good' may not be promise enough.

Sensitive issues

MAEP will also struggle to address some of the more sensitive issues, such as accommodating the military mission or the perceived threat to a state's sovereignty. This is especially prominent in the Middle East, where for many states the military effectively control the airspace and grant access to civil users. Indeed, the GCC's virtual upper FIR project might even test this.

These are all barriers to overcoming the current airspace constraints and will require ongoing and concerted effort in political fora.

While MAEP cannot solve all the problems, with sufficient political support and the genuine cooperation of stakeholders, there is the potential to overcome some of the immediate challenges facing the region.

So, is my colleague's camel across the ditch yet? Probably not, but we might have pushed it a little closer to the edge...



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How SAEI is engineering its potential

Mohammed Al Ghamdi:
increasing third-party
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Saudi Arabia is often overlooked when talking about the Middle East's aviation growth. But the kingdom is taking giant steps with new airlines, new aircraft and new airports. Now Alan Peaford asks: is the maintenance industry ready to match the potential?

Saudi Arabia and its neighbour, Bahrain, were the early adopters of aviation on the Arabian Peninsula. While Bahrain has been hampered by size, Saudi Arabia's conservatism and risk aversion has seen it focus on activities through its national carrier, Saudia.

But, in recent years, the liberalism in its aviation policies and a determination by the government to privatise the Saudia Group by separating out the key businesses is already paying dividends.

Saudia Catering was the first to float and has been growing steadily; Saudia Cargo and Saudi Arabian Ground Handling are being prepared for flotation.

But, according to many industry analysts, the probable jewel in the crown is the airline's MRO and engineering specialist, Saudia Aerospace Engineering Industries (SAEI), which is already seeing private investment and is making a claim to be the MRO leader in the Middle East.

SAEI's chief, Mohammed Al Ghamdi, was at MRO Middle East and enthusiastic about the opportunities for the engineering business.

"At the moment, 90% of our activities are for the national airline but we see our growth enabling us to become more

like 60% for Saudia and 40% from external third-party work."

Al Ghamdi said the third-party work had already increased by 300% over the past three years. "That sounds a lot but it is still a small part of our business. We have been restrained by capacity with our work for the main customer but that is changing."

The change is coming with the \$800 million investment in a new engineering complex and headquarters at King Abdulaziz International Airport in Jeddah.

This new MRO facility is being built by TAV Construction in a joint venture with Al-Rajhi Holding and Al Habtoor Leighton.

Football fields

According to Al Ghamdi, the new facility is the size of 281 football fields and will be the biggest of the MRO providers in the Middle East offering third-party work.

"We can currently take two wide-bodies in our hangar and two narrow-bodies in temporary shelters, plus four additional aircraft that can be worked on outside," said Al Ghamdi. "With the new facility, that jumps from eight aircraft to 23 at the same time."

The demands of the new facility – and SAEI's expansion plans as a whole – create its own challenges. "If we have the facility but no workforce then we have a real problem," Al Ghamdi said.

SAEI will need some 2,500 engineers and technicians when the new complex opens next year, but Al Ghamdi believes changes in the Saudi school system will see greater numbers of youngsters having the right educational attributes to take up the challenging roles in the aerospace industry.

"The government's human resources development fund is providing support and we are seeing more students visit our facilities and we tell them about the industry and they see how structured it is and how there is a lot more to it than car mechanics. These are high-level skills," Al Ghamdi said.

Let's work together to improve MRO

Saudi Arabian Airlines maintenance chief, Abdulrahman Altayeb, has called on Gulf carriers to support a call for more appropriate MRO services.

In a keynote address at the MRO Middle East conference, Altayeb asked GCC countries to join together to demand higher levels of maintenance specifically aimed at dealing with the region's harsh, dusty conditions. "We must join forces to put pressure on MROs, aircraft and engine manufacturers to offer real improvement in dealing with our environment," he told delegates.

With 70% of its business coming from

domestic flights, Altayeb said 30 to 40% of Saudia Airlines' delays were caused by maintenance issues produced by the harsh environment.

"Saudi Arabia is a vast country and we have a great deal of pressure from our public to provide an excellent service.

"The best way of travelling across country is by air, yet we face a daily struggle to maintain our engines.

"We are not seeing any movement towards addressing the harsh environment, and get 'Band-Aid' fixes rather than fixing the root causes."



More than 400 airline and manufacturers' delegates attended the latest IATP conference in Hamburg.

Sharing: the secret

It's every airline's nightmare: an aircraft goes unserviceable at an airport down-route, where the carrier does not have onsite engineering support.

A spare part or urgent maintenance is required to get it back in the air. But, with every airline today having an obsession with its bottom line, it is impossible for it to station engineers and a full inventory of spares at every point on its route network.

So, how does it avoid lengthy delays, irate passengers and the cost of urgently flying out spares or personnel?

The answer is an organisation that began operations more than 60 years ago but which, even today, is hardly known outside the airline industry. Yet it saves its members millions of dollars and innumerable hours of delay every year.

Technical assistance

The International Airlines Technical Pool (IATP) came into existence in 1948, when a small number of European carriers committed to providing each other with reciprocal technical assistance, without financial settlement, if one of their aircraft 'went tech'.

Today, with 102 full airline members and 32 associate members, the IATP footprint can be found all over the world. It includes eight African and 15 Middle Eastern airlines (there is some overlap with north African members in those totals) that will come to the aid of carriers that would usually be regarded as competitors.

Alan Dron travels to Hamburg to find out why 'going tech' is not the problem it used to be.

Remarkably, it remains a not-for-profit organisation, which agrees cost-sharing formulae with its members for the services it organises.

The IATP system is very simple: if a member's aircraft needs a spare part, it can borrow that component from a fellow-IATP member for 14 days, with a further seven-day period to return it.

There are formulae by which any costs are calculated and eventually billed to the airline. However, any costs to member airlines are considerably less than they would incur if they had to buy or transport the spares to a stranded aircraft.

In the summer 2013 season, for example, IATP members shared around \$190 million in spare parts and provided line maintenance pooling at more than 400 locations.

One major participant in IATP is EgyptAir. A member since 1962, it operates maintenance services for foreign airlines within Cairo and can also call on fellow IATP members abroad when required.

This can be particularly important in areas of Africa, where MRO facilities are at a premium in several regions.

"With IATP, if we're in the middle of nowhere, there's always a way to find someone," explained Tarek Ghoneim, EgyptAir Maintenance & Engineering's marketing and maintenance contract director. IATP, he says, has played a major role with EgyptAir Maintenance and will continue to do so into the future.

Third-party maintenance revenues became increasingly important during the Arab Spring and Egyptian Second Revolution, when the political upheavals led to sharp downturns in inbound passenger traffic.

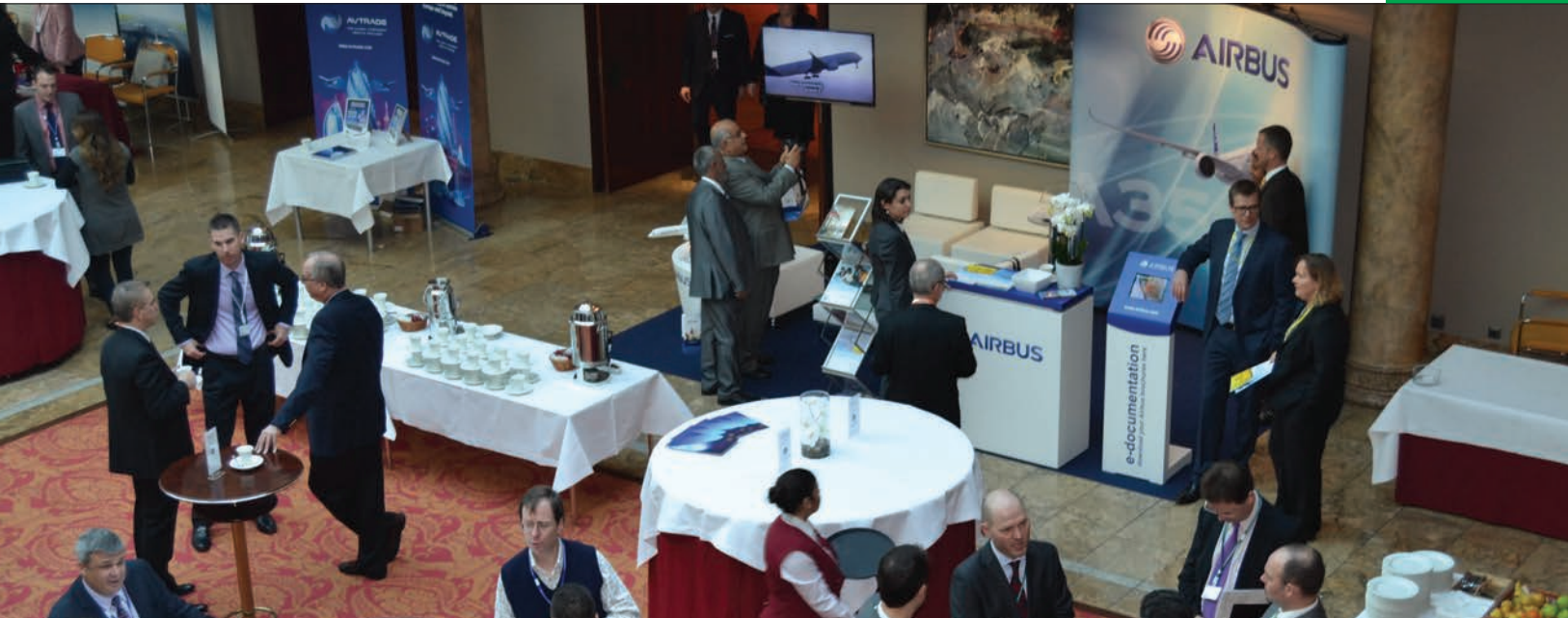
"We're always looking for more members," said Essam Hanafy, vice-president of IATP's board of directors, whose 'day job' is as the chairman's advisor for materials at EgyptAir Maintenance & Engineering. Increasing the number of airlines means upping the resources available to members, he added.

Urgent calls

One of the most urgent calls for assistance comes when an aircraft suffers an undercarriage collapse or skids off a runway, perhaps sinking into soft ground. Airports need to have the aircraft removed as quickly as possible in order to restore operations.

Aircraft recovery kits – huge airbags that are wedged under the stricken aircraft's wings or fuselage then inflated, plus recovery jacks and slings – typically cost \$1 million per set and are, thus, not held by every airline.

IATP members hold 12 of these recovery kits



Outside the main conference and negotiating sessions, delegates networked with colleagues and suppliers' representatives.

at strategic locations around the world that can be flown quickly to the scene of an accident. The fee for providing this to fellow-IATP members is a modest \$500 daily (which pays for a supervising engineer to oversee the use of the kit) for up to seven days.

A non-IATP member airline can still call on the organisation's assistance in these circumstances, but will have to pay an up-front charge of \$120,000, plus the cost of the engineer and a daily charge of \$6,000.

Having access to this type of recovery kit is vital. Airports need runways or taxiways to be cleared as quickly as possible and many now insist that airlines have a plan in place to get access to recovery equipment before they are allowed to start services.

IATP's activities cover four main areas: spare parts pooling, line maintenance pooling, equipment pooling and aircraft recovery. Currently, the first two categories make up most of these activities, but IATP hopes to expand into training and base maintenance.

Within IATP there are 10 parts, maintenance or equipment pools, either covering a particular model of aircraft or types of ground equipment. There is also the aircraft recovery pool, mentioned above.

Currently, most types of jet airliners are covered. Significantly, IATP has a new target of supporting regional aircraft and talks are under way to bring Embraer and Bombardier aircraft within its responsibilities. This is likely to be particularly significant in Africa.

Face-to-face with the solution

IATP members hold two conferences each year to conduct business before the start of airlines' summer and winter seasons. This provides a forum for the airlines' technical decision-makers to identify the most cost-effective support solutions for their organisation.

