



# ARABIAN AEROSPACE

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

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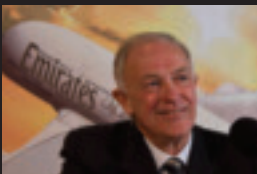
## ON TOP OF THE WORLD

**DUBAI AIRPORTS' CEO SHARES THE  
SECRETS OF THE WORLD'S NUMBER ONE  
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### GENERAL AVIATION

Around  
the world,  
powered  
by the sun

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# Seen with greater frequency.

With E190s now in service to Royal Air Maroc (RAM), E-Jets are spotted even more frequently in Africa and the Middle East. In fact, greater frequency — as an operations goal — is often easier to achieve with smaller-capacity E-Jets complementing larger narrow-bodies. Witness RAM's opening of new high-frequency short- and medium-haul E-Jet routes from its Casablanca hub. It's a strategy of matching capacity with demand. A strategy that works every time. Or at least quite frequently.

Other E-Jet operators in Africa and the Middle East include Egyptair Express, Kenya Airways, LAM Mozambique, Oman Air, Petro Air, Royal Jordanian, Royal Omani Police, Saudi Arabia Airlines, and Saudi Aramco.

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Commercial Aviation

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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:**

Sophie Fullam  
sophie.fullam@arabianaerospace.aero

**Circulation Dept:**

Clare Brown  
clare.brown@arabianaerospace.aero

**EDITORIAL**

**Editor-in-chief:** Alan Peaford

alan.peaford@arabianaerospace.aero

**Deputy Editor:** Marcella Nethersole

ella@aerocomm.aero

**Defence:** Jon Lake, Alan Warnes

**Air Transport:** Alan Dron, Martin Rivers

**Business Aviation:** Liz Moscrop, David Calderwood

**Cargo:** Tom Pleasant

**Helicopters:** Paul Derby

**General Aviation:** Liz Moscrop

**Space & Technology:** Steve Nichols

**Interiors:** Barbara Cockburn, Marcella Nethersole

**MRO & Propulsion:** Geoff Thomas

**Business:** Ian Sheppard

**Airports:** Keith Mwanalushi

**Picture Editor:** Ian Billingham

**Photographers:** Paul Merritt,  
Tom Gordon, Mark Wagner

**Design:** Chris Murray

**Production Editor:** Rick Haden

**Sub-Editor:** Steve Knight

**Regional Editors:** Barbara Saunders (UAE)

David Calderwood (France), James Wynbrandt (USA)

**Contributors:** Thomas Billingham (Dubai), Mohammed Ali  
Ahli, Martin Ferguson, Kelly Clark, Ian Goold, Claire  
Apthorp, Thomas Billingham (Dubai), Alan Warnes, Terry  
Spruce, Jamie Hunter

**Editorial head office:**

Aerocomm Ltd, The Tower, Guardian Avenue,  
North Stifford, Essex RM16 5US UK.  
Tel: +44 137 537 1421

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## No resting on our laurels as far as safety is concerned

The tragic event of the Germanwings crash in the French Alps in March has cast a shadow over the whole aviation industry.

The co-pilot, 27-year-old Andreas Lubitz, flying for the Lufthansa-owned low-cost subsidiary, is thought to have deliberately crashed the Airbus in the French Alps. All 150 aboard died.

The spotlight is now turning on to the airline's procedures as, according to documents, a Lufthansa doctor wrote that Lubitz should continue treatment after depression.

This avoidable disaster followed on the heels of the still-missing Malaysian flight MH370, the Boeing 777 which vanished somewhere in the southern Indian Ocean prompting calls for automatic – tamper-proof – tracking, and the loss of flight MH17 over Ukraine, when the passenger jet was shot down by anti-aircraft missiles.

And so safety is now genuinely at the top of the agenda.

Dubai hosted the World Aviation Safety Summit just before the March 24 Germanwings incident. It was encouraging to hear about the focus the UAE's General Civil Aviation Authority (GCAA) and the organisers, Dubai Civil Aviation (DCA), are putting on safety.

Indeed, the GCAA should be congratulated for its recent success. The UAE has recorded the best results in an International Civil Aviation Organization (ICAO) safety audit, rating it the highest in the world for compliance.

Described as "an enormous and unprecedented achievement" the UAE scored a success rate of 98.86%, which is the highest rate in history given by ICAO's universal safety oversight audit programme.

But there must be no resting on laurels.

Now is the time to be looking at everything we do that affects safety. Are we training our new pilots correctly? Are we considering the work patterns and pressures that pilots are under? And has the way that technology has developed on the modern flight deck actually gone too far?

A greater transparency about how these issues are being addressed will bring confidence back to the public perception of our industry. And we should continue to remind people that commercial air transport's accident rate improved to 0.23 per million flights during 2014, down from the previous year's figure of 0.41.

However, these figures made no account for MH17, as that was considered a deliberate act, as indeed the Germanwings tragedy will be. If MH370 also turns out to have been a deliberate act, rather than an accident, the 2014 accident statistics would fall from 969 deaths to 432.

As my old friend David Learmount at Flightglobal said: "Accidents are mishaps caused by circumstances that conspire to cause damage to an aircraft and/or those on board. Deliberate acts intended to cause such damage are, by definition, not accidents – but when they occur they are often the cause of death. So what we need to ask ourselves is: Are the airlines and air transport industry responsible for foreseeing – and thus preventing – deliberately hostile acts, just as they are responsible for working to reduce the risk of accidents to the lowest possible level?"

I think they are.

Alan Peaford, editor-in-chief  
*Arabian Aerospace*



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COVER: Paul Griffiths, CEO Dubai Airports Company. Picture by Dubai Airports.

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**CITATION JET** LEADERSHIP



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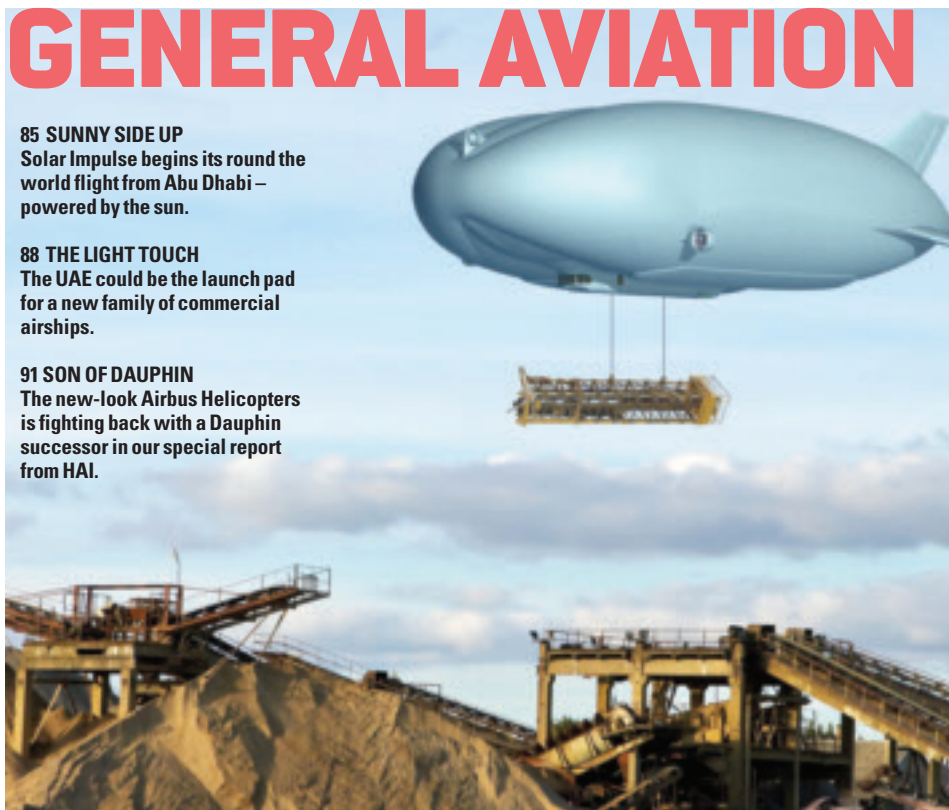
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**CONTACTS :**

**Marie-Pascale Jouaville**

Tel : +33 (0)5 46 82 85 87

[mariepascale.jouaville@stelia-aerospace.com](mailto:mariepascale.jouaville@stelia-aerospace.com)

**Claire Nurcombe**

Tel : +33 (0)5 81 91 45 48

[claire.nurcombe@stelia-aerospace.com](mailto:claire.nurcombe@stelia-aerospace.com)

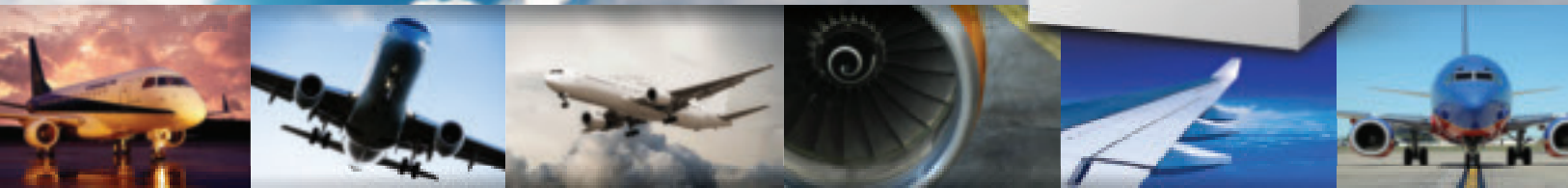
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## Hurghada uses SITA for airport solutions

Egypt's Hurghada International Airport is transforming the passenger experience at its new terminal with assistance from air transport IT specialist, SITA.

The airport is using SITA's passenger processing platform, baggage management and airport operations systems, to enhance the passenger experience with new self-service options, the latest baggage management solutions and shorter queues. The new solutions are also helping the airport improve operational efficiency by integrating airport systems and providing a single control point for airport operations.

## Emirates introduces Apple Watch app

Emirates was scheduled to launch its Apple Watch app on April 24, becoming the first airline in the Middle East and African region to offer the facility.

"In today's connected world, mobile technology plays an increasingly important role in the overall travel experience of our passengers. The Apple Watch platform allows us to connect with travellers on a more personal level by providing real time information throughout their journey," commented Alex Knigge, senior vice president, Digital at Emirates.