Possibly the most important aspect, however, is networking between the representatives of the carriers that attend.

Creating and maintaining personal links between airlines' maintenance departments provides the essential contacts that enable urgent repairs to be carried out swiftly when an airliner goes unserviceable at a distant location.

At the most recent conference in Hamburg in March, airline representatives spoke of the benefits that IATP membership brings their respective companies. Several delegates commented that, because of IATP, the airline maintenance community felt like a global family. Here's what some of them had to say:

■ **South African Airways:** Danny Boulanger, project co-ordinator of IATP's board of directors, whose 'day job' is contract coordinator line stations. "It's through this forum that we know each other. For example, a member airline had a 747 in Nairobi with leaking landing gear seals. Through our contacts, the managing director of a member airline contacted me, asking if we could assist. We had people on standby within 30 minutes and on a flight to Nairobi within a few hours. If it hadn't been for these contacts, it would have taken a lot longer to fix the problem."

■ **Libyan Airlines:** Sadegh Lasebai, technical advisor. "These meetings give an opportunity for Libyan Airlines to choose the right companies that can handle our aircraft throughout our network. We consult people at these meetings about technical affairs, especially spares and maintenance."

■ **Ethiopian Airlines:** Zeweter Abebe, supervisor AOG desk. "There's no doubt about it, it develops relationships between individuals that really speed up responses on AOG days."

■ **Emirates Airline:** Imran Umar, manager, component management. "We're in the 'Top 10' in terms of IATP activity."

"How does it help? It optimises our costs, because we don't have to position our spares at all our stations. We look at the IATP website and that tells us where the parts are."

■ **Royal Jordanian:** Motasem Mohammad Saleh Alharbi, team leader, material support & logistics. "We use it for spare parts pooling and technical support to other carriers."

"We gain money from other carriers that are flying into Amman. For example, if Saudia asks us to keep a nose or main landing gear as a spare, they pay us on a monthly basis to store it safely for them."

■ **Saudia:** Tarik Al Johani, material specialist. "When you're pooling in stations you're saving a lot of money and a lot of space."

"When you come to a conference you see people face-to-face and if you have a problem, you can solve it directly. The problem with the younger generation is that they do everything by e-mail. If you send an e-mail, you don't know who it's going to; if you've met somebody here, you can solve a problem by phoning him."

■ **Emirates Airline,** Augustus Gunasekera, planning manager for out-station support. "Last year we avoided five AOG situations by going through the pooling system. One of the benefits of the conferences is that we get the opportunity to talk face-to-face and solve issues."

Part players:
From left, Eric Hennet,
managing director,
Tarek Zaki Hegazy,
oversees network director,
and Joël Glusman,
president and CEO.



TALA takes a star part in aerospace

The Aerospace Logistics Alliance (TALA) is represented in more than 100 locations worldwide, with 100% of its revenue derived from the aerospace industry. Marcelle Nethersole takes a closer look.

What sets independent freight forwarder TALA apart from big-gun competitors like FedEx, UPS and DHL, is that it is purely dedicated to aerospace, with a mission to make sure any aircraft on the ground (AOG) is back in the sky as quickly as possible.

Customers include airlines, MROs, helicopter operators and aircraft manufactures.

“Our mission is to keep aircraft off the ground. If one has a problem, such as a missing or damaged part, we deliver it where needed,” said Joël Glusman, president and CEO.

“TALA is a one-stop-shop; one single AOG call desk, one single track-and-trace system, and centralised invoicing. Through our global organisation of TALA branches, we are able to manage all shipments under a single database and provide status updates to any party, anywhere, any time. This means only one phone call or e-mail is required.”

Logistical nightmare

An AOG can be a financial, time-consuming and logistical nightmare for airlines, as oversees network director Tarek Zaki Hegazy explained.

“A Boeing 737 might cost around \$5,000-7,000 an hour stuck on the ground – the airline only makes money when flying – and this is where we come in,” he said.

“We offer a very quick turnaround, whether it’s a major component or a small part such as a pilot’s seatbelt – he can’t take off without it working properly. It has to be on time and you need to supply the proper documentation.”

The company’s biggest call, however, is for aircraft engines.

“We move a lot of engines worldwide and we have to be very careful when transporting them. It requires expertise in both transferring them and keeping them secure. Engines are an expensive item that have to be handled with maximum care,” said Hegazy.

As TALA concentrates solely on aerospace, it makes sure its staff have a passion for aviation and know the industry well.

Engine stand

Glusman said: “The idea is, if a customer asks us if we have a CFM56 to transport – we know what the client is talking about, we know what engine stand to put it on, what it will weigh etc. Other companies might not know the details as much as us. We dedicate ourselves to aviation.”

The company’s headquarters is in Miami with the administration in Dubai. Customers in the Middle East region include Oman Air, Emirates Airlines and Turkish Airlines.

“Our busiest offices in the region are in the UAE and Saudi Arabia, where we work with Nastec and Flynas, but we are looking at more GCC countries,” said Glusman.

Africa is also a growing market for the company and it has offices in Tunisia, Egypt, Morocco, Libya, South Africa, Mauritius and Nigeria.

There are times when company employees will hand carry parts but mostly they are shipped on scheduled flights. TALA also takes care of custom procedures.

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A leading MRO training business has warned that manpower issues could sink the burgeoning regional MRO business. Mohammed Al Ahli reports.

Workforce issues threaten Middle East aviation growth

The Middle East has successfully secured a leading position in the aviation industry and, as a result, the region has developed a strong demand for new aircraft, as well as its appropriate support from the MRO sector.

But it takes people to power MRO, and now one leading training company has warned that the inability to address the shortage of qualified, locally trained maintenance talent could bring growth to a stop.

According to various reports, Middle Eastern airlines will need more than 2,600 new aircraft over the next 20 years – 60% or more of which will be used for fleet expansion.

Consequently, experts believe the region's MRO market will need 53,700 new technicians to fuel the growth.

According to a survey carried out ahead of the MRO Middle East event, some 74% of airlines and independent MRO respondents in the region expect to recruit new engineering and technical personnel within the next one-to-five years.

Licensed engineers

Most of the local players said they planned to employ more than 100 additional staff members. However, none of the Middle East technical training providers who answered the survey thought they would be able to provide enough licensed engineers and technicians to meet the area's forecast growth.

"With a positive outlook for air traffic demand and on-going fleet renewal, the Middle East has attracted the attention of the MRO providers all over the world for some time now," said Kestutis Volungevicius, the head of FL Technics Training. "Until now the regional industry has been able to maintain a necessary balance, as the MROs in the Middle East are pretty confident that their existing workforce still meets today's needs and is capable of fully supporting their operation satisfactorily. However, the constantly increasing demand for new aircraft means that the providers will inevitably face the rise in demand for their support.

"As deliveries roll out, maintenance organisations must propose appropriate solutions."

Low salaries and highly complex regulations are blocking young talent from entering the MRO profession in the region, he said.

"As for those who still choose to become aircraft mechanics or engineers, they find it difficult to get some relevant on-the-job or

practical training, as well as to find jobs within a reasonable timeframe."

One of the reasons is that, usually, regional MRO providers want a type-rated recruit with at least a year's experience, who is capable of speaking multiple languages.

"What the region seems to lack is proper communication and cooperation between the MRO and training providers," Volungevicius said.

"The training providers, airlines and the independent MROs in the Middle East have to realise that they're in it together; they need each other's products and support. "Developing a regional technical workforce that can sustain growth is a challenge but it always provides higher-quality production and lower overall labour and training costs, if conducted successfully. Otherwise, the deficiency of skilled professionals will definitely take its toll, as this is a global problem that cannot be solved by merely hiring people from other regions."



Kestutis Volungevicius: "The regional industry has been able to maintain a necessary balance."

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Why Go has come to the Middle East

While some want to escape the scorching summer temperatures in the Middle East, Go Aviation saw the region's weather as a turning point for the company.

Marcelle Nethersole spoke to CEO, Dennis Cruz.

Moving base from the US to Dubai to take care of aircraft suffering from the harsh elements of sun and desert sand, and expanding the company's portfolio made sense to Dennis Cruz of Go Aviation.

"Through servicing many clients from the MENA region when we were based in US, we were able to build many excellent relationships," explained Cruz. "Because of these relationships, we received invitations to visit the region and expand our service coverage.

"During one of our discovery visits, we determined that Dubai would provide the best capture rate for servicing the customers from the MENA region, while providing a much-needed service to the local FBO and MRO markets."

The full service aircraft appearance company provides everything from light interior cleaning to a complete paint, bright work restoration, and polishing, on both narrow-body and wide-body aircraft.

"The weather in the Middle East is very tough on aircraft, from the strong sun to the battering aircraft take from desert sand. We knew that our experience in working in varying weather conditions would prove to be very valuable here," said Cruz.

The company was at AIME/MRO recently talking about

its new 'dry wash' cleaning technique, introduced to the Middle East in cooperation with Dubai-based product specialist, Almadien International.

"A typical frequent wet wash for a Hawker 800 will use approximately 1,000 litres of fresh water, whereas dry washing requires less than eight litres of water to clean the same aircraft," explained Cruz. "This type of dry wash is not only better for the environment but it also provides UV protection for the exterior of the aircraft and significantly enhances its appearance.

"Almadien provides us the products that allow us to perform our job in a safe and professional manner, while always keeping up to date on new technology in cleaning products."

Cruz added that airlines and corporate operators had appreciated having a clean aircraft while making a positive impact towards the environment and reducing the carbon footprint in the UAE.

Big push

"The whole Gulf region, and specifically the UAE, is making a big push to reduce its carbon footprint," said Cruz. "In aircraft operations, the cleaning is easily overlooked.

"In addition to reducing the carbon footprint, the exterior of the aircraft receives a vital UV protection and brilliant shine. In terms of flying days, the weather in the Middle East is excellent. However, in terms of maintaining the appearance and keeping up with corrosion control, the weather proves to be quite challenging because of the heat, salt water air, and blowing sand. The uniqueness of dry wash is that it can be performed at any location, given the wind conditions provide a safe working environment."

Located at Dubai World Central (DWC), the company works with VVIP clients, fractional ownership companies, and some of the world's largest airlines and FBOs, including Jet Aviation.

Currently the dry wash is regularly used by major airlines including Lufthansa, Air Berlin, and Swiss International Air Lines, as well as other commercial airlines and general aviation clients.

"Our main focus for the UAE market will be the fast-growing and quality demanding general aviation sector, as well as commercial airlines," said Cruz.

The company was also at AIME/MRO expanding its services menu to include minor interior repairs, and introducing its engine wash division, which will be servicing most bypass engines like the ones found on Boeing, Airbus, and Embraer aircraft.

"And we are also highlighting our deep cleaning option that involves everything in the cabin getting a thorough detail," said Cruz. "This includes all drawers being emptied, vacuumed, cleaned, disinfected, and dressed to the original positioning. In addition, every other surface will receive a detailed cleaning and conditioning if necessary."

Go Aviation staff dry washing the aircraft tail of an Embraer Lineage at DXB.





Ammroc's rotary role

Panthers ready to pounce after Ammroc's work.

The UAE Joint Aviation Command's Eurocopter AS565 Panther naval helicopters are now being overhauled and redelivered within the Emirate under a \$38.9 million contract.

Jon Lake reports.

With the Advanced Military Maintenance, Repair, and Overhaul Center (Ammroc) now redelivering Panther naval helicopters, the UAE can legitimately claim that it has a regional provider of choice for military aviation MRO services across rotary platforms.

Ammroc, a joint venture between Mubadala Aerospace, Sikorsky and Lockheed Martin, initially announced that it had started performing major inspections of 13 AS565 Panther all-weather, multi-role light helicopters for the UAE Navy in February last year.

The project marked Ammroc's first contract with the UAE Navy, though by then the helicopters had actually come under the command of the Joint Aviation Command.

Late last year, Ammroc said it had completed the overhaul, modification and redelivery of the first of 13 AS565MB and AS565SB Panthers. The rest of the work is now on-going.