## Abu Dhabi to host WCA conference

Freight forwarder, WCA, has announced that its annual global conference will be held in Abu Dhabi in 2016.

Expected to attract around 2,500 freight forwarder delegates, the event will be held at the Abu Dhabi National

## Air Arabia adds Doha from new RAK hub

**Air Arabia has added Doha to the list of destinations it serves directly from its recently opened Ras Al Khaimah hub. The low-cost carrier will fly four times per week to Qatar, bringing the total number of destinations operated from the Ras Al Khaimah International Airport to nine.**

**Group CEO, Adel Ali, said: "When we launched our Ras Al Khaimah hub in 2014, we made a firm commitment to increase connectivity to and from the Northern Emirates. Ras Al Khaimah is one of the region's most attractive destinations and we are confident that our newly-launched flights will provide customers with great connectivity between both cities, both for leisure and for business."**



## Radar technologies to improve ATC



**Airbus Defence and Space has introduced new technologies in its latest airport surveillance radar next generation (ASR-NG) product.**

**The company demonstrated real scenarios in front of international customers, which showed off enhanced detection capabilities and a significant increase in range to 120nm (220km).**

**Other key features of ASR-NG are the complete mitigation of wind farm effects, a new primary surveillance radar 3D height measurement and resistance against interference by 4G/LTE mobile phone signals.**

**Thomas Müller, head of Airbus Defence and Space's electronics business line, said: "With its new capabilities, ASR-NG addresses the most urgent and recent concerns of air surveillance and air traffic control customers."**

Exhibition Centre (ADNEC) from March 10-16.

Humaid Matar Al Dhaheri, acting chief executive officer at ADNEC said: "ADNEC's latest strategy places significant emphasis on the conference aspect of our business. To deliver this objective, we are proactively developing our industry network and bringing in a larger canvas of world-class conferences to Abu Dhabi."

## Transworld deal extended

Honeywell Aerospace has extended its agreement with Transworld Aviation in the Middle East to include component supplies for two of its most widely used turboshaft engines in the region – the T53 and T55.

Transworld Aviation is already a regional distributor of Honeywell's health and usage monitoring systems

(HUMS), a technology that improves helicopter safety and maintenance by communicating to crews when maintenance may be required.

## Etihad tops for cargo

Etihad Cargo has been recognised as 'Cargo Airline of the Year' by American magazine, *Air Transport News* (ATN), at a gala dinner awards ceremony in Geneva.

## MEA in 'world first' with new simulator

Middle East Airlines (MEA) has inaugurated the world's first CAE 7000XR Series full-flight simulator (FFS) at the Middle East Aviation Academy in Beirut.

The CAE 7000XR is the next generation of CAE's simulators, offering unprecedented realism.

The Airbus A320 FFS passed the Lebanese Directorate General of Civil Aviation (DGCA) acceptance and is now ready for training. It was qualified in early April to the highest-fidelity certification (level D), by the European Aviation Safety Agency (EASA).

CAE also delivered to the airline a suite of CAE Simfinity training devices, including one A320 Airbus pilot transition trainer (APT), one A330 APT and an A330/A320 CAE Simfinity virtual simulator (VSIM).

## LT gets Airbus A350 approval

Lufthansa Technik has received approval from the European Aviation Safety Agency (EASA) as a maintenance organisation for the new Airbus A350.

## Emirates Group to hire another 11,000

Emirates Group, comprising Emirates Airline and Dnata, plans to hire more than 11,000 new staff in the coming year across its business, in line with its projected growth across six continents.

This would increase its staff size by 6% by March 2016.

Approximately half of the new recruits will comprise Dubai-based cabin crew for Emirates Airline. As the airline gears up to receive more than 20 new aircraft this year, it is also actively recruiting talent in areas such as flight operations, engineering, airport services and corporate functions.

## Cavotec the cool guys

Aircraft at the Presidential Flight Hangar at Abu Dhabi International Airport, and at the Oman Air MRO facility at Muscat International Airport, will be keeping their cool thanks to a new order with global engineering group Cavotec.

The orders are contracts



## Emiri Air Force to make RIAT debut

**Qatar's Emiri Air Force will make its UK airshow debut this summer when it takes part in the Royal International Air Tattoo (RIAT) at RAF Fairford in the Cotswolds.**

**The Qatar Emiri Air Force will send a C-130J-30 Hercules transport aircraft for the show's static display.**

**It is one of four such aircraft delivered to the Arab state by manufacturer Lockheed Martin in 2011-12.**

**Qatar was the first Middle Eastern customer for the C-130J model.**

to supply the innovative sub-freezing DX-Boost pre-conditioned air (PCA) technology for both facilities.

Cavotec will design, supply, install, test and commission the PCA system, 400Hz converters, pop-up pit and hatch pit systems.

"These landmark projects are excellent references for our sub-freezing DX-Boost cooling technology, and further demonstrate our ability to

offer all the necessary technical expertise to deliver complex solutions to major industry players," said Ottonel Popesco, Cavotec CEO.

## Flir's Abu Dhabi move

Flir Systems has opened a new office and support facility in Abu Dhabi, which the company said is an important step in its ongoing commitment to the support of programmes in the UAE and other states in the Arabian Gulf region.

## Kuwait to reject terminal bids

Kuwait's Public Works Ministry has reportedly rejected all bids to build a new terminal at the country's international airport. According to Kuwait's state news agency, KUNA, even the lowest bid was considered too high.

In November, the tender committee for the project said a consortium of Kuwait's Kharafi National and Turkey's Limak Holding had submitted the lowest bid for the contract, worth \$4.78 billion, but a Kuwaiti newspaper reported that the lowest bid was considered almost 40% too high and did not meet the technical specifications.

The new terminal will boost Kuwait Airport's annual handling capacity from eight million to 25 million passengers.

## Flynas a hit with search visibility

Saudi low-cost carrier Flynas has reported a 303% growth in traffic to its website, contributing to a record-breaking increase in passenger numbers in 2014. Working with search optimised content

marketing agency, Sekari, the airline re-launched [flynas.com](http://flynas.com) with new multilingual content that led to an increase in search visibility.

## IAFC signs for five A330s

Dubai-based International Airfinance Corporation (IAFC) has signed its first firm purchase agreement for five Airbus A330-200 aircraft. The agreement also includes options for an additional four.

Based on list price, the contract value for the transaction is approximately \$2 billion. The five firm aircraft have been placed on long-term operating lease with a flag-carrier.

## Flynas selects SITA for check-in

Flynas has chosen air transport IT specialist, SITA, to provide a range of passenger check-in services.

The five-year, multi-million dollar agreement includes an end-to-end check-in solution incorporating SITA's departure control services (DCS), SITA's private IP VPN telecommunications infrastructure, type B messaging service and service management.

## Turkish transfers reporting to iPads

Turkish software developer and systems integrator company, Innova, has been selected by Turkish Airlines to digitise its cabin management processes.

Turkish Airlines has initiated a project with Innova to launch a new digital cabin management system (DCMS) to improve the quality of its cabin services. With the new system, flight attendants are able to file all necessary reports instantly by using iPads instead of paper.



## Kuwait to operate first Bell 429 in HEMS role

**The Ministry of Health in Kuwait will be operating the first two Bell 429s configured for helicopter emergency medical services (HEMS) in the Middle East. It will be contracting the EMS Bell 429 through the Al-Safwa Security and Defense Systems company. Delivery was due as Arabian Aerospace went to press.**

**"This organisation has been able to assemble this complex life-saving programme in just a short amount of time and we are honoured to be involved in such an undertaking," said Steve Suttles, Bell's vice-president and director of Middle East and African sales.**

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## Dream birth for RJ passenger

A Jordanian woman gave birth to a baby girl aboard a Royal Jordanian (RJ) flight on one of the airline's 787 Dreamliners in January.

RJ indicated that the 33-year-old mother went into labour four hours before landing at JFK airport in New York, while the aircraft was flying over the Atlantic.

The captain was about to conduct an emergency landing at one of the Canadian airports, but the delivery was fast and easy, helped by an anaesthesiologist and a legal nurse who happened to be on board, and in cooperation with crew members.

Mother and child were in good health and there was no need to divert the plane.

## Turkish signs freighter deal

Turkish Airlines has signed a firm order for the purchase of four A330-200F freighter aircraft.

Operated by Turkish Cargo, a Turkish Airlines brand, the additional aircraft will help to further boost the company's expansion in the cargo market.

## Flydubai profits up

Dubai's hybrid-carrier, Flydubai, reported a net profit of \$68 million – an increase of 12.3% compared to 2013 – with total revenue of \$1.2 billion for the 12-month period, ending December 31.



## Gulf Air achieves maintenance milestone

Gulf Air marked the successful insourcing and completion of a C1 check on its Airbus 321 in February. Carried out by the airline's engineers and technicians, it reinforced Gulf Air's technical capabilities – delivering its first insourced C1 check in 25 years.

Acting chief technical officer, Jamal Hashim, said: "The

achievement is a clear demonstration of our in-house engineering capabilities and strengths that reflect the on-going training and development of our team, delivering several major milestones in the past, such as the recent insourcing of our Airbus A330 18-month and 42-month checks."

## Etihad opens arms to military training



Etihad Airways is to begin providing commercial aviation training to a number of pilots, cabin attendants, loadmasters and flight despatchers in the UAE armed forces.

Etihad's chief operations officer, Richard Hill, said: "Etihad Airways is committed to training and developing a national workforce of skilled and motivated Emirati nationals, which includes supporting the UAE armed forces and the development of personnel employed in military aviation."

## Etihad ups stake in Virgin Australia

Etihad Airways has taken its stake in Virgin Australia up to 24.2%. Last November, the Abu Dhabi-based carrier took its stake to 22.9%, which at the time was the maximum approved by Australia's Foreign Investment Review Board (FIRB). Virgin said Etihad had purchased 45.8 million shares for a total of \$17.8 million in an off-market trade executed on January 22.

## Hogan steps down

Etihad CEO James Hogan is withdrawing from the board of one of its equity-partner airlines, Virgin Australia, because "other commitments prevent him from being able to devote the time needed for the role".