The UAE Navy's helicopters, which have traditionally operated from Al Bateen when not embarked on board ships like the UAE's six Baynunah Class Corvettes, have been gathered together under Group 21 at Sas al Nakhil. They still wear UAE Navy titles. Group 21's assets include 10 AS332 Super Pumas – five AS332Bs, one AS332B1, two AS332Ms and two AS332M1s) equipped with Thales FLASH sonar and armed with MU-90 torpedoes or AM39 Exocet anti-ship missiles – plus the 13 Panthers.

Seven of the Group 21 Panthers are AS565SBs, powered

by Turbomeca Arriel 2C turboshaft engines.

The SA565SB was an armed naval version of the Dauphin, and featured a Thompson-CSF (now Thales) Agrion-15 search radar, with the antenna mounted in an unusual disc-shaped radome under the nose, as well as an ELIPS ESM suite and a FLIR/EO package mounted in a turret above the nose.

Little is known about the operational fit of the UAE AS565SBs, which could, in theory, carry a Crouzet-towed magnetic anomaly detector (MAD) system to detect submarines and/or an Alcatel dipping sonar.

Homing torpedoes

Twin homing torpedoes for anti-submarine warfare were offered as an option, but it is not known whether the UAE exercised this.

To many people's surprise, one aircraft shown at the Dubai Airshow was fitted with stub wings accommodating four Aerospatiale AS 15TT light anti-ship missiles, like the older AS 565SA Panthers delivered to Saudi Arabia.

The other six UAE Navy Panthers are understood to be unarmed AS565MBs, which lack weapons pylons, do not have an under-nose radar, and which have a forward-looking infrared (FLIR) turret below the nose, rather than above it.

These aircraft are believed to have been used for utility transport, ISR, and SAR missions, featuring a winch and other search-and-rescue role equipment.



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POISED FOR **GROWTH**

*The world's aerospace OEMs tend to be secretive organisations, for obvious commercial reasons. However, **Geoff Thomas** has been given an informed glimpse into the future of Rolls-Royce, the world's market-leading wide-body engine manufacturer.*

DESIGNS ON THE FUTURE

Rolls-Royce is one of the most famous names in global aerospace – and a huge presence for many decades in the Middle East, north Africa and the Gulf.

The company's high bypass ratio turbofans feature on just about all of the world's wide-body airliners, so the way that this British-based company sees technological developments over the coming 15 to 20 years is of the utmost relevance within the industry.

Right now, the company is concentrating on developing the latest members of its hugely successful Trent family of powerplants – the Trent XWB that powers the latest (and yet to enter service) Airbus A350, and the Trent 1000 TEN, one of the option powerplants on Boeing's 787 Dreamliner.

But the Derby, England-based company is not letting the developmental grass grow under its feet and has unveiled its strategic plans for a new generation of high bypass ratio turbofans for the 2020s and beyond.

Technology leadership

Over the past 25 years, Rolls-Royce has built a technology leadership position with its Trent engines and it claims that the XWB is the world's most efficient flying today. There are 2,500 Trent engines in service and more than 2,500 on order.

As is the case with each of the major engine OEMs, Rolls-Royce says it provides powerplants for existing and planned airframes, rather than driving the marketing initiatives of Airbus, Boeing, Embraer and Bombardier etc. But, that said, these new engines will undoubtedly get the creative juices flowing among the world's airframers.

The ambitious plans feature an evolution of Rolls-Royce's successful three-shaft architecture but depend on a broad mix of scalable technologies that position the company both for new additions to the wide-body marketplace and also for future single-aisle airframes.

Rolls-Royce president, civil large engines, Eric



The CTi fan blade incorporating advanced carbon and titanium materials.

Schulz, confirmed that the company also intends to re-enter the medium-sized engines market “with conviction”, after announcing that it was divesting itself of its stake in IAE, whose V2500 engine is one of the options to power the Airbus A320 family of narrow-body airliners.

As well as its two new engine designs – dubbed Advance and UltraFan for now – the company is introducing its first composite fan blade, albeit with a titanium leading edge for strength and erosion resistance.

This new blade will save considerable weight and the fan itself will rotate within a composite casing, which also features the company's innovative composite ‘rafts’ that carry much external wiring and pipework, effectively enhancing reliability and reducing both build times and maintenance costs.

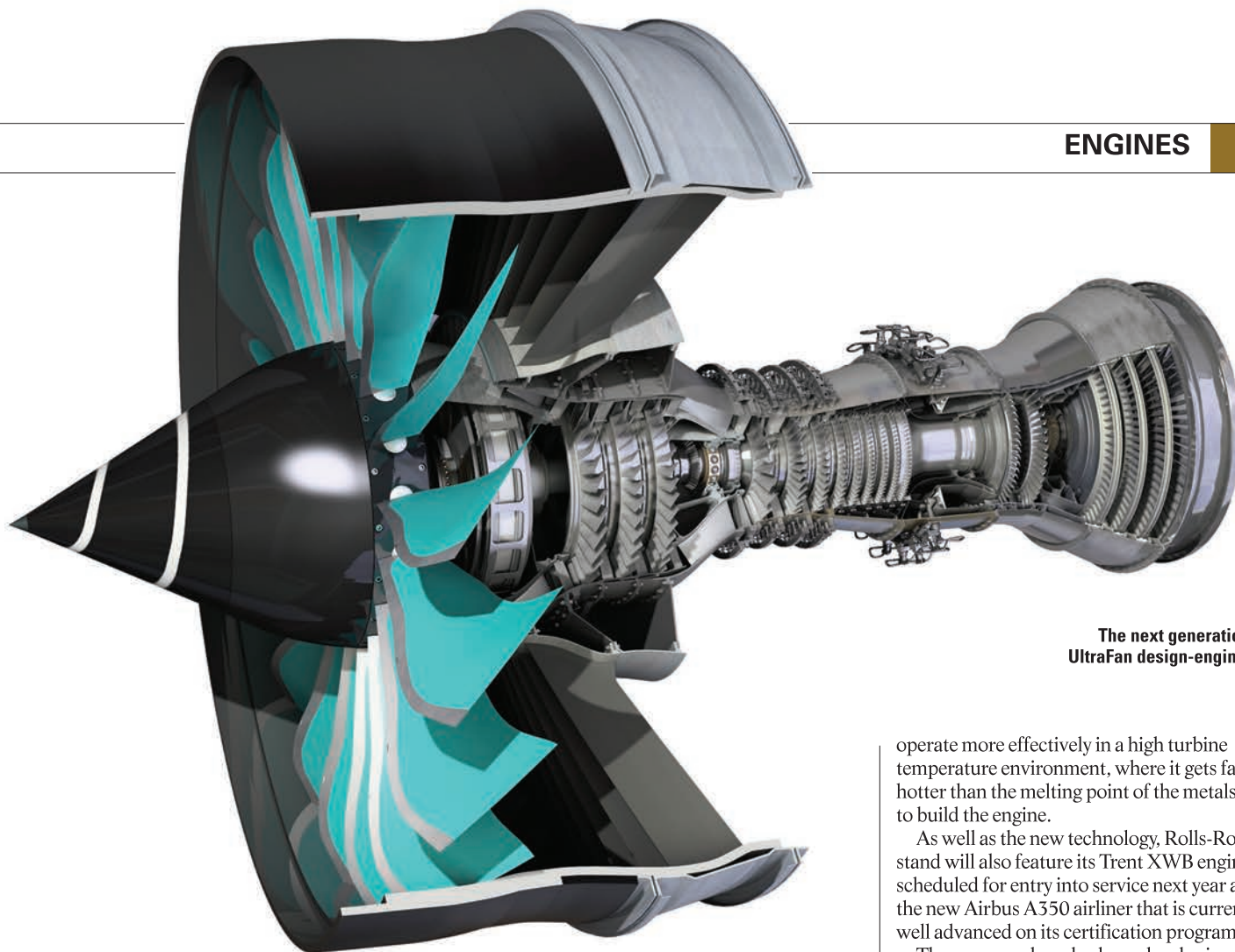
Powerplant weight

This new fan (made from carbon/titanium – CTi) and its associated casing, will reduce overall powerplant weight by up to 1,500lb per airframe, the equivalent of carrying seven more passengers at no cost.

The first engine, known for now as Advance, will run as a demonstrator in 2015 and will be based on a re-cored Trent XWB. Although no specific application has either been identified or announced, Rolls-Royce says the engine could enter service from around 2020 onwards. Advance was the basis for the company's bid to power Boeing's 777X, for which General Electric's GE9X was ultimately selected after an engine competition in 2013.

The engine also emerged as the basis for the RB3025 that was submitted to Boeing and was then described by Rolls-Royce as a “radically different new-generation engine”.

The company says that the Advance engine is designed to have a bypass ratio greater than 11:1, while the overall pressure ratio will be in excess of 60:1. It will deliver fuel burn and CO₂



**The next generation
UltraFan design-engine.**

emissions at least 20% better than the first member of the Trent family, the 700, that powers the Airbus A330.

The Trent 700 ran for the first time nearly a quarter-of-a-century ago, entering service in 1995 on Cathay Pacific's new fleet of Airbus A330s. It can trace its direct lineage back to the trailblazing three-shaft RB211 engine that bankrupted Rolls-Royce when airframe delays – and the engine's development – overstretched the then-company's finances.

The second of the new engine concepts, known as UltraFan, will feature a fan driven through a gearbox, as well as variable pitch blades that could form the basis of technology for an open rotor design should the airframe OEMs decide to go down that contentious route.

Although gearbox-driven fans aren't new in the world of commercial aviation engines – some turbofans and all turboprops feature the technology – the introduction of variable pitch blades will create several weight-saving opportunities, not least in rendering complex thrust reversers obsolete. This engine would feature a 15:1 bypass ratio and overall pressure ratio of 70:1.

Colin Smith, Rolls-Royce director - engineering and technology, said: "These new designs are the result of implementing our on-going technology programmes. They are designed to deliver what our airframe and airline customers tell us they need; even better fuel efficiency, reliability and environmental performance."

Since the advent of today's huge and massively powerful turbofans, improvements have mainly been driven through increases in both fan diameter and bypass ratio, allied with more compact, hotter-running cores and huge improvements in thermal efficiency.

Simon Carlisle, Rolls-Royce executive VP and head of strategy, future programmes, said it would be very simple to become complacent, adding that there had been plenty of examples of people who took their eye off the ball... but Rolls-Royce was not going to do that.

Maintain our position

"We have strong and capable competitors, who we respect, and we want to maintain our position in the large engine business. So we continue to invest in technology because the demands from the industry keep getting greater. We know fuel prices are going to stay high and will only continue to go in one direction, so we're investing to address that," he concluded.

Visitors to this year's Farnborough International Airshow will see the Rolls-Royce stand featuring the company's advanced low pressure system (ALPS) engine that is scheduled to fly later this year on a test bed aircraft.

This engine (a modified Trent 1000 as used on Boeing's 787 Dreamliner) will have the previously described composite fan case and also lightweight composite blades. In addition, the core will also feature advanced ceramic matrix composites – heat-resistant components that

operate more effectively in a high turbine temperature environment, where it gets far hotter than the melting point of the metals used to build the engine.

As well as the new technology, Rolls-Royce's stand will also feature its Trent XWB engine, scheduled for entry into service next year aboard the new Airbus A350 airliner that is currently well advanced on its certification programme.

The company has also been developing and testing technologies to support an open rotor engine concept and is positioned to mature them should there be clear market demand. Although inherently more fuel efficient than a high bypass ratio turbofan, the open rotor concept has suffered from the twin negative issues of noise and an inability to hang underneath wings due to its inherent size. As yet, airframers haven't produced final designs for open rotor-powered airliners, although Rolls-Royce claims that the noise issue has virtually gone away, thanks largely to sophisticated blade design and acoustic research.