Instead, the chief

operating officer for equity partners of the Abu-Dhabi based airline, Bruno Matheu, will represent Etihad on the Virgin Australia board.

## Qatar Business best

Qatar Airways was named Business Airline of the Year' at the UK Business Travel Awards in London.

Richard Oliver, country manager, UK & Ireland, said: "It has been an incredible year for Qatar Airways, with not only a number of new routes but the expansion of our fleet to include the A350 and A380, both of which represent the latest in aviation engineering and technology. This award reiterates the quality of our renowned five-star service and it is an honour to have been recognised in this category again."

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## Italy says yes to Hammerhead

The Italian Air Force has confirmed it will be the launch customer for the P.1HH Hammerhead unmanned system produced by Abu Dhabi's Mubadala subsidiary, Piaggio Aerospace.

Piaggio is an Italian manufacturer but is 98% owned by the Abu Dhabi investment company.

Italy has publicly supported the development of the Hammerhead since it was unveiled at the Paris Airshow in 2013, but had not committed to a purchase.

It has now given the go-ahead for three systems consisting of six air vehicles and three ground control stations, which will be delivered in 2016.

## Record freight results from DWC

Freight volumes and passenger traffic at Al Maktoum International at Dubai World Central (DWC) reached record levels in 2014, according to the year-end traffic report released by operator Dubai Airports.

DWC welcomed 845,046 passengers in its



## CIRTA scoops \$2.8m Etihad deal

**CIRTA Electro Mechanical and Maintenance, a Khalifa Fund member, has won a \$2.8m deal to develop customised software for Etihad's cabin crew transport system.**

**Robert Webb, Etihad's chief information & technology officer, and Abdulla Al Shammari, CIRTA's CEO, signed the agreement.**

**"CIRTA's software will be tailored to Etihad**

**airways' unique specifications and will significantly improve the crew transportation routes for travel to Abu Dhabi airport," Webb said.**

**"The automatic optimisation system will analyse flight departure times for the crew, identify their locations in Abu Dhabi, schedule pick-up times and produce an optimised transportation route.**

first full year of passenger operations, boosted mainly by the arrival of a number of passenger carriers during the runway refurbishment programme at Dubai International from May 1 to July 20.

The annual figures were also augmented by traffic during the fourth quarter, during which DWC handled 110,920 passengers.

## Satair brings Lord to region

The Copenhagen-based Satair Group will be representing Lord Corporation for its commercial fixed-wing product line across the European, Middle East and African markets (EMEA).

Under the agreement, Satair will assume responsibility for

aftermarket sales, distribution and support of a wide range of Lord Corporation isolation mounts and catalogue parts.

## SITA named IT company of the year

The *Air Transport News* (ATN) Awards have recognised air transport IT specialist, SITA, as IT company of the year.

The 2015 award was based on SITA's influential leadership and innovation, new solutions and achievements, social responsibility, financial performance and contribution to the air transport community.

Dave Bakker, president, SITA Europe, said: "SITA is honoured to receive this award bestowed on us by our peers.

"We work with nearly every airline and airport in the world, collaborating for create community value, while exploring new technology that will help shape the future of the industry."

## Royal's appointment

Abu Dhabi-based private charter company, Royal Jet, has awarded SR Technics a five-year contract to maintain, repair and overhaul its CFM56-7B engine fleet.

The CFM56-7B engines are currently in service on Royal Jet's six luxurious Boeing Business Jet (B737-700 IGW) aircraft, which are used by the carrier's prestigious VIP guests.

The work on the engines will be carried out at SR Technics' facilities at Zurich Airport, Switzerland. The Swiss company is owned by Abu Dhabi's Mubadala company.

## AMMROC chooses Rockwell support

Abu Dhabi's military maintenance provider, AMMROC, has signed a MoU to create a strategic alliance with Rockwell Collins for the MRO of military avionics. Target markets include the UAE and countries in the South Asia, Middle East and North Africa (SAMENA) region.

## Amman airport top rated for quality

Amman's Queen Alia Airport was rated the best overall in the Middle East by ACI – the trade association for the airport industry worldwide.

In the annual survey of airport service quality (ASQ) ACI studied 34 key service areas and included eight major categories such as access, check-in, security, airport facilities, food and beverage, retail and more.

It rated Amman as top with Abu Dhabi second, Tel Aviv third, Doha fourth and Dubai fifth. Amman was also an award winner in the 'best improved' category.



## Blighter has the edge to win ME deal

**Blighter Surveillance Systems – a British electronic-scanning (e-scan) radar and sensor solution provider – has been selected to supply its Blighter B400 Series e-scan radars to secure the perimeter of a strategic air base in the Middle East.**

**The Blighter passive electronically scanned array (PESA) radars will form part of an integrated perimeter security system at the base and this will include a long-range illuminated camera system for day and night operation.**

**Blighter will also supply its BlighterTrack multi hypothesis software-based radar target tracker and its BlighterView HMI 2 control system to display the radars and to cue the camera systems. This configuration is known as Blighter Guardian.**





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## Libyan Wings's touch of class

Passengers travelling on Libyan Wings, the new Tripoli-based airline, can expect exceptional style and comfort on board with the cabin interiors having been designed by London and Singapore-based award-winning transport and hospitality design specialist, JPA Design.

In conjunction with Libyan Wings, JPA Design has created a design that reflects the forward thinking and high ambitions of an emerging airline. Investing in the best cabin and seating materials available, JPA has worked hard to ensure that the design is elegant, simple and functional. Against a backdrop of richly textured metallic greys, the seat colours draw on Libyan Wings' brand palette.

## Egis upgrades Riyadh airfield

International engineering group, Egis, has been awarded the design consultancy contract for Riyadh's King Khaled development project by general contractor Almbani.

The King Khaled International Airport is currently undergoing a large development and expansion programme that aims at increasing capacity in a near future.



## First P2010 for the Middle East

Italian manufacturer Tecnam has delivered its first P2010 to the Middle East. The four-seater – registered as 'A7-TBA' – was delivered directly from Tecnam's Capua, Italy production facility to Qatar-based Aviation Home at Al Khor Airport.

The 25-hour ferry flight included stops in Brindisi, Corfu, Crete, Alexandria, Cairo, Hurghada, Madina, Riyadh and Doha.

The P2010 joins a wide range of Tecnam aircraft already in service with Aviation Home, Tecnam's dealer for the UAE, Qatar and the Kingdom of Saudi Arabia. These include the Tecnam Astore, P2006T Twin and a number of P200JFs.

Serving the Saudi capital, King Khaled International Airport is the second biggest airport in Saudi Arabia, after Jeddah Airport. Today it hosts around 20 million passengers each year and the current expansion programme will extend capacity to 35 million.

For the first time in the airport infrastructure domain, Egis will perform the full design under the building information modelling (BIM) concept. Egis will also provide full technical support during construction.

## Process of illumination

Honeywell has played a key role in refurbishing both the southern and northern runways at Dubai International (DXB) and installed one of the world's first complete LED airfield lighting systems.

The recently completed project was designed to help the airport accommodate future growth by implementing technology to enable more efficient, reliable and sustainable operations. Honeywell installed more

than 8,200 LED lights and 1300km of cabling in just 80 days. Most critically, the airport remained operational throughout the entire programme.

## Bombardier to sell training business

CAE and Bombardier announced in January that they have signed an agreement for CAE's acquisition of Bombardier's Military Aviation Training business for approximately \$15.6 million. The deal is subject to usual conditions and regulatory approvals. Closing is expected to occur during 2015.

## Lomax order

L-3 Wescam has received an order from Iomax USA for 28 MX-15D electro-optical/infrared (EO/IR) imaging and designating turrets for the UAE.

Fitted to a fleet of Iomax Archangel turboprop aircraft, the MX-15Ds will support close air support and armed border patrol missions carried out by a customer within the UAE.

## UAE top for safety compliance

The UAE has recorded the best results in an International Civil Aviation Organization (ICAO) safety audit, rating it the highest in the world for compliance.

Described as "an enormous and unprecedented achievement" the UAE scored a success rate of 98.86%, which is the highest in history given by ICAO's universal safety oversight audit programme.

Sheikh Ahmed bin Saeed Al Maktoum said the aviation sector in the UAE, with its superb infrastructure and services, had become hugely attractive and was qualified to play a key role in steering the global aviation industry. He praised the efforts of the staff of GCAA, and relevant authorities within the aviation safety sector, hoping the hard work and achievements would continue.

## AMAC takes Cair

Swiss completions specialist AMAC has placed an order for the Swedish built CTT Cair System to be installed in a VIP B777-200 aircraft for a Middle Eastern customer.

This is the seventh order from AMAC and we are delighted that our Cair System has been selected for enhanced cabin comfort in such a prestigious project, said Peter Landquist, CTT's vice president sales & marketing.

## Air Arabia extends China links

Air Arabia has extended its network to China with an inaugural flight to Urumqi, marking the carrier's 101st global destination.

## Iraq L-159 deal finally gets go-ahead

Iraq is to finally get the L-159 fighter jets it opted to buy more than two years ago. In 2013 Czech aviation company Aero Vodochody had reportedly agreed to sell 12 of the subsonic fighters to the Iraqi Air Force, but the package needed to be approved by the governments of both countries.





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“I don’t want to be seen as threatening or intimidating, but I am hoping that the US Government thinks about all of this.”

TIM CLARK

*The exponential growth of the ‘big three’ Gulf carriers could be stunted if the US Government bows to pressure from American carriers, which are lobbying to ban their successful competitors.*

**Alan Peaford** reports on the battle for business.

# OPEN WARFARE

**F**or more than 1,000 years, history books will tell us that British knights have been fighting for freedom and justice.

Now, Sir Tim Clark, president of Emirates, is keeping up the tradition as he leads the battle against three American airlines, which are determined to defy the freedom of ‘open skies’ and reintroduce protectionism against the Dubai airline and fellow Gulf carriers Etihad and Qatar Airways.

The US Government says it will review claims by three US airlines – American, Delta and United – that the state-owned Gulf airlines received more than \$40 billion in alleged subsidies, after intense lobbying from the US carriers. The review will begin later this month.

“We have invested heavily in the US aerospace industry and a lot of what we have done with regard to market access has allowed us to go and place these orders, for which we have contracts in place,” Clark said. “I don’t want to be seen as threatening or intimidating, but I am hoping that the US Government thinks about all of this.”

The US carriers complained that the three Gulf carriers have switched strategy after the ‘open

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skies' deals were negotiated to become global hubs threatening the rest of the industry, rather than ordinary national carriers.

Clark denies Emirates has changed direction and said that its growth and strategy were discussed openly during the trade talks that led to the 1999 'open skies' deal.

The row blew up to make global news when Delta chief executive Richard Anderson appeared on CNN in March to claim the Gulf carriers were receiving the unfair subsidies. But in a move to sway US public opinion, Anderson drew a relation between the Gulf carriers and the 9/11 terrorist attacks, citing "the great irony" that the "terrorists originated from the same region as Emirates and the like".

Following a massive public outcry, Delta apologised. But that didn't impress Qatar Airways CEO Akbar Al Baker, who was also dismissive of the US carriers' subsidy claims.

"Quite frankly, I think Mr Richard Anderson needs to go and study in a university to find out what the difference is between equity and subsidy," Al Baker told CNN.

While Clark was addressing the US National Press Club to outline the Emirates view of the claims – "It's all tosh" – James Hogan, CEO of the UAE national carrier, was making a long-planned keynote speech at the US Chambers of Commerce aviation summit.

"The world has changed," he told a packed auditorium.

#### Equity and investment

Outlining what he called "10 facts about Etihad", he sought to persuade the audience that the Abu Dhabi Government's involvement in the carrier was similar to the role that other states play in their hometown airlines. "Our shareholder has provided equity and investment, they've invested and seen success," he said. "That's business."

Hogan then flew to London to address the influential UK Aviation Club, where he said that international regulators should recognise that "investing in success is not a crime; blocking competition would be".

To great applause he added: "The dark clouds of protectionism are gathering over Europe and the United States. Five mega-carriers are trying to pull the ladder up after years of having it their own way. The people that will really lose if these giant legacy airlines are successful are the millions of travellers benefitting from new choice in the global air travel market."

Hogan said Etihad Airways' shareholder, the Government of Abu Dhabi, had chosen to invest in a new airline at a time when many factors combined to offer major opportunities.

"It saw the opportunities from a new world order in terms of international commerce, from its geographical position and from modern aircraft technology which meant that for the first time, it was one flight away from almost anywhere in the world," he said.

The result, he said, was an airline that had



Left: James Hogan at the UK's Aviation Club defending government investment and (right) Delta's Richard Anderson stooping low to garner US public support to his claims.

grown to serve 14.8 million guests in 2014, over a network that now reaches 111 destinations.

To achieve that rapid growth, in an industry with such high costs of entry, had required significant investment, said Hogan.

"Etihad Airways has received investment from its shareholder, the Government of Abu Dhabi, in the form of equity capital and shareholder loans. We have always been clear about that.

#### Capital-intensive industry

"The shareholder knew those amounts would need to be significant. It was, after all, setting up a national airline in 2003, decades after most governments. It was investing in an incredibly capital-intensive industry, one which requires significant investment in the obvious items of aircraft and engines; but one which also requires heavy investment in the less obvious items: people, training, technology, a headquarters building – every single thing had to be started from scratch.

"To have any chance of success, Etihad Airways had to get to a size and scale that could compete against the networks of airlines that had not only been operating for years, but had benefited from decades of government investment and infrastructure support themselves.

"To become a serious competitor in long-haul hub-and-spoke air travel, there is a very, very high cost of entry.

"Our shareholder set clear parameters for that investment. The airline had to get to profitability

within a decade. And, in the long term, we have to deliver a return.

"Because we have satisfied those conditions, because we have grown more quickly and more successfully than our initial targets, our shareholder has invested further. It has invested in success. Just like any other rational investor.

"Our shareholder may be national but when it comes to money, it is very, very rational," he said.

Hogan also questioned the claims of the airlines campaigning against Etihad Airways.

"Some of the carriers attacking us claim they are losing market share. We've started some analysis on this issue and, although the detailed study will take some time to complete, I can say that our initial studies already suggest that those claims are true. We admit it!

"But that so-called loss has resulted in thousands of new passengers for these suffering airlines, thanks to the market stimulus we provide.

"They are getting a smaller slice, it is true. But it is a slice of a bigger cake. And the bigger cake is proof that more people are able to travel – more consumers are getting the benefits of competitive choice."

Industry analyst Saj Ahmad believes that the US carriers' stance is down to sour grapes that the quality of the offer is just not as good as that from the Gulf carriers.

"The indisputable fact is that passengers choose to want to fly on Arab carriers like Emirates more

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than they want to fly on US airlines. This is why Emirates has been expanding its footprint in both North America and Latin America. They are providing multi-city connections that incumbent airlines simply do not offer. Exactly how many US airlines have flights to Dubai or Abu Dhabi from gateways like Seattle, Los Angeles or Houston?

“And how is it the fault of Emirates – or others – if US airlines cannot raise their game? Airlines like Emirates, Qatar Airways and Etihad offer one-stop connections between pretty much any two global city pairs. And these airlines also offer immense product quality, value for money and very efficient airport hubs that make connections easy and seamless.”

Ahmad said the American critics were missing the point about the business models applied by the carriers.

“US airlines are living in a deluded time warp. They still think it’s the 1970s, where regulations exist. Sadly, they need to wake up and smell the coffee. The big Arab carriers are here to stay.

“Instead of whining like EU airlines, US carriers, especially Delta, should hang their heads in shame at their lack of competitiveness and poor cost structures.

“The fact that they are saying these ill-founded remarks about Arabian airlines only serves to show how naive they are. Emirates publishes its accounts and it’s crystal clear that it is not subsidised at all. Whatever document the US airlines are peddling on Capitol Hill frankly isn’t worth the paper it’s written on.”

#### Cast iron defence

Clark said the airline could provide a “cast iron defence” against subsidy claims and, in an interview with the news agency Reuters, he hinted at possible legal action over the criticisms, voiced especially by Delta.

“Delta is maligning us, leading people down a path which is based on unsubstantiated false allegations and that is very serious. It could be commercially damaging to us and if it is, we will consider all our options,” Clark told Reuters.

Meanwhile, the US Government is receiving submissions. “The US Government takes seriously the concerns raised in the report and is interested in receiving insights and feedback from stakeholders before any decisions are made regarding what action, if any, should be taken,” The US Department of Transportation (DoT) said.

**“Delta is maligning us, leading people down a path which is based on unsubstantiated false allegations and that is very serious. It could be commercially damaging to us and if it is, we will consider all our options.”**

TIM CLARK



Tim Clark and John Rishton announce the \$9.2 billion deal.

## Emirates A380 deals just keep on Rolling

Emirates Airline has announced a \$9.2 billion deal for Rolls-Royce Trent 900 engines to power the 50 A380s it ordered at the 2013 Dubai Airshow. It is the biggest order ever won by the British powerplant manufacturer.

The deal includes more than 200 engines plus a long-term TotalCare service support package. The engines will be assembled at Rolls-Royce’s Singapore plant.

Current Emirates A380s are powered by the Engine Alliance GP7200 but, speaking in London, Emirates’ CEO Sir Tim Clark made it clear that Rolls-Royce had won the new deal on the basis that it had shown more hunger for the deal and had worked harder to incorporate continuous improvements into the Trent 900. Engine Alliance had not shown the same commitment to improving the GP7200.

“This is a good day for the aviation industry in the UK and, I hope, an excellent day for Rolls-Royce.” The order, said Rolls-Royce CEO John Rishton, was “the largest non-defence order ever awarded to a British engineering firm”.

The first 25 A380s will be delivered between late 2016 and Q1 2018, he added. “The second batch of 25 are further out, but we’re looking at advancing some of those into the 2019-2020 timeframe,” he said.

The new A380s, he added, would release the carrier’s Boeing 777s for the development of new markets.

Emirates is the world’s largest user of the A380, with 60 in operation and a further 80 on order. Clark said that the projected doubling of global annual passenger numbers to 6.6 billion over the next 10-15 years would require airlines such as Emirates to ‘upgauge’ their fleets.



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*After its huge losses of recent years, Gulf Air's latest results give good reason to believe Bahrain's national carrier is on an upward trajectory, says acting CEO Maher Salman Al Musallam. And, reports Alan Dron, the airline is getting closer to joining one of the three airline alliances.*

# Gulf Air continues to fight back from the brink

It's not often that you hear a government minister talking enthusiastically about the national airline making an annual loss of more than \$160 million (BHD63 million).

For Bahrain's Transportation and Telecommunications Minister, Kamal bin Ahmed Mohammed, however, the result was "miraculous" and the latest sign that the national carrier was on a course to recovery.

That airline is Gulf Air. A few years ago, it was losing money at a frightening rate – BHD211 million (\$560m) in 2011 and around BHD185 million (\$490m) in 2012 – and was putting a significant strain on the national treasury.

Ahmed made his comments at a February press conference after presenting the airline's unaudited annual results to the island nation's Cabinet. He attributed the improved figures – a reduction of around 33% on 2013's losses – to the continuing benefits of the major cost-cutting exercise that the airline embarked upon in January 2013.

The carrier has made a strategic shift from low-value transit traffic through its Muharraq hub to high-yield, high-demand, point-to-point routes focused largely on the MENA region. It has reduced its staff from around 4,000 to 2,800 and shrunk its fleet from 40 to 28 aircraft; yet despite having fewer aircraft the number of destinations served has increased from 39 to 45.

The man overseeing the on-going restoration of Gulf Air's fortunes is acting CEO Maher Salman Al Musallam. He is cautious but hopeful about the airline's future.

Asked when the airline might achieve breakeven he replied – rather appropriately in the circumstances: "That is the million dollar question."

"Gulf Air in its current status will not be able to break even. We've said this many times. We're currently only selling seats, we're not selling a lot of [other] services that fall under the umbrella of what we identify as air travel."

He pointed to other major carriers in the region that have subsidiaries providing a host of

ancillary services, such as engineering or consultancy, that contribute to their overall financial results.

However, that may be about to change. The airline's owner, the state-owned Mumtalakat holding company, is looking at bringing together the nation's aviation interests. This will cover organisations such as Bahrain Airport Company, fuel suppliers and handling agents.