Rolls-Royce still has to decide whether or not to perpetuate the Trent name with these two new designs, if and when they enter service on a new airframe or even – potentially – should they be involved in a re-engining project. There has been much talk recently about whether existing airliners – particularly from Airbus – might benefit from new engine technology. The precedent is the current re-engining projects in the single-aisle marketplace, now referred to as the Boeing 737 MAX and Airbus' equivalent A320neo.

However, a recertification and relaunching process would be massively expensive for relatively few engines, so this is thought to be unlikely. Having said that, a few years ago who would have predicted that the world's most common single-aisle airliners – the B737 and A320 families – would enjoy a further lease of life with sophisticated, new power plants from CFM and Pratt & Whitney?



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MORE TO BELIEVE IN



Dwarf glasswort. Etihad used the first UAE-produced batch of biofuel to help power one of its Boeing 777s in January this year.



Biofuels look to the dwarf in the desert

Alan Dron reports on a new candidate in the search to produce environmentally friendly aviation biofuel, which is to be produced in the UAE.

The search to find a ‘green’ alternative—or at least a supplement—for aviation kerosene has been a long one.

A succession of plants, such as jatropha and camelina, have seemed initially promising but then largely dismissed because they compete with food crops in their requirement for land and, particularly, water.

Algae remains a promising possibility as a fuel feedstock, but much work needs still to be carried out on its suitability. The consensus is that producing it in reasonable quantities is at least a decade away.

So, the news that a major biofuel project, now under way in the UAE, is showing considerable potential, is likely to be of interest to the aviation industry.

Plans are well advanced to operate a pilot scheme in Abu Dhabi, in a project that brings together Etihad Airways, Boeing, Abu Dhabi’s Masdar Institute of Science and Technology (MIST), refiner Takreer, oil giant Total and UOP, a subsidiary of Honeywell.

MIST’s Sustainable Bioenergy Research Consortium (SBRC), funded by Etihad, Boeing and UOP, is researching and developing desert plants that could yield biofuel.

Attention is focused on *salicornia bigelovii*, more commonly known as dwarf glasswort, a small, shrub-like plant, one of a family known as halophytes. Halophytes do not require agricultural-quality land to grow—they are often seen flourishing in sandy soil beside roads in the UAE and, crucially, are tolerant of salt water.

The partners announced their ‘BIOjet Abu Dhabi’ initiative in January, following the successful flight of an Etihad Boeing 777 partly powered by the first UAE-produced bio-kerosene derived from *salicornia*.

BIOjet Abu Dhabi aims to support a sustainable aviation biofuel industry in the UAE.

For the initial Etihad flight, the fuel was partly converted from biomass by Total and its partner Amyris. Takreer then handled the final aviation distillation.

In 2011, Etihad conducted a test

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flight using biofuel on a Boeing 777 flight from Seattle to Abu Dhabi and several airlines, such as KLM, already use biofuel regularly in their services.

“Boeing’s role in terms of biofuel is to act as a catalyst in the industry,” said Julie Felgar, managing director, environmental strategy and integration at Boeing Commercial Airplanes. “What Boeing is best at is systems integration. We’re obviously very engaged in fuels which have to meet very strict standards.”

Salicornia offers several major benefits, apart from its tolerance of salt water and marginal-quality land. The first is that the plant is native to the Gulf.

A second is that, whereas it was initially thought that only the plant’s seeds – which contain about 30% oil – could be used for biofuel, further research discovered that oil could be extracted from the entire bush, even its roots. This made it a much more scalable solution, with the eventual prospect of huge acreages being planted with the bushes.

Thirdly, the shrub’s stalks and branches contain very low levels of lignin, the substance that gives wood rigidity. This low lignin content allows the plant to be broken apart easily in the refining process, so less energy is required to convert it.

A two-hectare pilot facility of salicornia is due to open later this year and operate for at least three years. “One of the next steps, once we get the facility up, is to work in the labs to determine yield,” said Felgar.

The project also takes advantage of Abu Dhabi’s substantial involvement in aquaculture, notably shrimp and fish farms, and simultaneously solves one of the biggest problems that affect those farms – how to dispose of their waste products.

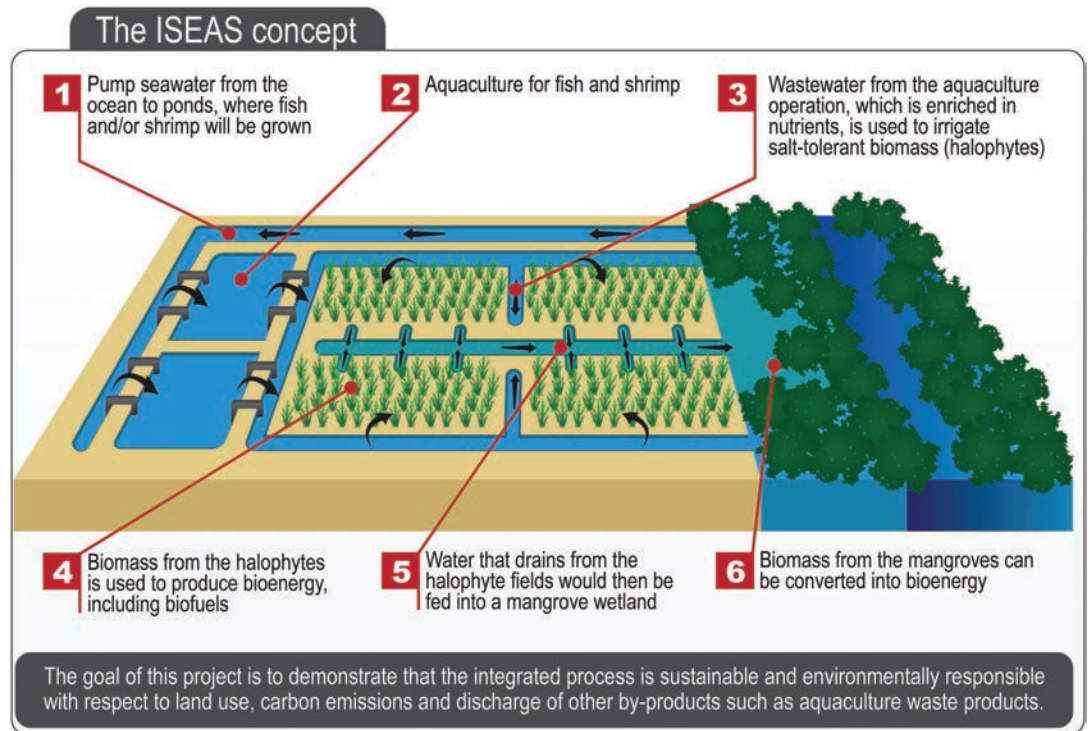
The fish and shrimp excrete large amounts of waste. In some parts of the world, this has become a major pollution problem.

Liquid fertiliser

However, by pumping the waste-water into plantations of salicornia, the nutrient-rich waste acts as liquid fertiliser for the plants, which draw it from the water. To further improve the cleanliness of the water, it is then channelled into rows of mangroves, which absorb more of the waste material, before it is returned to the sea.

Like salicornia, mangroves are native to the Gulf. They also grow rapidly, allowing salicornia plantations to become productive within a few years.

“What’s super exciting is that 97% of the world’s water is salt, while 20% of the land surface is arid,” said Felgar. This means that salicornia plantations would not need to use water from the 1% of the planet’s total that is available to humans



This diagram shows how waste-water from fish farms – a rapidly-expanding industry in the UAE and elsewhere in the Gulf – is used to feed the oil-producing salicornia plants.

for agricultural, industrial or drinking purposes, or compete for agricultural land. The plant also absorbs the ‘greenhouse gas’ carbon dioxide, from the atmosphere as it grows.

In Abu Dhabi’s case, it also helps the emirate’s desire to diversify its economy from hydrocarbons. “If you can do this in Abu Dhabi, it’s not only something that will help them meet their biofuel needs, it’s something that is exportable,” noted Felgar.

Founding members

The SBRC was established by the Masdar Institute and has, as its founding members, Boeing, UOP-Honeywell and Etihad Airways, together with associate member Safran.

SBRC director Dr Alejandro Ríos Galvan, said that halophytes’ tolerance of salt water makes them an “incredible candidate” for biofuel. “Halophytes hold huge promise and potential,” he added.

The quantity of usable fuel from salicornia bigelovii plantations is also considerable, said Ríos Galvan: “One hectare of salicornia will produce around two tonnes of seeds, but 50 tonnes of biomass. We’ve been able to use the biomass to produce ethanol, and in analysing the plant’s composition there are many different pathways that can be used to produce different types of alternative fuels.”

Salicornia seeds contain about 30% vegetable oil. That means that two tonnes of seeds would produce 600-700 litres of oil per hectare, although this figure shrinks as refining takes place to make the oil suitable as an aviation biofuel.

The fact that oil can also be extracted from the rest of the plant obviously helps the situation, but any feedstock has to be scalable.

“If we can produce this plant at a reasonable scale and do it sustainably without damaging the environment, I think we’ve got an extremely good candidate for biofuel production,” said Ríos Galvan.

“This year, we’re starting the two hectare pilot facility. It’s very small but enough to allow us to understand many of the variables that are at play.”

It is a sign of the high hopes that the SBRC has for the new plant that a 200 hectare coastal site has already been planned for Ruweis, in western Abu Dhabi – conveniently close to an oil refinery – for the next stage in development of salicornia-derived biofuel.

Areas that have still to be investigated include the inter-relationship between the fish farms and the plantations: “There’s very little information out there,” said Ríos Galvan. “We need to confirm a lot of the hypotheses that have been put forward.”

To help clean the waste-water after it has been used by the plants, mangroves would be planted in a series of bands, with each progressively acting as a filter to purify the water before it is returned to the sea. These areas of mangrove would also act as a wetland environment in which other plants and animals could thrive as a new eco-system develops.

As well as acting as a living filter, mangroves, with their large, complex root structures, “are one of the best plants for absorbing carbon”, he added.



Airbus unveils comfort of A350 XWB cabin interior

Airbus revealed the cabin interior of its A350 XWB development flight-test aircraft at its facility in Hamburg.

Steve Nichols
was there.

Aircraft MSN002 made its first flight on February 26 2014. It is the first of two test aircraft fitted with a passenger interior and was opened up to the media on the eve of the Aircraft Interiors Expo.

The aircraft's interior demonstrates how its extra-wide fuselage will offer passengers more personal space, flexibility and comfort in both business and economy classes, with a full 18-inch wide seat in a nine-abreast economy configuration.

Other features included the near vertical walls of the A350, which don't encroach on passenger space; mode lighting with 16 million different colours; and a flat floor concept, which hides the wiring and does away with in-flight entertainment and connectivity (IFEC) boxes hidden under the seat that encroach upon passenger foot space.

Airbus said that intensive cabin flight and ground tests have already been performed during the two-week stay of the aircraft in Hamburg, and two more test aircraft (MSN004 and 005) will join the fleet shortly.

Aircraft on order

The company confirmed that it now has 812 A350 aircraft on order from 40 countries, including 80 for Qatar Airways and 70 for Emirates. Other Middle Eastern and African airlines choosing the A350 include Etihad, Kuwait Airways, Ethiopian and Afriqiyah.

The A350 XWB will be available in three versions, covering a wide range of capacities from 276 to 369 seats. Airbus confirmed that some airlines might go for a 10-abreast economy option, which would bring the seat width down to 17 inches.

Airbus has also paid attention to the overhead bins, making them larger and more able to cope with the increasing loads passengers are bringing on board.

The A350 also uses a fibre-optic IFEC backbone that offers up to 25mbps broadband speeds for passengers, although the current A350 catalogue does not yet include an IFEC supplier that can continue the fibre right the way to the screen.

A spokesperson said that the current A350 catalogue is

very fluid, growing and buyers could expect more options to be added over the next 12 months.

The brochure says the A350 family brings a 25% "step change in efficiency" compared with existing aircraft in this size category. Its new wing design and 53% composite construction enables a Mach 0.85 cruise speed, while the new engines allow for better fuel economy and lower noise in the cabin.

The first aircraft is due to be delivered by the end of the year. Qatar CEO Akbar Al Baker is reported to be pushing for as early delivery as possible, possibly in November.

Passenger comfort

Chris Emerson, senior vice president of marketing at Airbus, said: "Passenger comfort is an increasingly important differentiator for the airline industry, becoming a fundamental deciding factor driving passenger choice and business success.

"The A350 XWB is the only aircraft in its sector to truly offer comfort without compromise, while providing airlines with unrivalled operating economics, flexibility and fuel efficiency.

"The airlines have endorsed our approach to this market segmentation and this is reflected in our order book."

Emerson added that the A350 fits in nicely between the Airbus A380 and the A300 series, offering the ideal solution for long-haul developing routes.

Airbus also twinned the viewing opportunity with the inauguration of its dedicated A350 XWB Customer Definition Centre (CDC) in Hamburg, where airline customers and operators can work on their cabin design and definition process.

The CDC, which features individually tailored zones, enables Airbus customers to test the A350 catalogue solutions in a showroom environment.

Two airlines can work on their designs at the CDC at once, with separate mock-up areas. It also includes an electronic A350 XWB configurator – a virtual environment and modelling tool for airlines to test the cabin specification and visualisation.



Chris Emerson: "The A350 XWB is the only aircraft in its sector to truly offer comfort without compromise."

A Quantum leap in trolley technology

The Quantum, which is claimed to be the world's lightest certified trolley, was being displayed at AIME by Canadian manufacturer Norduyn.

The company specialises in the design and manufacturer of lightweight composite products for commercial airlines.

"There are 20,000 Quantums currently in use with airlines internationally and our current version, which came out in 2012, is the lightest available," said Patrick Phillips, vice president sales and business development.

The Quantum results from a collaboration between Norduyn and LSG Sky Chefs.

"The trolley weighs under 22lbs and is more energy efficient, generating cost savings to airlines," said Phillips. "It is all to do with the optimisation of the resin infusion – it's the mix of the resin in the trolley that makes it lighter as well as the fibres.

"It's difficult to infuse but is something we mastered.

"These trollies are the only ones of their type in the world made up of composites. Most other carts are made of aluminium and they have been around for the last 45 years. Ours is more ergonomic and lighter.

"It's also fuel efficient because of the weight and the design is thin-walled, which allows for more content inside. It might just appear to be a box on wheels but we have used the right materials to make it light, as well making sure it passes the smoke and toxicity tests to make it certifiable."

Phillips said the cart is easy to maintain and the company offers a two-day training session to show customers how to repair it: "As it is composite, you can repair a part as opposed to having to change it, which lowers costs."

Customers include Lufthansa, Condor Airlines, and Aeromexico.

Saudi Arabia is also a customer, but of one of Norduyn's other galley parts – the baby-crib.

Phillips said: "The Middle East is a dynamic region and one of great interest to us, which is the main reason we have recently recruited a representative based in Abu Dhabi and one in Lebanon."



Patrick Phillips, vice president sales and business development with examples of the company's Quantum range - claimed to be the world's lightest certified trolley.



Recaro well connected with latest generation seats

Recaro Aircraft Seating unveiled the next generation of its best-selling BL3520 seat at the Aircraft Interiors Hamburg show – and also revealed its new CL6710 business-class seat.

The new Recaro BL3530 adds innovative solutions to the challenge of personal electronic devices.

"Connectivity is no longer just an option, but a necessity. With our new BL3530, we respond to these market demands", said Recaro CEO Dr Mark Hiller.

"The new tablet PC holder is the most striking advancement in the evolution of the seat," added Hiller. "Its ingenious design enables ideal ergonomic positioning of all standard-sized tablet devices with an optimal viewing angle."

The company also presented its new CL6710 business-class seat for long-haul flights at the show. This is a 180-degree full-flat-bed seat, combining high comfort with the possible demands of a high-density cabin.

Kuwait gets on board with OnAir

Kuwait Airways became the 10th Middle East customer to choose OnAir as its connectivity provider with orders for the services to be installed on 12 new aircraft – five A330s and seven A320s – all of which will be line fitted with Mobile OnAir and Internet OnAir.

The first A320 and first A330 will be delivered in December 2014 and May 2015 respectively.

Kuwait chose to line fit its new aircraft with Airbus's ALNAV2 network architecture, which does not require any additional antennae.

"OnAir was the right offering for us," said Rasha Al-Roumi, Kuwait Airways chairperson.

"On top of the proven SwiftBroadband service, which is available line fit on our new aircraft now, OnAir has GX Aviation capability waiting in the wings.

"We can offer passengers the connectivity they expect from a leading airline, as well as formulate a plan for the easy transfer to GX Aviation when it is available."

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The Middle East may be famous for traditional carpets, but Marcelle Nethersole discovers a company at AIME introducing new technology to its carpets.

Mohawk remains a cut above the rest

Mohawk, the largest floor manufacturer in the world, had a colourful array of carpet swatches on display at AIME.

The US company supplies everything, from stone tiles to laminate and hard wood flooring, plus a whole range of carpet.

However, its sub division – Mohawk Aviation – specialises in primarily woven nylon carpet for airlines.

“Mohawk Aviation is the pioneer of nylon aviation carpet. We are probably the largest carpet supplier in the world in terms of aviation usage, with more than 50% of commercial aircraft using it,” said Jonathan Green, international specialist.

“For years airlines installed wool carpet, as it could meet the fire and smoke requirements for aviation. But nylon carpet will typically outlast wool by three to five times.

Wool to nylon

“A good example is British Airways, which switched from wool to nylon about 10 years ago as it was changing its aisle carpets every six weeks. With the advent of the Mohawk product, it’s now installing the nylon carpet throughout all its classes, replacing it every 18-months in the aisles and three years under the seats. We also support the cleaning of the carpet.”

Nylon is a 100% continuous filament, literally thousands of metres long, which is woven. As a consequence, you can’t pick the fibre away, making it hardwearing and durable.

“Woven nylon construction is inherently stronger than any other carpet,” said Green. “It’s longer life-cycle means your investment stretches further, offering a significant cost saving over time.

“Woven carpet also saves the environment,



using less nylon in its construction, and performing 300% longer than other carpet constructions before needing to be replaced. This means less energy needed to make replacement carpet, less energy needed to haul it and exchange it, and less carpet in our landfills.

“Aircraft go through heavy checks every 18 months, where they remove all the interior fittings to perform maintenance. Using woven nylon enables airlines to keep the carpet in the aircraft between those checks, so there is a significant cost saving.”

While Mohawk has its own designers, who can work closely with customers to create a unique look, airlines can also choose to either select an existing pattern or supply their own design.

Mohawk worked with Akro Fireguard to develop a low smoke-backing compound, which is used in the manufacture of the carpet when it is weaved.

Green explained: “This means we can actually get nylon carpet to be lower smoke than wool

carpet. Akro Fireguard developed a backing technology that is added to the carpet in production. The carpet meets all the low smoke requirements of Boeing and Airbus, as well as the FAA and other civil aviation authorities.”

Green can’t see carpet ever being removed from the aisles.

“Of course, removing carpet from aircraft will save weight, something all airlines and manufacturers strive for, but carpets performs two important functions; aesthetics and the ability to deaden sound. In the figures that Airbus and Boeing will give you for sound performance, they take the carpet into consideration. And if you replace carpet with non-textile flooring, then you get a marked increase in the drop of the acoustic performance in the aircraft.

“People are always trying to reduce weight, and with carpet the only way to do this is reduce the pile height. Doing that, you get a very hard product and so there is always going to be a trade-off. If you want to reduce weight, you need

Green carpet: Jonathan Green, international specialist, with a selection of Mohawk's carpet swatches.



to compromise with something else.”

Mohawk has been successful in reducing the weight over a traditional carpet by about 30% in the last few years.

Its customers include all the US airlines, BA, Scandinavia, and Qantas.

“We do have customers in the Middle East that are about to do some trials, including Etihad, so hopefully we will have a customer in the region very soon,” said Green.

Mohawk launched its new printed carpet product in April 2014.

Printed carpet is a white tufted product passed through a large industrial inkjet printer, where the design is actually painted on to the carpet and printed.

“Printed carpet won't replace traditional carpets but will open an additional avenue for airlines,” said Green. “With this particular technology, you could print a carpet specifically for a limited period of time to promote an event. We're talking to some airlines about that at the moment.”



Christian Battisti, with the Italian company's new luxury business class full-flat seat, Zeus.

The lowdown on the new lie-down

Italian manufacture Avio Interiors was at AIME displaying its new Zeus luxury business class full-flat seat.

“In order to reduce the mechanical complexity needed for a business class sleeper seat, Zeus re-thinks living spaces by introducing simple concepts that improve passenger comfort while reducing weight,” said Christian Battisti, senior sales manager.

“The main feature on the Zeus seat is the easy maintenance; you only need two manoeuvres and it goes to a flat position, allowing for a two-metre long bed.”

Battisti explained the flip-up armrests allow a larger bed size in the shoulder zone without the complication of an up-down side armrest mechanism.

The table, linked to the backrest of the seat in front, is extra-sized compared to conventional tables and can be moved forward to free the passageway of the side sitting passenger.

The launch customer for Zeus is Transaero Airlines, which will install it on dedicated routes in its imperial class on the 737-800.

“We have also been selected to supply a 757 on business class configurations for a VIP customer,” added Battisti.

The company has been producing aircraft passenger seats for more than 40 years, designing, certifying, manufacturing and delivering products to airlines and premium operators as well to aircraft manufacturers globally. These include Kuwait Airlines, as well as customers in Qatar and Saudi Arabia.

“There is a demand for innovation in the Middle East, which is a great challenge for us, and our designers,”

said Battisti. “We can customise seats to whatever the customer wishes. We know that commercial airlines want a seat to be luxurious, like a VIP seat, which is something we're good at. As Italians, we know style too.”

The company is located in Latina, an hour from Rome, and has a 63,000sqm facility, where it manufactures all its seats.

“We have our own internal designers, who work closely with the customer,” said Battisti. “Turnaround from design to end product will depend on the complexity of the design and the production load available, but going on a retrofit programme and just changing colours and some aesthetic parts, we can say around four to seven months, depending on the project.”

The company is also focused on its Leonardo seat concept, a composite seat for economy class.

Battisti explained: “The main feature is the combination of aluminium on the main structure and then one piece of carbon fibre on the backrest and one piece on the bottom – this is completely revolutionary. Some competitors use carbon fibres on some items; here we are talking about 60-70% of the seats being made of carbon fibre.”

The company is currently concluding the internal test campaign before going to qualification, depending on the aircraft model.

“Carbon fibre is the future for seats as it's so lightweight. People are already interested in the concept,” said Battisti.

The company has also recently introduced its latest lightweight seat – the Columbus.

Panasonic Avionics is looking to the Middle East for growth with its in-flight entertainment and connectivity (IFEC) product range, saying that the region is ripe for expansion. Steve Nichols reports.

PANASONIC BOOM!

Middle East carriers currently using Panasonic products include Etihad, Emirates, Qatar and Turkish Airlines. However, the company believes there is scope for more systems on more aircraft.

David Bruner, Panasonic's vice president, global communication services, said:

"Eventually, all of Etihad's wide-body fleet will carry our products, while Emirates is starting with its Boeing 777 fleet.

"We also have high hopes that airlines will look to us for their Airbus A380s."

Panasonic said the first A380 test flight with its Wi-Fi service installed took place in Hamburg recently, and the system is now available for both line- and retro-fit.

"There is a lot of scope with the A380 and it's likely that ours will be the only system that is certified for fitment this year," said Bruner.

Turkish Airlines has Panasonic's global communications suite (GCS) installed on 13 Boeing 777s and is about to start equipping its Airbus A330 fleet as well.

Qatar recently announced that the IFE system on its Airbus A330s would be upgraded to the Panasonic eX2 platform, providing a "richer entertainment experience with a greater amount of programming".