"I hope we will be able to do this in the near future," said Al Musallam. If achieved, he was confident that that the airline could become profitable.

"Our task is to go ahead and reduce our losses year-on-year, in order to get to a sustainable status in which Gulf Air is at least pumping more into the economy than it is taking," he added.

Gulf Air is a major contributor to the island's GDP, accounting for around 8% of the kingdom's total annual economic output.

The improvement in Gulf Air's financial position over the past two years was obvious, he said, noting that the full, audited results for 2014 were due for release as *Arabian Aerospace* was due to go to press.

## Upward path

The airline's task for the near future was to continue on this upward path, he said, providing a good service for passengers and further increasing productivity.

Gulf Air now has a slimmed-down fleet based around six Airbus A330s for its long-haul routes to London, Bangkok and Manila, with six A321s and 16 A320s handling regional and medium-haul services.

A major cabin refurbishment of the A330s was completed recently, which provided flat-bed seats for all business-class passengers, together with a new in-flight entertainment (IFE) system throughout the aircraft (the airline's A320-family aircraft, unusually for single-aisle types, also have the flat-bed seats in the business cabin).

The A330 upgrade was a major improvement for Gulf Air's business-class passengers, said Al Musallam. "They are now assured that when they go on board the aircraft they're getting a premium

offering with a business class that has flat-beds and a full IFE system for all passengers."

Some of the A320s and A321s are the extended range (ER) versions of the narrow-body and are used on the Moscow, Paris and Frankfurt services. These involve sectors of up to six-and-a-half hours, around the limit of what passengers on a single-aisle aircraft normally regard as acceptable.

Using the smaller aircraft rather than the A330s on some European routes has reduced Gulf Air's costs. "We've looked at this very closely to ensure our European market is well served with an aircraft that can cater to both passenger load and distance. We have received only overwhelmingly positive feedback to date," said Al Musallam.

As well as new seats, the A320s also benefit from state-of-the-art IFE, which replaced an older system that attracted many complaints.

The new IFE has been so successful, he added, "that at least 50% of the cabin crew's workload has been diminished. This is fact. Kids can play games, while there are movies and entertainment options for adults; as a result passengers no longer feel the need to press the [cabin crew] call button!"

It is in the MENA region that Gulf Air sees its future, at least for the next few years. It has no intention of going head-to-head with the Gulf's 'big three' – Emirates, Etihad and Qatar Airways. "We can't compete with these giants, nor is that our intention or business strategy. We're not looking to move passengers from east to west like the others. We're very much emphasising point-to-point traffic that will directly benefit both the kingdom and its national carrier."

The airline hopes that it can continue to develop its niche of frequent services to regional capitals and it believes that it is creating an advantage over other carriers by this policy.

Having shrunk its network dramatically at the start of its rationalisation campaign, it has started to expand it once again over the past year or so.

Services to Shiraz in Iran and Hyderabad in India have been reopened, while services have begun to several new destinations, including



**“Gulf Air in its current status will not be able to break even. We’ve said this many times. We’re currently only selling seats, we’re not selling a lot of [other] services that fall under the umbrella of what we identify as air travel.”**

**MAHER SALMAN AL MUSALLAM**

Gassim and Taif in Saudi Arabia, Larnaca in Cyprus and the Russian capital, Moscow.

It particularly wants to strengthen its position in locations such as Saudi Arabia, one of its biggest markets. Its new services to Taif and Gassim recorded impressive average load factors above 65% in their first month. Gulf Air hopes to add new routes or increased frequencies to Saudi Arabia in coming months.

Among the new routes are direct flights to Larnaca and Istanbul from Kuwait International Airport, using fifth-freedom rights.

Kuwait is a strong market, with a population that has a high disposable income. Its national carrier, Kuwait Airways, has fallen behind the standards of many other Gulf carriers, offering opportunities to Gulf Air to pick up traffic there.

More fifth-freedom services may be on the cards, hinted Al Musallam: “We are open to mirroring such operations where it is commercially feasible to do so across our network and are currently in the process of monitoring our Kuwait operations that, to date, are promising.”

Gulf Air has also recently employed a consultant to look 10 years into the future and predict the

possible shape of the network: “It will basically reveal potential destinations that Gulf Air might go to and which aircraft might operate to those destinations.”

The airline has an order book of 16 A320neos, ‘12 to 16’ Boeing 787-8s and 10 Bombardier CSeries CS100s due for delivery towards the end of the decade.

Al Musallam said these numbers could change, depending on the company’s performance: “Whether we take all the aircraft or not is a big question.” This cautious approach echoes that of Bahrain’s transportation minister, who said immediately prior to the 2014 Bahrain International Airshow that talks were continuing with the various manufacturers over possible modifications to the order book.

Among the more interesting new destinations is Moscow. Russian tourists have flocked to the Gulf in large numbers in recent years, but they have mainly headed to the UAE, particularly Dubai.

Although Bahrain does not have the quantity of tourist attractions enjoyed by Dubai, Gulf Air believes that the island can attract its share of Russian tourists wanting a break from their country’s notoriously long, cold winters. “Bahrain

might not be as well known for its beaches and summer attractions – but they exist and are plentiful and appealing to visitors to the kingdom,” he said.

A marketing campaign is under way to make Bahrain’s name more familiar to Russians, with travel agents and journalists having been invited on familiarisation trips so they can tell their customers and readers about the island’s attractions.

The familiarisation programme is also seeking to dispel memories of the unrest of 2011 and to assure potential visitors that Bahrain is a safe destination. If initial groups of tourists can be attracted, numbers will quickly increase, believes Al Musallam. “I’d say to them, ‘come and see’. Word of mouth travels faster than anything else.”

#### **Fallen sharply**

The timing of the Moscow service, with the Russian rouble having fallen sharply in value against foreign currencies because of sanctions over the Ukraine crisis, had been unfortunate, he conceded, but he believed there were still ways to attract Russian visitors – notably to the Formula One Grand Prix.

Although Moscow might take some additional effort to become profitable, all the new routes opened over the last two years “are in a very good situation”. Gulf Air is taking a balanced view of future network growth, said Al Musallam; growth is essential for the company’s survival, but it is being very cautious in opening new routes, so as not to over-extend itself.

In 2013, Gulf Air said it was open to the idea of joining one of the major airline alliances and an announcement is getting closer: “We are still working towards entering a strategic airline alliance that would be aligned with Gulf Air’s commercial direction. Hopefully we will have some positive news to share sometime this year.”

If Gulf Air continues to pull itself back from the brink, perhaps next year will see another minor miracle.



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**Shell Aviation**



*With Tunisia emerging as the only true beneficiary of the Arab Spring, Martin Rivers talks to Tunisair president Saloua Essghaier about the flag-carrier's prospects.*

# Fine tuning in Tunis

**T**o many international observers, Tunisia's Jasmine Revolution is best known as the catalyst for the 2011 Arab Spring uprisings across the Middle East and North Africa – popular demonstrations which, by and large, fell short of their lofty aspirations.

But, for Tunisians, the legacy of the Jasmine Revolution is much rosier. The country last year held its first open and democratic election since independence from France in 1956, swearing in 88-year-old Beji Caid Essebsi as its new president.

*The Economist* hailed the vote as “proof of a precious truth: the Arab world can change for the better, and Islam can be reconciled with democracy”. Such idealism may be hard to stomach when considering the disastrous effects of the Arab Spring elsewhere – unleashing civil wars in Syria, Libya and Yemen, and replacing one dictator with another in Egypt – but it is a kernel of hope that must be preserved.

Only when economic prosperity trickles down to the Arab street will the full benefits of democracy begin to resonate across the region. Tunisians, therefore, continue to fight for progress in the Arab world, even as their Jasmine Revolution fades into history.

Flag-carrier Tunisair, which suffered heavy financial losses during the political crisis, but is now showing signs of a sustained turnaround, illustrates this struggle on a microcosmic level.

Revenue at the airline inched up by 0.8% last year, even as its overall passenger count fell by 5.1% to 3.5 million. That reflected a fine-tuning of operations, according to president and director general Saloua Essghaier, with load factors and

Continued  
on Page 30



**Saloua Essghaier: “We believe that with the implementation of the new business strategy, the cost-cutting programme, the increase of the ancillary revenues, and the drop in fuel prices, 2015 will be the year ... to re-position our company.”**

## CONTINUED FROM PAGE 29

ancillary earnings benefiting from a re-deployment of capacity away from volatile markets towards charter flying and more stable scheduled points.

“Regarding the turmoil in Libya, we shut down our activities in August 2014 and, consequently, traffic from Libya dropped by 42% compared with 2013,” she said.

“But the overall traffic of Tunisair has decreased by only 1.9% [when measured by revenue passenger kilometres] due to the recovery of charter activity and scheduled activity in other markets, especially in Europe.”

As well as suspending flights to six points in Libya – Tripoli, Misrata, Benghazi, Bayda, Tobruk and Sabha – the flag-carrier last year dropped services from Tunis to Manchester and Lille. It also adjusted capacity at secondary bases, withdrawing non-stop links to Europe and Russia from Enfidha, Monastir, Djerba and Tozeur.

Having already put eight aircraft up for sale in 2013 – three ageing Airbus A300s, four Boeing 737-500s and one ATR 42 – Tunisair ended the year with 17 A320s, four A319s and seven 737-600s.

Meanwhile, its regional subsidiary, Tunisair Express, retained three ATR 72s and one Bombardier CRJ900.

But it will not be long before the fleet starts growing, with the flag-carrier this summer taking delivery of two A330s. A third unit will arrive in 2017, by which time Tunisair’s long-term fleet study will have been concluded and its requirements for the period running 2018-28 will be known.

“These wide-body aircraft will be operated to reinforce the medium-haul routes to Saudi Arabia and Turkey, but will also fly long-haul routes,” Essghaier said of the imminent A330 deliveries.

**Obvious candidates**

Jeddah and Istanbul are obvious candidates for up-gauging, being the second and third largest points in the network when measured by available seat kilometres. The airline’s largest market, Paris, which accounts for nearly one in every six flights, will almost certainly also be served by the wide-bodies. Local media reports have further suggested that Dubai and Dakar may benefit from the larger aircraft.