The A330s will also be fitted with the GCS. Both the A330 and A320 will have the capability of sending and receiving SMS and MMS messages.

Panasonic revealed that, across the globe, it is set to double the number of installations of GCS by the end of the year, with 23 airlines worldwide enabled. The company expects to have more than 800 aircraft using its broadband in-flight Wi-Fi service by December.



David Bruner: "There is a lot of scope with the A380 and it's likely that ours will be the only system that is certified for fitment this year."

The path is now clear for it to ramp up installations by 30% and equip up to 40 aircraft of all types per month.

It has also been busy improving its network coverage and reach, coming to a number of agreements with satellite providers.

In December it announced a 50% uplift in satellite capacity, with software upgrades to its network's 22 satellite beams. Panasonic uses iDirect's satellite modem technology and has upgraded to iDirect's latest Evolution technology as well to increase bandwidth.

The company recently signed an agreement with China Telecom Satellite Communications (CTSC), which will enable in-flight broadband

connectivity for Panasonic's 39 customer airlines when flying into and over China. As part of the agreement, CTSC will operate a ground station in Beijing to service Panasonic.

Other deals include an enhancement to its in-flight connectivity service over South America, using Telesat's new Anik G1 satellite.

The company had its eyes on the 2014 World Cup, being held in Brazil later this year, and Bruner said: "The extra capacity ensures fans will be able to watch the exclusive Sport 24 network, which is offered in conjunction with IMG Media, and catch key matches while travelling to South America and even to the tournament.



Panasonic's innovation has been well received by Middle Eastern carriers.

“We have the unique ability to scale coverage and capacity anywhere in the world where our customers fly. This flexibility not only helps guarantee that we will always provide the best coverage for airlines but also that we will continue to offer the highest bandwidth for the lowest price per bit.”

Looking further forward, Panasonic Avionics has an agreement with Intelsat for capacity on its forthcoming EpicNG satellites. This will provide wide Ku-band beams and high-power spot beams, offering three to five times more capacity per satellite than traditional platforms.

The expected throughput of the satellites is expected to be in the 25-60Mbps range, typically 10 times more than traditional Ku-band satellites and similar to, or even faster than, the speeds promised by Inmarsat's upcoming Ka-band GX Aviation service.

Coverage over the US and north Atlantic will be provided by Intelsat 29e, planned for launch in 2015.

A contract for capacity on the Intelsat 33e satellite (due in 2016) will provide high bandwidth to aircraft travelling from Europe to south east Asia and Europe to north Asia. It will also provide capacity and coverage for flights over Russia and the Middle East.

Panasonic signed a contract with SES last September for the use of its SES-6 satellite beams over North America, Latin America, Europe and the Atlantic Ocean.

Although the contracts are in place, the company had been held back from its planned expansion by the FAA's recent requirement for

bird strike testing on all satellite radomes. These are the white 'blobs' on top of an airliner's fuselage that house and protect the delicate antennas.

The FAA now mandates that bird strike tests are required to demonstrate that a flight can be successfully completed with any structural damage sustained if a radome is struck by a four-pound bird at speeds of more than 400mph.

The FAA ruling came after concern had been raised when a number of cracks were found in radomes fitted by US-based LiveTV on some 737s.

Airworthiness directive

There was no suggestion that Panasonic's radomes were found to be damaged, but the FAA concern resulted in an airworthiness directive issued in February 2014 that asked for checks on radomes fitted on certain Boeing aircraft.

New supplemental type certificates (STCs) for radomes are being allocated by the FAA as providers show compliance. Panasonic received FAA certification of a bird strike-compliant radome for Boeing 777-200 aircraft in March. This now paves the way for approvals on other aircraft types. Panasonic currently has more than 150 B777-200 aircraft scheduled for installation, and further STC approvals were expected for the B757 as *Arabian Aerospace* was going to press, and for the B767 in September.

Panasonic hasn't been letting the grass grow under its feet. In the week after receiving the STC it installed GCS on nine separate aircraft for five different customers, including a B747-400, three

B777-300s, two B747-800s, an A330, an A320, and an A319.

The company's in-flight Wi-Fi service, delivered via GCS, provides two-way broadband communications to the aircraft and supports internet browsing, e-mail, social networking and other crew and passenger applications.

In collaboration with AeroMobile's GSM service (of which Panasonic is a shareholder), passengers can also use their mobile phones, Smartphones and BlackBerry devices on board to make voice calls (if selected by the airline and allowed under law), send SMS text messages, or use services such as e-mail and internet access.

GCS also offers airlines the ability to improve operational efficiencies by enabling electronic flight bag, real-time weather updates, live engine monitoring and other services.

Panasonic recently signed a MoU with Singapore Airlines to explore how the system could be used for cockpit applications. A study will look at how GCS could link into the airline operations network to improve aircraft location monitoring, including aircraft speed, altitude and other performance parameters, in real time.

Panasonic's fast Ku-band access could potentially deliver real-time aircraft health monitoring, engine data and critical systems monitoring, prior to the aircraft's arrival.

Live customer relations management, electronic flight bag updates, operations and maintenance communications are also possible.

With the airline contracts, radome certification and satellite coverage in place, Panasonic thinks it has a bright future.

ACCL Aero Academy has opened its training doors. **Marcelle Nethersole** met managing director **Ajay Chaukulkar** to find out what the new centre has to offer.

Safety first for Sharjah academy

The new kid on the Sharjah Airport International free zone block is ACCL Aero Academy, a training-cum-repair management facility.

The company launched on December 17 2013, with the installation of an A320 full trainer.

Then, on February 13, the first batch of students arrived from launch customer Wings Academy, a wholly owned subsidiary of Air Arabia.

"I have an entire A320 trainer and cabin service; it is the actual full aircraft fuselage," said Ajay Chaukulkar, ACCL's managing director.

"Air Arabia wants to launch a training unit as a profit centre. We provide the trainer and facilities and Air Arabia brings its own instructors and crew."

ACCL also boasts live fire training, which complies with EASA rules and approval, to enable cabin crew to learn how to combat blazes in an enclosed environment.

Services on offer

ACCL and Wings Academy have signed a five-year contract and Chaukulkar said he also expects other airlines to be showing an interest in the services on offer.

"A lot of A320 airlines will look to us, as it is an actual aircraft that we use to provide the training," said Chaukulkar. "We can encompass a range of practices, from smoke in the cabin to pilot incapacitation."

Training and safety is something about which Chaukulkar is passionate. A former instructor, he believes training isn't high enough on the agenda for some airlines.

"Emirates is putting a lot of investment in safety training,

as are FlyDubai and Qatar Airways; it's imperative and airlines in this region know that. However, the same can't be said for other regions of the world, namely India. I am actually thinking of setting up a similar training facility in Delhi.

"As an Indian, I want to focus on India as I believe it truly needs help in training.

"I also know other airlines that cut costs on the training aspect, and it's dangerous."

Chaukulkar added: "Cabin crew need to learn very technical points now. It's important that proper procedures are practised; it also gives the staff confidence.

"The crew has to be prepared to do more than just serve a meal and drink. What if there is a health scare on a flight, or a fire? The concept of glamorous trolley-dollies is over; it's more about safety first as opposed to service. It all needs to be part of the syllabus."

Chaukulkar claimed ACCL is the only private company that has training devices that were fully EASA compliant. "I want to bring this to all levels of airline operation, from charter to VIP... you name it," he said.

The company is also looking forward to including the 737NG as the next training device.

Spatial Design, which modified the A320, will also modify the 737NG and ACCL hopes to place an order this summer for it to be commissioned by the end of 2014.

"I service the narrow-body industry and these two aircraft types are the biggest players in the region," explained Chaukulkar.

Training rooms

The facility in Sharjah covers 600sqm. "We have two training rooms but are in the process of building two more," said Chaukulkar. "I also want to hire our own instructors. I am evaluating cabin crew instructors from the Middle East, India and Turkey."

At the moment, ACCL is a 12-hour operation but Chaukulkar wants to change that to round-the-clock, especially given his plans to provide full-flight simulator training for pilots in 2015.

"I know there are a few training companies in the region but I feel the demand for crew members is way ahead of its supply and if you want to make the aviation world safe it is important to have quality crew members, cabin or flight staff," he said.

The company also has a second core business; ACCL Aeromotive Services concentrates on current and classic engine repairs with established MROs worldwide, including Lufthansa Technik.

Chaukulkar said: "I'm a part of the service industry now – I will cater for the customers as to what they want.

"Personally, setting up the company was a giant step for me, and I really hope established airlines will see this vision is of use to all those who want to be a part of the airline fraternity the correct way."

"The demand for crew members is way ahead of its supply and if you want to make the aviation world safe it is important to have quality crew members, cabin or flight staff."

AJAY CHAUKULKAR



Ajay Chaukulkar: "I have an entire A320 trainer and cabin service."

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إتحاد الطيران الخاص في الشرق الأوسط
MIDDLE EAST BUSINESS AVIATION ASSOCIATION

The third Abu Dhabi Air Expo attracted record numbers of visitors and exhibitors. The show, aimed at general aviation – from microlights to business jets – enjoyed a relaxed atmosphere with more than 100 aircraft displayed, which led to fun in the sun for all. Arabian Aerospace writers and photographers were on site to capture the finest moments.

Record show sees billion-dollar sales

Show organisers saw a 30% increase in attendance with 16,900 visitors and 175 exhibitors from local, regional and international companies participating.

Various general aviation (GA) sales and other announcements at the event saw Abu Dhabi claiming \$1.3 billion of deals. The deals included:

- 10 sales by Aeroprakt, the ultralight aircraft manufacturer;
- 3 new SR22 Cirrus Aircraft sold with GCC specification;
- More than 10 sales by AutoGyro, the German Gyro Copter;
- 3 aircraft (P2010 and P2008) sold by Tecnam.



His Excellency Ali Majed Al Mansoori, chairman of Abu Dhabi Airports, His Excellency Sheikh Sultan Bin Tahnoon Al Nahyan, chairman of Abu Dhabi Tourism & Culture Authority, and Yousif Al Hammadi, general manager of Al Bateen Executive Airport, lead the VIP group for the opening of the Air Expo.



AgustaWestland aircraft are now better catered for in the region thanks to a deal between the manufacturer and Abu Dhabi Aviation.

Abu Dhabi centres in on helicopter services

Abu Dhabi Aviation has launched a new helicopter spare parts company called AWAS in a strategic partnership with AgustaWestland to cater for the Gulf and broader Middle East helicopter needs.

There are more than 150 AW helicopters in the region.

"This will enhance our capabilities and constitutes a leap forward in the quality of services provided to customers, said Abu Dhabi Aviation CEO Nadder Ahmed Al-Hamadi.

"Taking into consideration that AgustaWestland helicopters are widely used by Abu Dhabi Police, Dubai Police Air Wing, Oman Police, the Lebanese Air Force, the Royal Jordanian Air Force, and Aramco of Saudi Arabia, we will not only be able to expand the coverage of services we provide to our customers, but

also attract new customers."

Mark Thistlethwaite, CEO of the new venture, said the deal brought added value to the UAE in terms of aircraft technical knowledge transfer, and would "pave the way to a long-term commercial partnership with the UAE aviation sector".

He said: "AWAS will be able to respond quickly and immediately to our customers' requirements for spares, and also provide helicopter inspection, repair, modifications and overhaul facilities in the UAE without having to move the aircraft to its manufacturing companies in Europe or the USA."

■ Abu Dhabi Aviation also announced the delivery of the first AW139 simulator in the region, and the establishment of a specialised civilian helicopter training centre.

The rain falls mainly from the plane

Visitors to the show found out a little more about why the grass is just a little bit greener in the UAE.

Members of the National Centre of Meteorology and Seismology (NCMS) were present along with their special rainmaker aircraft.

NCMS specialises in making it rain, seeding convective or cumuliform clouds with natural salts to promote rainfall.

Ali Al Musallam, head of cloud seeding at NCMS, said: "We've been doing this since 2004, dropping natural salts like sodium, potassium and calcium chloride into the mountainous northern region of the UAE. Cloud seeding can increase valuable rainfall by between 15-40%," he said. "Summer is the best time, between May and September, and we often seed clouds three to four times a week."

The NCMS's cloud-seeding King Air aircraft was on the static – and the show weather remained fine.

Saving money with AvioGuard

Satellite communication service provider Satcom1 launched a new product, AvioGuard, which promises to prevent users from overspending on unnecessary data traffic while flying.

It protects the user from system and software updates, background applications and video streaming, all of which can consume large amounts of data that is often not essential while in flight.

Research and development manager Francois Goudal, said: "AvioGuard is our response to business aviation customers' needs. As the cost of using data on board is still relatively high, we wanted to develop a service that will moderate data traffic in an intelligent way, making the user only spend money on data they consider essential."



John Kassis, Bombardier regional vice president Middle East and Africa, congratulates Captain Mahmoud Ismael, chief operating officer, Falcon Aviation Services on the deal.

Falcon gives CSeries another boost

Abu Dhabi-based Falcon Aviation Services (FAS) signed a letter of intent to buy a Bombardier CS300 aircraft with an option for another.

This makes FAS the first customer for the CSeries aircraft in the UAE and only the fourth in the Middle East.

Based on the list price, a firm order for the two CS300 aircraft would be valued at approximately \$156.5 million.

Captain Mahmoud Ismael, chief operating officer, FAS, said: "The superb versatility of the CSeries will allow us to offer a unique aircraft configuration, catering specifically to business, corporate and elite travellers in the Middle East, and connecting to north Africa, Europe and the Far East.

"Its fly-by-wire technology, new engines with a 12:1 bypass ratio, and 2,500-mile range makes it a very impressive aircraft."

FAS is based at Al Bateen Executive Airport and operates a fleet of corporate jets running VIP charter flights, as well as a fleet of helicopters serving the offshore oil and gas industry. The company also conducts search and rescue; aircraft management, maintenance, repair and overhaul; as well as consulting operations.

The evolution > of JMB Aviation

JMB Aviation attended the 2013 Abu Dhabi show last year looking for a local dealer for its VL3 Evolution light aircraft – and it got one.

"On the static here for the 2014 show is the VL3 aircraft for our new Saudi dealer, which will be delivered to Riyadh after this show," said CEO, Jean Marie Guisset.

The VL3 was produced by parent company, JMB Aircraft, which has its own private airport in Amougies, Belgium.

"The plane is built to EASA standards," said Guisset. "It is an aerodynamically pure, full-composite, low-wing aircraft with fixed or retractable landing gear.

"The VL3 uses the same technology as a glider, but it is technically built like a Formula One car, with carbon and Kevlar.

"It's very smooth, very quiet, but very fast; it is actually the fastest VL plane on the market, flying at 145 knots per hour. It is able to fly at a very low approach speed of 75-85km/h, which is ideal for short landings."

The two-seater aircraft can take off and land in 150 metres.

Guisset added: "This ultra-light aircraft will be the best choice for touring due to its large interior (115cm) and its big luggage compartment."

Guisset, who has clocked up more than 1,000 flying hours in the VL3, was at the show to speak to potential investors and promoters but did express his worry at the lack of flight schools in the region.

"The Middle East is a growing market in terms of aviation and it is definitely the region where we will see the biggest growth in pilots, but it will take at least another three years as there needs to be more flight schools in the region," he said.

JMB's VL3 now firmly part of the region's general aviation scene.



The Avanti was at Al Bateen but was constantly leaving its spot on the main apron for more flights.

Piaggio hammers regional sales

Piaggio Aero may enjoy the backing of Abu Dhabi investment arm Mubadala, but that didn't mean it could display an aircraft, as the installed fleet in the region is constantly flying.

Piaggio has three of its Avanti twin-turboprop executive aircraft PA180s flying with the UAE Air Force and a fourth is with a customer who is about to upgrade to a newer model because he has enjoyed using the aircraft type so much, according to Davide Pozzolo, sales manager for EMEA.

However, the company was really aiming to highlight another of its products at the Expo.

Launched at Abu Dhabi's IDEX defence exhibition a year ago, Europe's largest medium-altitude, long-endurance unmanned air vehicle, the P.1HH Hammerhead is derived from the P180. The Italian air force has ordered 10 of the type.



Arabian Knights on home ground

The UAE Air Force and Air Defence's Al Fursan (The Knights) formation aerobatic display team was wooing the crowds on its 'home turf' at the Abu Dhabi show.

The team has worked non-stop since its inception in 2010, when it was created to show off the skills of its fighter pilots.

The team's squadron commander, Captain Lt Colonel Pilot Nasser Ahmad Al Obaidli, said: "There has been a lot of trust between us from the beginning. We train together, stay together and socialise together."

Al Fursan originally consisted of four pilots from the Flying Instructors' School at Al Ain, flying four Aermacchi MB339 Italian jet trainers in standard camouflage. Today the seven-ship team represents the seven emirates that make up the UAE.

Falcon spreads its wings

Falcon Aviation Services opened its newly constructed 106,000sqft authorised Embraer service centre at Bateen Executive Airport during the show.

The new facility makes Falcon one of the largest executive MROs in the Middle East. The company was first appointed as an Embraer-authorized centre in 2009, providing line maintenance support for the Legacy 600. It was the first service centre in the Middle East to support the Linage 1000 in 2009.

The new centre features workshops, logistics facilities, a 55,000sqft air-conditioned hangar, and a 25,000sqft undercover wash bay, which supports aircraft washing and detailing.

The first floor consists of a 3,000sqft environmentally controlled parts warehouse, continuing airworthiness management organisation (CAMO) office, training facilities, quality compliance and safety department, and management offices. In the final stages of completion is the addition of a dedicated customer lounge with internet, TV and office facilities.

When in Rome ... >

Italian FBO and flight support provider, Argos VIP Private Handling, was at Abu Dhabi promising Middle Eastern customers a warm welcome and good taste when they visit Italy.

"Whenever landing, Argos coordinates each single detail of the flight in the quickest and easiest way possible," said Fabio Ferlini from the Argos commercial department. "We follow our clients from the aircraft request as brokers, to the permit arrangements. Then we offer VIP ground-handling, crew and passenger accommodation and transport, VIP passenger assistance, personal concierge, fuel and exclusive direct in-flight catering."

Bahco tells a tool story...



Tool supplier Bahco was at Air Expo to expand its aviation customer base in the region.

The company, which is owned by the Snap-On Group in the US, is big in the Middle East, but not necessarily in the aviation market.

Roger Marti, Bahco's regional sales director, said: "We can offer tailor-made tool solutions for maintenance, repair and overhaul centres."

The company said these had been developed in conjunction with professional aircraft technicians from market-leading organisations, such as Lufthansa Technik.

"Bahco has a rich heritage," said Marti. "We invented and patented the first adjustable wrench more than 100 years ago."

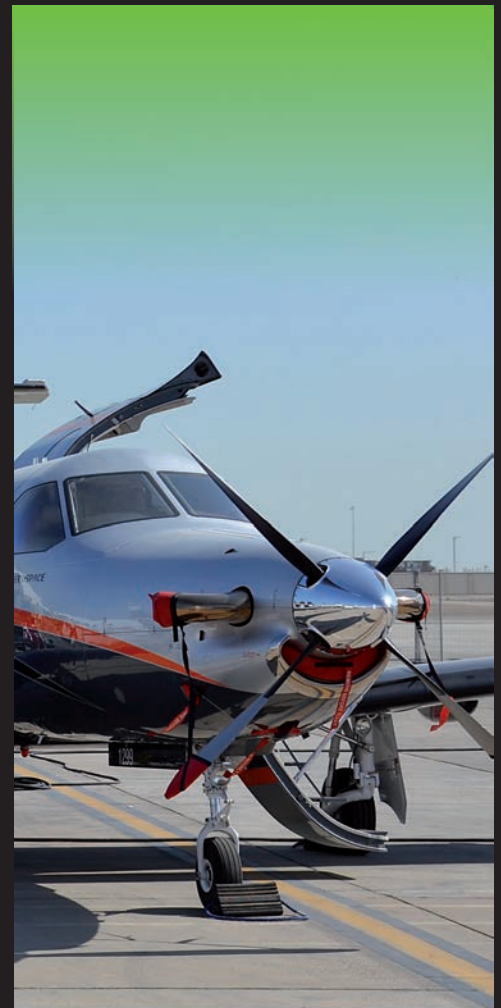
And it turned out to be popular. The company has so far produced more than 100 million of them.



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Dr Ashley Nunes
gives his view on
why manpower
represents the
Achilles' heel of
aviation growth in
the Middle East.

Unfortunately, recruitment isn't as easy as 1-2-3

Aviation is a vital part of an increasingly globalised world economy. Its economic contributions are the driving force behind financial investments aimed at increasing aviation system capacity, as governments compete to ride the economic globalisation wave and seek to claim a greater share of the financial benefits for their populations.

This is especially true in the Middle East where, according to Amadeus, a leading technology partner for the global travel industry, a new set of socio-economic and geo-political factors are enabling the region to eclipse the traditional travel centres of North America and Europe.

Airlines in this region are expected to experience some of the highest growth, as passengers are increasingly lured by the appeal of new aircraft and impeccable service offerings.

But, according to Associated Press airlines writer Scott Mayerowitz, the real key to the airlines' incredible growth is geography: their hubs in Qatar and the United Arab Emirates are an eight-hour flight from two-thirds of the world's population.

Economic opportunity

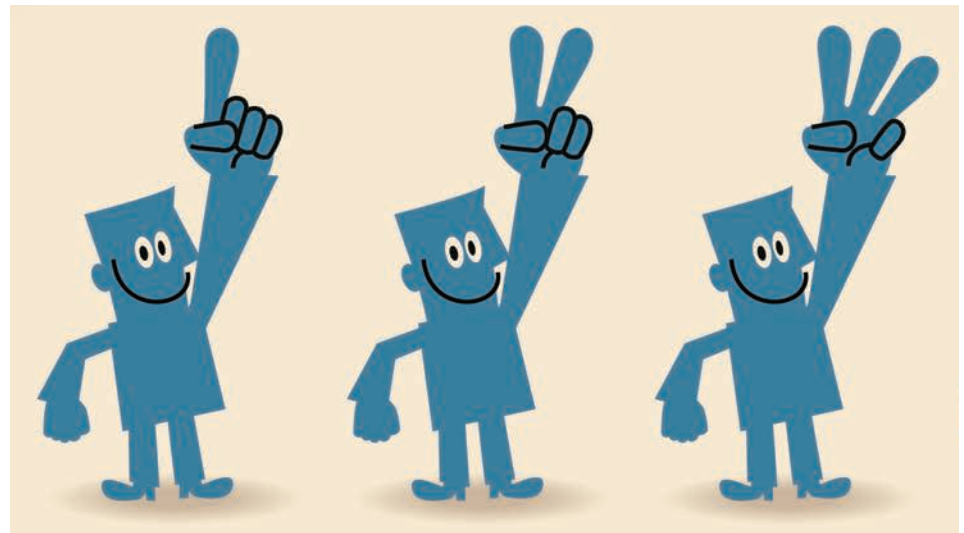
Sensing economic opportunity, local governments have made tremendous financial investments to create the airport infrastructure necessary to boost regional aviation capacity. And these investments are beginning to pay off.

Mayerowitz pointed out last year that passengers, who had historically utilised London, Amsterdam and Frankfurt as layover points, were increasingly switching planes in Dubai, Doha and Abu Dhabi.

Meanwhile, Air Traffic Management magazine's Aimee Turner has reported that the total aircraft movements to/from and within the Middle East region are estimated to increase to 2.3 million in 2025, reflecting an astonishing average annual growth rate of 7.6%.

According to Amadeus, this boom in the aviation sector is poised to have a significant influence on future global air traffic, and the Middle East's strategic location will enable the emerging national carriers to connect most metropolises via a single hub.