Although the president did not single out Senegal for A330 deployment, she stressed the need to “strengthen our operations in the continent” and confirmed that the new type will make an appearance on African routes soon.

Tunisair’s foreign network presently includes four north African destinations (Algiers, Cairo, Casablanca and Oran) plus five in west Africa (Abidjan, Bamako, Dakar, Nouakchott and Ouagadougou).

The reference to long-haul services is less clear-cut. There had been speculation that Tunisair may launch flights to Montreal – taking the baton from local rival Syphax Airlines, which withdrew from the Canadian city last year after

The overall traffic of Tunisair has decreased by only 1.9% due to the recovery of charter activity and scheduled activity in other markets.



just a few months of operations – but no plans have been announced. Asked about the prospect of route launches, Essghaier would only confirm that Scandinavian markets are in the pipeline.

She emphasised that growing frequencies on European routes is the top priority, with Barcelona, Dusseldorf, Frankfurt, Milan and Marseille earmarked for additional flights.

The upcoming delivery of four A320neos – two next year and two in 2017 – will propel this short-haul expansion.

**Greatest potential**

But it is the wide-body fleet that has the greatest potential to drive future growth. Despite cancelling a commitment for three A350-800s in 2013 – originally ordered alongside the A330s – management continue to talk about the need for six twin-aisle aircraft.

Essghaier confirmed that the on-going fleet study is evaluating whether “switching to A330neos will be considered”. The re-engined version of the A330 was only confirmed by Airbus in July 2014, but anticipation of its launch among customers is believed to have cannibalised sales of the more advanced A350.

Having lost an average of \$100 million in each of the three years following the Jasmine Revolution, Tunisair is not expecting a profit for 2014. However, the president is upbeat about the flag-carrier’s broader prospects.

“We look to the future with optimism,” she said. “We believe that with the implementation of the new business strategy, the cost-cutting programme, the increase of the ancillary revenues, and the drop in fuel prices, 2015 will be the year ... to re-position our company.”

Her target of breaking even this year will depend in large part on successful implementation of the restructuring plan.

Two internal committees have been established under the turnaround project, which was initiated in 2012. The first has a mandate to pursue cost-cutting measures and boost ancillary revenues, while the second is tasked with articulating a short-term commercial strategy through to 2018.

Government support will be crucial for both

committees. As well as providing guarantees for aircraft financing, Tunis has pledged to fund “a portion of the severance allowances” owed to the 1,700 employees who face redundancy by 2016. Those job-cuts will nearly halve Tunisair’s 3,700-strong workforce – bringing its ratio of aircraft to staff in-line with industry norms – but could provoke industrial action without the backing of trade unions.

While the threat of strikes loom large, Tunisair is at least enjoying a competitive reprieve following an unfortunate few months at Syphax, the private carrier founded by businessman-turned-politician Mohamed Frikha in 2011.

Syphax’s withdrawal from the Montreal market last year precipitated a raft of problems at the fledgling carrier.

**Accounting anomalies**

In November, the Tunis Stock Exchange suspended trading of its shares due to alleged accounting anomalies. Barely a fortnight later, newly appointed chief executive Christian Blanc – the distinguished former boss of Air France – was forced out of the job following a regulatory dispute with Tunisia’s civil aviation authorities. Syphax subsequently returned its A330, leaving it with just two A319s.

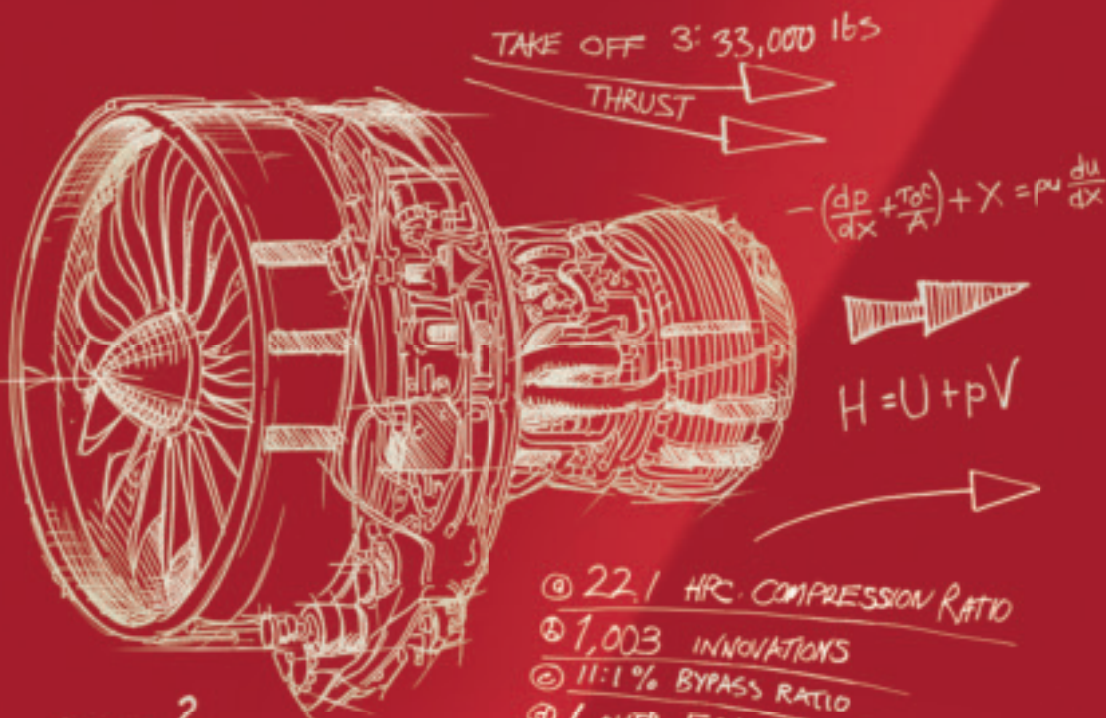
With Frikha’s aim of deploying a 15-strong fleet by 2018 in tatters, Tunisair has breathing space to finalise its restructuring plan and capitalise on improving business sentiment in the country.

Competitive headwinds are, however, likely to resurface. Tunisia has, since November 2012, been negotiating an ‘open skies’ treaty with the European Union (EU). Although the latest round of talks was postponed in June 2014, Tunisair’s fortunes have been explicitly linked to the pace of reform.

“The agreement on ‘open skies’ with the EU will be implemented once ... the restructuring of Tunisair is completed,” Essghaier affirmed, reiterating earlier pledges.

While liberalisation is a daunting prospect, Morocco’s ‘open skies’ deal with Europe in 2006 proved to be a boon for country and flag-carrier alike. Time will tell if Tunisia follows its example.





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# LEAP

MORE TO BELIEVE IN

*Ulrich Ogiermann  
successfully steered  
Cargolux, Europe's largest  
cargo carrier, through  
troubled times. But, as  
Martin Rivers discovers, the  
industry veteran has found  
an even greater challenge  
at growth-obsessed Qatar  
Airways.*

# Ogiermann delivers the goods in Doha

Following years of uncorroborated allegations against the Gulf's fast-expanding carriers, the release of a 55-page dossier detailing \$42 billion of government subsidies over 10 years has put the region's 'big three' operators firmly on the defensive.

Qatar Airways is front and centre in the dispute, facing accusations by America's Partnership for Open & Fair Skies – a lobby group headed by three US legacy carriers – that it has benefited from \$16 billion of unfair state support.

Those subsidies, it is claimed, are the real reason for the Doha-based carrier's breakneck expansion in recent times.

Qatar Airways has increased passenger capacity, as measured by available seat kilometres, six-fold since 2004. Its 151-strong fleet now serves 147 destinations around the world. And, with another 206 aircraft on order, the flag-carrier shows no signs of slowing down.

Beneath the passenger deck, the cargo division is also keeping pace. Qatar Airways Cargo has recorded double-digit traffic growth in all but one of the past 10 years, when measured by freight tonne kilometres. Its belly capacity is complemented by a fleet of 14 main-deck freighters, which presently fly to 47 destinations. Last year saw the addition of 11 freighter points.

Asked about US allegations of subsidised growth, Ulrich Ogiermann, Qatar Airways' chief officer for cargo, turns the question on its head and presents an alternative narrative for the flag-carrier's seemingly unstoppable expansion.

"We see that we have a different problem," he said. "Our problem is that we don't have enough capacity at the moment! We are not dumping capacity anywhere on the globe. We're following the needs of our customers – they tell us where they want us to operate, and we go according to their needs."

Ogiermann may toe the company line when necessary, but his experience and insight is questioned by no-one in the air cargo industry.

The German native made his name as president and chief executive of Cargolux, the Luxembourg-based carrier, which he steered through a series of macroeconomic crises between 2005 and 2010. His reign was brought to an ignominious end when the US Department of Justice indicted him in a price fixing conspiracy, ultimately handing down a 13-month jail sentence.

#### Industry experience

But, with 25 years of industry experience under his belt – also including a spell as the chairman of the International Air Cargo Association (TIACA) – Ogiermann's credentials shone through to Qatar Airways boss Akbar Al Baker, who has pledged to make his airline one of the world's top five cargo operators by 2018.

Ogiermann took up his Doha-based role in November 2012 – the same month that Qatar Airways decided to return its 35% stake in Cargolux to the Luxembourg Government.

That short-lived equity investment had been blighted by a series of high-profile bust-ups

between Qatar Airways and OGBL, a trade union that opposed the takeover. Al Baker is not known for his love of collective bargaining, maintaining that trade unions have slowed the post-financial-crisis recovery. But, while the culture at Europe's largest cargo carrier proved incompatible with his philosophy, the airline's former boss has settled in nicely in Doha.

Indeed, with Cargolux now sounding alarm bells about a \$100 million cash shortage, and operators elsewhere frantically scaling back their freighter fleets, Ogiermann's move could hardly have been timed better. He has no doubt that industry growth will remain centred on the Gulf, and he sees the 'open skies' treaties being challenged by American carriers as pivotal to this trend.

"We see a lot of opportunities. We want to really develop the African footprint much stronger. Clearly there's a lot of opportunities across Asia too," the cargo chief said. "But it's not that we aim for an impressive number of stations. We go where the business wants us to go."

"Wherever we can, we try to promote the benefits of open trade. Trade always drives growth. It drives the creation of jobs. So we are always interested in very liberal aero-political agreements, because they are to the benefit of the economies. We clearly want to work towards very open regulation of trade, and 'open skies' is the best example of that."

Even amid a simmering row with US competitors, Qatar Airways Cargo is keeping its foot on the pedal in the American market. Los Angeles became its fourth US freighter destination



Ulrich Ogiermann: "We go where the business wants us to go."

in April, joining Atlanta, Chicago and Houston.

Further expansion in North America could involve leveraging the airline's deep footprint in the British capital, either by pursuing fifth-freedom traffic rights or signing block space agreements with partners. Qatar Airways added a five-times weekly freighter service to London Stansted Airport last year, complementing its existing six daily passenger flights to London Heathrow Airport. It also owns 10% of Oneworld-partner British Airways, while Qatar's sovereign wealth fund holds a 20% stake in Heathrow.

With the Qatari and British flag-carriers already collaborating on the high-density cargo corridor between Hong Kong and London, Ogiermann stressed that partnerships will continue to play a "very important role" in scaling up the business.

"You cannot do everything alone," he insisted. "You can grow certain trade links together with a partner, and we are very, very interested always to work in partnerships. That's clearly win-win for everybody. But it really depends on the bilaterals we have in place."

Fifth-freedom stopovers are particularly appealing to cargo operators, Ogiermann explained, as they help optimise payloads on round trips. Using Africa as a springboard for South America – currently absent from the freighter network – is another option, albeit one on the backburner for the time being.

"One or two years from now it might be something to look at but, at the moment, we

have not really studied it," he said of South American connectivity via Africa. "We are too short of capacity."

Efforts to lift that capacity and enhance flows through Doha received a major fillip in December 2013, when the new cargo hub at Hamad International Airport became operational.

Ogiermann described the opening of the 55,000sqm facility as a "major milestone" in the cargo operator's history. The two-storey building incorporates 11 wide-body freighter stands, 42 airside loading docks and 31 landside truck-load facilities, giving an annual processing capacity of 1.4 million tonnes. That will expand to 2.5 million tonnes over the coming years as development work continues.

#### Game-changer

"It's a real game-changer for us," he emphasised. "There were constraints at the old airport, with the growth we had obviously outpacing the full capability of the old warehouse."

Crucially for an industry reeling from years of yield pressure, the opening of the cargo hub has gone hand-in-hand with new product development. 'Pharma Express' flights, launched in January, link the pharmaceutical production centres of Brussels and Basel to Qatar Airways' global network. Their selling point is the seamless cool chain offered throughout the journey, including a network of reefer trucks with active temperature control during transit at Doha.

While many competitors offer their own

specialist freight facilities, the \$1 billion investment in the automated cargo hub – which also includes a 4,200sqm live animal centre and an International Air Transport Association (IATA)-compliant dangerous goods room – makes Qatar Airways an attractive partner for forwarders.

It also allows the airline to capitalise on continually rising belly capacity in the passenger fleet, with two new Airbus types entering service last year alone.

"The A380 is not extremely cargo-friendly, but the A350 is an excellent cargo aircraft," Ogiermann said, noting that the -900 model currently deployed by the flag-carrier has capacity for 11 cargo pallets. "We are very happy that we have the A350 in our fleet – it gives us a big competitive edge."

Qatar Airways' freighter fleet of eight Boeing 777-200LRFs and six A330-200Fs is expanding in tandem. Alongside firm orders for four more 777Fs and two more A330Fs, the flag-carrier is considering wet-leasing a larger 747-400F. "It could play a role eventually in some charter-orientated environment," Ogiermann speculated. "We want to be present in different weight brackets of the market that might not fit into the 777."

Though his company's rapid growth is ruffling feathers abroad, the cargo boss had short shrift for critics, insisting: "The only thing that drives us is the customer, and the equation for balancing capacity in the passenger fleet with the freighters."

# Astana fosters renewed relations with Dubai

*Having ended a four-year-long bilateral dispute, Kazakhstan's Air Astana is back in Dubai and eager to grow at both of the UAE's aviation hubs.*  
**Martin Rivers**  
*reports.*



**Peter Foster: "We made several trips to Dubai to try and smooth it out."**

**T**he resumption of daily non-stop flights from Almaty to Dubai is a feather in the cap of Peter Foster, Air Astana's larger-than-life chief executive, but it won't stop his airline pursuing deeper ties with its new partner in Abu Dhabi.

"We launched Abu Dhabi when we stopped Dubai and we stopped Dubai because we had a row with the Dubai Civil Aviation Authority," Foster said of the October 2010 withdrawal from the UAE's largest city.

Air Astana at the time blamed "reasons beyond the airline's control" for the suspension of its Dubai flights from both Almaty and Astana. Though not officially confirmed, it was no secret that Dubai's request to amend the bilateral air services agreement between the UAE and Kazakhstan had triggered the dispute.

The Kazakh flag-carrier had long enjoyed a monopoly on Almaty-Dubai and Astana-Dubai, so Emirates Airline was understandably restless to get a piece of the action.

#### **Bilateral agreement**

And, although Emirates is today no closer to launching either route, an updated bilateral agreement has, since September, allowed its narrow-body affiliate, Flydubai, to serve Almaty and the southern Kazakh city of Shymkent. That liberalisation, for now at least, has brought Air Astana's four-year hiatus to an end.

"We made several trips to Dubai to try and smooth it out and, during the course of that, we had tremendous assistance from [Flydubai chief executive] Ghaith Al Ghaith," Foster recalled.

"He is a good friend. We think he's developing an excellent airline, and he clearly has the support of sheikh Ahmed [bin Saeed Al Maktoum, Emirates Airline's chairman]. So he helped smooth the passage through the Dubai Civil Aviation Authority and we ended up in this happy situation whereby we're both now flying the route."

A spokesperson for Emirates Airline confirmed that the wide-body operator is no longer seeking traffic rights for Almaty.

Dubai was Air Astana's first international destination when it launched scheduled services in 2002, so the forced withdrawal had been a humiliating setback for its overseas network.

Foster said there was now a "compelling reason" to also resume the Astana-Dubai link alongside the restored Almaty service, but he downplayed the prospect of codesharing with Emirates Airline. Negotiations on the subject were abandoned in 2013, and Air Astana is content with signing interline agreements to funnel its passengers over the hub.

#### **Codeshare agreement**

In neighbouring Abu Dhabi, however, an existing codeshare agreement on flights from the UAE capital to Astana looks ripe for expansion.

Air Astana and Abu Dhabi's Etihad Airways both ply the route with their own metal, and talks are under way to establish a joint venture with "full cost and revenue sharing".

Foster said such agreements remove incentives for codeshare partners to "manipulate the onward inventory in favour of their own flights", adding that Air Astana has faced difficulty in securing third-country codeshares across the Gulf.

But he unequivocally ruled out any prospective equity deal with Etihad, noting that Air Astana's central Asian hub-and-spoke network is not a natural fit for the Gulf carrier.

"Etihad have very clear criteria for their equity partners; the main criteria being that nobody overflies Abu Dhabi," he explained. "We can understand that philosophy but it would never work for us. We wouldn't accept it, be interested in it, or have any need for it. We don't need their money. So it wouldn't work for us."

Foster is equally reserved on the prospects of expansion elsewhere in the Middle East, arguing that collaboration with the UAE's two market leaders makes more sense for a relatively small operator like Air Astana.

Iran's capital Tehran had been evaluated as a potential new route, he said, but network planners concluded that traffic between the two oil-producing nations would be limited.



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*Jazeera Airways Group is making a radical change of direction by selling its entire fleet and closing down its leasing operation.*

*What now for the Kuwaiti hybrid carrier? asks Alan Dron.*

# Jaz changes key

**J**azeera Airways Group, said chairman Marwan Boodai, had come to a crossroads. It had to decide if it wanted to stay on its current course as a company that owned its own aircraft and leased surplus capacity to others... or to break with the past and blaze a new path.

The decision, he said, was to opt for the strategic change of direction. It would sell its entire fleet of 15 Airbus A320s to a financial consortium and close down its Sahaab Aircraft Leasing arm. In future, the group's airline division would lease its fleet from others.

So, what were the reasons for the dramatic course alteration?

In 2010 Jazeera Airways took over a small leasing company, Sahaab Aircraft Leasing, transferred its Airbus A320s into it, then leased those assets from its sister company.

Sahaab was also used to create a second revenue stream. Jazeera Airways' older A320s were passed on to Sahaab, which then leased them out to third parties. Recent lessees included Virgin America, Flynas of Saudi Arabia, TAP Air Portugal and SriLankan Airlines.

This second source of revenue was particularly important while Jazeera was recovering from its 2009 loss – the first since its creation in 2004.

By last year, however, the group's management was looking closely at this arrangement. One reason was that Jazeera Airways was making an 18-20% return on equity, whereas the comparable figure for Sahaab was just 6-8%.

Additionally, in recent years it had been the airline side of the group that had turned in the bulk of the profits. From a 50-50 split in net profit generation in 2011, the first nine months of 2014 had seen the airline generate 81% of earnings and the leasing business just 19%.

Secondly, several of the leased-out A320s were going on to their second lessees, which meant that the fees they could demand were diminishing.

"Sahaab played a vital role when the airline was going through a tough time in 2009-10," said director Hany Shawky, who headed the company task group that developed the new strategic plan.

"But now, looking at the future of Sahaab, profitability will drop as the aircraft are getting older.

"We have a small fleet. We would have to put in big orders for new aircraft and diversify the fleet between narrow- and wide-bodies. That's something that requires focus and a lot of expertise."

Group chairman Marwan Boodai added: "Sahaab was created to help the Jazeera Airlines business reach a certain orbit. We have now reached that orbit. We had to either invest heavily into the leasing business or sell it. In the leasing business, you can't stand still. You have to keep investing, refreshing, and growing the fleet to reach a critical mass. Sahaab is still making a profit but the airline is doing better."

And, while the leasing arm had proved reliable, it was not, the group's board decided, an area where it excelled.

## New plan

So, a new plan – strategy one – was devised. This would involve divesting the leasing business, closing down Sahaab and selling the fleet to a third-party lessor, from which it would be leased back. This would be followed by a three-year business plan out to 2018.