Yet, despite all the infrastructure investment in the region, aviation has been, and will continue to be, an essentially human enterprise.



The economic benefits afforded by aviation are ultimately dependent on a capable scientific and technologically aware workforce. And it is a workforce that is rapidly changing.

This change can best be understood within the context of global aging (as researched by Andreev & Vaupel, 2005), a phenomenon characterised by declining fertility rates and increasing life expectancy.

Safety-critical professions

Across multiple safety-critical professions – energy, medicine, aviation etc – an entire workforce generation is reaching retirement age. As an Aerospace Industries Association (AIA) report in 2008 recognised, countries are not producing the quantity or quality of workers required to even begin replacing those who have served so well, let alone grow to cope with projected demand.

Current industry forecasts suggest that, by 2032, nearly a million new pilots, technicians, cabin crew and air traffic controllers will be required. This growing imbalance between workforce supply and service demand represents the industry's greatest challenge.

There are a multitude of reasons why workforce shortages exist in aviation, but high attrition rates associated with the initial selection and training of recruits is among the most important.

For example, the selection rate of air traffic control candidates at Eurocontrol is about 6%. This means that of every 100 applicants that apply, only six will obtain the qualification scores necessary to continue. Of those, a significant percentage will not successfully complete training for medical reasons or inability to meet the qualification standards. For example, at the Maastricht ATC facility, the failure rate of trainees is around 40%.

The immediate consequence of such standards is reduced access to a qualified aviation workforce and a subsequent reduction in service provision. However, because of air transportation's unique characteristics (such as its speed, reliability and safety), its economic contributions are unique. Consequently, reducing service to levels that match dwindling workforce access would be likely to have serious consequences, as seen in Austria in 2008. In that instance, a shortage of air traffic controllers prompted massive delays and flight cancellations, producing €5.8 million (\$8 million) in costs to Austrian Airlines.

Similar trends are now being observed in India and Indonesia, where the economic benefits of affording air service to an expanding middle class, are being impeded by workforce shortages.

An alternative to addressing these shortages has been to increase the productivity of the

■ **Dr Ashley Nunes, PhD, is a principal scientist at ISA Software, where his research focuses on operational performance and behavioural economics in aviation. He has been involved in advanced technology development and impact analysis in the aerospace and defence industry for more than a decade and has held research appointments at Yale University, the Massachusetts Institute of Technology, and Paris Descartes University.**



existing workforce. However, research suggests this carries consequences of its own. Historically, these consequences have been conceptualised in terms of decreased safety; because humans have limited capacity to do a job, they can, at times, become overwhelmed, resulting in safety being compromised.

More recent studies also suggest that increased productivity carries economic consequences. For example, exposure to higher traffic levels can have an impact on the quality of air traffic controllers' service, resulting in decreased routing efficiency; a result which has economic implications.

This is especially problematic for an industry characterised by high rates of cash flow and narrow profit margins, where typical returns on revenue average only a few per cent. Hence, the economic benefits associated with increased productivity in response to workforce shortages, may be offset by limits in working capacity of humans.

Aviation workforce shortages are, therefore, poised to have negative impact on global economic growth. However, the regional impact may be particularly profound for two reasons.

Firstly, the industry in the Middle East is heavily reliant on the migration and retention of a highly skilled expatriate workforce (air traffic controllers, pilots etc). The majority of these come from countries experiencing workforce shortages of their own because of global aging. Consequently, as existing workers retire and the global skilled workforce pool contracts, replacing them will become increasingly difficult. And, because the region is disproportionately reliant on a highly skilled expatriate workforce, the resulting economic impact may well be more profound compared to other regions.

A second cause for concern is that, while

aviation represents a means of diversifying the region's economic portfolio, its potential as a revenue generator is highly dependent on specialised workforce access. Any access changes will profoundly affect regional economic growth.

Regional governments have turned their focus to attracting, recruiting, and grooming talent from within the region through nationalisation programmes. Yet, these, while timely and important, present other challenges.

First, uniform implementation of nationalisation programmes across all sectors does not address disproportionate workforce gaps in specific sectors (such as aviation) that are considered to be critical to the long-term economic security of the region.

Increased errors

Second, the introduction of recruits carries with it the prospect of increased errors due to inexperience. Such errors decline as greater familiarity is acquired on the job, but its impact on regional aviation safety must be considered.

Finally, whereas nationalisation may reduce reliance on foreign labour, it cannot circumvent the cumulative effects of global aging. For example, in 2012, the population of the United Arab Emirates and Qatar over the age of 60 was 1.4% and 2.2% respectively. These numbers are expected to grow to 36.3% and 27.9% respectively by 2050 (Global Age Watch, 2013). Consequently, nationalisation is a short-term answer because the most prominent contributor to a contracting workforce is declining fertility.

A viable solution lies in alternatives that enable aviation stakeholders to achieve higher productivity from a declining workforce in a sustainable manner.

One such alternative is technology, and proponents argue that scientific advances are facilitating the creation of a brave new world, one in which increasing aviation demand will be seamlessly accommodated by new technologies.

An historical review of aviation certainly lends some support for this supposition. From fly-by-wire systems to conflict detection and resolution alerts, aviation technology has come a long way from the times of Wright Brothers and Archie League. Yet, during unexpected circumstances, when technology fails, a human must still be able to respond.

Hence, research efforts are needed that address fundamental questions such as: For how long can a human work? At what level of effort? What are the trade-offs that exist in terms of cost and efficiency at varying levels of shift duration and intensity for workers? And, perhaps most importantly, what are the optimal conditions under which humans and technology can work together to ensure continued safety and profitability?

Aviation's economic promise is ultimately dependent on a highly skilled workforce that is undergoing unprecedented demographic changes.

These changes, which had their origins in the 19th and 20th centuries and are continuing well into the 21st century, are transforming the world and they present enormous challenges, particularly as they relate to regional economic growth.

Yet, there is also an opportunity for governments to find a solution to a problem that has economic and social consequences for all of mankind. Given the interconnectedness of the modern era, surely this would be a contribution of the highest order.



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Alenia Aermacchi goes for Grasso

The Alenia Aermacchi board has appointed former Selex managing director, Giancarlo Grasso, as chairman after the resignation of Amedeo Caporaletti. Grasso will manage the company's business strategies, a responsibility he will exercise in coordination with the chief executive officer.

AIM announces two new directors

Aircraft cabin interiors provider, AIM Aviation, has announced the appointment of Dave Barger and Steve Ridgway as non-executive directors.

Barger helped found JetBlue Airways in 1998 as president and chief operating officer.

"AIM Aviation is uniquely positioned to influence the continued evolution of commercial aviation and I look forward to bringing my experience to the table to help guide the company," he said.

Ridgway, who was chief executive of Virgin Atlantic from 1998 to 2013, added: "I have known AIM for many years and have always

BRAYFORD AIMS TO TAKE SAFI AIRWAYS TO NEW HEIGHTS



John Brayford, former CEO of RAK Airways, has been appointed as the new director commercial of Dubai-based Afghan national carrier, Safi Airways.

Brayford has more than 25 years' experience in the commercial aviation industry and, in addition to RAK, has worked in strategic management positions for British Airways, Flybe, Qatar Airways and Arik Air.

Safi said his expertise and aviation knowledge would be a valuable asset, paramount in carrying the airline to new heights.

challenged them to innovate and provide high quality service to their customers, so will enjoy being able to help that further in my new board role".

Etihad appoints head of media

Etihad Airways has appointed Amina Taher, a UAE national with more than 10 years' experience in the field of marketing and communications, as its new head of media relations.

Taher, who joins Etihad from the Mubadala

Development Company (MDC), where she was head of social development and sponsorship in the group communications unit, will be responsible for all aspects of the airline's expanding media relations programme, reporting to vice president, Michael Venus.

Marketing VPs for Embraer

Peter Griffith has been appointed Embraer vice president sales and marketing, Europe and Africa to lead sales efforts

in the region, while Peter Walker has become vice president sales and marketing Middle East and Asia-Pacific.

Pearce quits Oman Air

Wayne Pearce, the chief executive of Oman's national carrier, Oman Air, quit the airline at the end of February, after two years at the helm.

Airline chairman, Darwish bin Ismael bin Ali Al Balushi, said: "Wayne has done an excellent job of steering Oman Air through a key phase of our development. Following a period of rapid expansion, all the vital elements are now in place for the next phase of our growth, while also safeguarding continued increases in passenger numbers."

Balushi said the search for a new CEO was now under way.

FSF in safe hands

Jon Beatty, former president and CEO of International Aero Engines, has been named as the new president and CEO of the Flight Safety Foundation.



Caglar Ozturk.

Air Charter Service Istanbul office

Air Charter Service has opened an office in Istanbul headed up by Caglar Ozturk, who has been working in the company's Dubai office since 2011.

Justin Lancaster, commercial director, said: "We have been planning to have a presence in Turkey for a number of years and we feel Caglar is ideal to kick-start that, as he moves back to his homeland. Initially, the operation will only be offering cargo charters, but we will be looking to add a passenger department in the near future."

The company has also appointed Andrew Summers as MD of its Middle East operation, headquartered in Dubai.

ETIHAD APPOINTS NEW SENIOR VP OF SALES



Etihad Airways has appointed James Mueller to the new position of senior vice president sales. With more than 20 years' experience in the aviation industry, Mueller joins Etihad from United Airlines, where he worked for five years in various senior roles, including vice president Asia Pacific and vice president Atlantic and Pacific sales.

Mueller, a US citizen, will initially report to Etihad chief commercial officer Peter Baumgartner during the group structure's transition phase.

Mueller said: "My interest in aviation extends beyond the 20 years I have spent in the industry. With the recent creation of the Etihad Aviation Group, there's no doubt that future developments will be even more ambitious and I am excited about the opportunity to contribute by leading the ever-expanding sales functions of Etihad Airways."

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Paul James

Marcella Nethersole *speaks to the sales manager at DC Aviation Al-Futtaim (DCAF).*

1

■ DCAF's FBO opened at Dubai World Central recently. How is it going?

The joint venture between Dubai-headquartered Al-Futtaim Group and Germany's DC Aviation is the first of its kind at DWC.

Opened in November 2013, we offer a fully integrated FBO and hangar facility with line maintenance capability.

The FBO operation continues to be ever popular with our customers and has recorded strong growth in the first quarter of 2014.

2

■ Can you give more detail about the facility?

This joint venture brings together DC Aviation's expertise in the business aviation sector and Al Futtaim's local knowledge.

The facility offers a 5,700sqm state-of-the-art fully air-conditioned hangar and 1,300sqm VIP lounge. The hangar is capable of holding four Airbus A319CJ and two Bombardier Global Express or Gulfstream Jets.

The facility also includes four VIP lounges, crew rest room and shower areas, conference room and valet car parking.

There is also a dedicated ramp parking area spanning 7,700sqm, the key feature being that aircraft can be parked a few feet away from the FBO, allowing passengers to walk onto or off the aircraft in a matter of few steps.

3

■ Why did DCAF choose Dubai World Central as its hub?

With the ever-increasing number of aircraft flying into Dubai International, slots and hangar space are at a premium. Business jet delivery is expected to double over the next 10 years, so the need for a strategically located FBO and MRO facility will also greatly increase.

With this in mind, there was no better location than DWC. The airport is conveniently located just 30 minutes from Dubai Marina, The Springs, The Palm and Arabian Ranches.

4

■ What does your role involve?

I look after the aircraft managed by DC Aviation Al Futtaim. I am the key point of contact between the company and our aircraft owners. This involves flight management, liaising with operations, maintenance and ground-handling departments to ensure that everything runs smooth and seamlessly.

DC Aviation has a fleet of 31 aircraft based out of Stuttgart. Part of my role involves managing the charter fleet and ensuring the expectation of our charter clients is met.

5

■ What is your background?

I started my career with a well-known operator based in the Middle East before joining a UK-based charter brokerage.

“ This joint venture brings together DC Aviation's expertise in the business aviation sector and Al Futtaim's local knowledge. ”



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