The lessor chosen was a consortium made up of Chow Tai Fook Enterprises (Hong Kong) and Investec Bank of the UK. The price tag for the fleet: KD149 million (\$507 million).

"We have a balance sheet that's loaded with debt," added Shawky. "That's something we would like to solve. We believe our airline can make phenomenal return on equity once the debt has been paid. Our balance sheet will look completely different. We will be debt-free, asset-light and cash-rich."

Jazeera Airways recorded a record net profit of KD16.7 million (\$59.1 million) in 2013, up almost 20% on 2012's figure of KD15.9 million. The 2014 figures are expected imminently, but the nine months to September 30 yielded a net profit of KD13 million (\$45.3 million).

Boodai cautioned that the group expected to register a non-recurring net loss of KD3.2 million

(\$11.2 million) for the 2014 financial year as a result of the difference between the sale value of its aircraft and the book value of the aircraft portfolio.

However, the airline's profits are expected to grow in 2015 and it is aiming for at least a 50% rise in earnings over the next three years.

Removing debt means no financing costs, which will immediately improve profitability. Not only will the airline be cash-rich, but also it will be free cash. This will open the possibilities of it being used to pay dividends, for investment in the network infrastructure and seizing opportunities that arise.

Boodai hinted that some of the proceeds would be used to capitalise on Kuwait's expanding passenger market through the provision of unspecified improvements in the passenger experience while on the ground.

Jazeera has already upgraded that experience at Kuwait International Airport, paying for the construction of four new gates equipped with two state-of-the-art air bridges. These opened last summer and increased capacity at the airport by 30%. They are exclusively for Jazeera's use and will ease previous terminal congestion.

The cash released through the sale of the fleet will also be used to create a financial war-chest, to enable the airline to ride out any operational challenges.

Jazeera intends to announce its choice of new aircraft to replace its A320s in the next few months. Another major decision in the near term is whether to take a stake in national carrier Kuwait Airways, which is being privatised.

"Kuwait Airways poses very little direct competition to the resurgent Jazeera Airways," noted Saj Ahmad, lead analyst at Strategic Aero Research.

"Any bid for a stake by Jazeera in Kuwait Airways does two key things. It removes any direct competition, since there would be a corporate basis for cooperation on routes that overlap, and secondly, Jazeera would be able to tap into Kuwait Airways' international passenger base beyond the Gulf Cooperation Council (GCC) region."

He added: "Kuwait Airways has been one of the slower moving GCC airlines when it comes to



**“We had to either invest heavily into the leasing business or sell it.”**

MARWAN BOODAI

investment and strategy overhaul, but with orders in the pipeline for A320neos, A350-900s as well as Boeing 777-300ERs, this would represent good value for Jazeera to become a major stakeholder, since much of the capital expenditure has already been accounted for.

“However, the biggest challenge remains – and that is to make Kuwait Airways a profitable entity. It remains to be seen if Jazeera really has the capability to change Kuwait Airways for the better.”

Meantime, Jazeera continues to pull in passengers with its hybrid business model, which it describes as “value” rather than low-cost, providing customers with complementary meals and a generous baggage allowance. Jazeera turns in a healthy profit at load factors of 70%.

Passenger figures remain strong, due to the large number of expatriate workers in Kuwait who travel home periodically and the prosperous indigenous population. “We have a huge consumer demand and expansion here in Kuwait,” said Boodai.

Despite the closure of Assiut, one of its Egyptian destinations, for several months in 2014 due to airport refurbishment, and the continued closure of its three Syrian destinations, prospects are good.

There is no intention to radically expand the route map, but rather to increase traffic on existing sectors. One move last year saw Jazeera move its Istanbul flights from the Turkish city’s secondary airport, Sabiha Gökçen International, to its primary hub, Ataturk International, and increase frequencies from three to five a week.



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**Dr Nicola Davies** looks at the role played by human error in aviation accidents and investigates what is being done to help mitigate the situation.

## THE HUMAN FACTOR

**T**o err is human – and recent events have proved that the aviation industry is no exception to that statement. The tragedy of Germanwings Flight 9525 and, before that, Mozambique Airlines Flight 470, proves that pilots can readily take control of an aircraft and forego all safety standards and measures.

Despite state-of-the-art technology, intensive skills training and safety protocols, there is still the human component of personal judgement. The responsibility of the lives of passengers still rests in the hands of the pilot and there is little or no technology in place that can fully circumvent psychologically motivated human error.

The main similarity between the two flights was human control.

The crash of Germanwings Flight 9525 on March 24 this year was recently determined to be the intentional actions of co-pilot Andreas Lubitz. The aircraft was flying from Barcelona, Spain to Dusseldorf, Germany and carrying 150 passengers and crew when it crashed into the French Alps, leaving no survivors.

A similar chain of events took place in the November 2013 crash of the Mozambique Airlines Flight 470, which was flying from Maputo in Mozambique, bound for Luanda, Angola and carrying 33 passengers and crew.

The pilot, Herminio dos Santos Fernandes, locked the

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## CONTINUED FROM PAGE 39

cockpit once the co-pilot left for a bathroom break and proceeded to alter the autopilot altitude. Despite the co-pilot's attempts to open the cockpit door, dos Santos Fernandes deployed the spoilers so the plane would descend faster. No distress calls were communicated to any control tower. The plane quickly crashed into a swamp in Namibia's Bwabwata National Park, leaving no survivors.

Prosecutors can account for personal turmoil – marital problems and the death of a child – as possible explanations for dos Santos Fernandes' suicidal behaviour.

In both flights, pilots Lubitz and dos Santos Fernandes waited to be left alone in the cockpit before resetting the autopilot for swift descent, ignoring all warnings from crew and control towers and manually controlling the throttle. According to a prosecutor in the Germanwings crash: "The intention was to destroy the plane. Death was instant."

In the absence of in-depth psychological evaluations that are internal to the company, prosecutors and the public are left to theorise and suspect the motives for Lubitz's bizarre and horrific actions.

**Human error**

Aircraft manufacturers and flight service providers have continuously taken measures to minimise the great influence of human factors in flight safety and outcome. Examples of such measures include:

- Flight deck and maintainability design – flight decks are structured with easy-to-use, efficient and intuitive systems. There is an appropriate degree of automation that detects potential problems that pilots may miss, enhanced communication and interaction among crew members, and improved navigation, surveillance and air traffic management. Ergonomic analyses also adds improvements so that in-service personnel can physically access and manage the manual maintenance of hardware and mechanical ware.

- Intensive medical examination and training – medical certification may differ from one country to another but all pilots are required to have them prior to flying a plane. According to both the UK Civil Aviation Authority and the US Federal Aviation Administration, pilots are required to pass an intensive annual medical examination, which focuses on measuring physiological and technical capabilities.

- Reinforced cockpit doors – since the 9/11 attack, cockpit doors have been designed to withstand gunfire and grenade explosions as a precaution against potential terrorist attacks. However, the presumption here was that the attack would come from outside the cockpit, and not from the inside.

- Controlled door locking system – there is a lock switch accessible only to the pilot, which locks the door for five minutes. There is a code

The debris from the Germanwings fatal flight - allegedly brought down deliberately by first officer Lubitz.

PICTURE: LIONEL BONAVENTURE/AFP/GETTY IMAGES



that can open the door from outside in case the pilots inside become incapacitated. In case the entry of the code is not permitted, a pilot from inside overrides that code and continues to lock the door. In the Germanwings and Mozambique Airlines incidents, both Lubitz and dos Santos Fernandes were able to completely shut out the rest of the crew.

- Rule of two – some airlines have a strict policy of having two crew members in the cockpit at all times. When one pilot leaves for a bathroom break, a flight attendant is supposed to take his seat until he returns to his post. Some aviation specialists note that this rule also has its risks.

Despite these precautions, there is still room for human error leading to flight incidents.

According to a Boeing study, pilot error accounts for almost 80% of accidents; the remaining 20% is accounted for by equipment failure and weather-related conditions.

**Designed to enhance**

Developments such as the autopilot don't aim to replace the pilot, but are designed to enhance his (or her) airmanship. There is still a percentage left to the judgement and decision-making skills of the pilot. Because of this, human error can occur, usually through failure to follow standard procedures or to make good strategic judgements.

The incidents with Mozambique Airlines and Germanwings should serve as a wake-up call for a systematic and continual evaluation of the fitness of pilots to fly, not just physically and technically, but in terms of their commitment to the safety of the passengers and the crew, as well as their capacity to make sound decisions.

And that begs the question over whether there is a lack of internal and in-depth testing for psychological capability to fly.

Medical tests are required among pilots for physiological fitness and intensive training for technical fitness. Doctors also utilise the medical examination to identify psychological red flags.

However, the process by which doctors gather data might be the start of the problem. Findings depend heavily on self-reporting. Pilots can, therefore, merely say what doctors want to hear

in order to avoid any further psychological testing. If there is no traumatic experience, no further in-depth testing is carried out and there is no early identification of any potential psychological problems.

Lufthansa, the mother company of Germanwings, said that Lubitz was 100% fit to fly despite a bout of depression prior to 2009. However, his girlfriend mentioned that an external eye doctor and neuropsychologist concluded he was unfit to fly because he was too stressed with work. The problem, it seems, is that Germanwings was not aware of such outside medical conclusions.

In line with the incident, the European Federation of Psychologists' Associations (EFPA) and the European Association for Aviation Psychology (EAAP) issued a press release that emphasised the need for recurrent mental health evaluations to complement the initial psychological selection of pilots.

Initial psychological testing can only assess the mental and emotional stability prior to training and admission. "However, it cannot forecast the life events and mental health problems occurring in the life of each individual pilot and the unique way he or she will cope with these," said the report.

The human factor is not one that can be ignored – especially in an industry like aviation. The risk is high and crew members are legally tasked to ensure the safety of passengers. The technological and procedural improvements built into the architecture and systems of an aircraft support the pilot's airmanship. However, if a pilot is psychologically unfit to fly a plane, these improvements can do little to ensure a safe air flight.

Thus, the frequent and in-depth mental and emotional evaluation of pilots should be considered as important as the upgrading of aircraft software, repair of damaged mechanical parts and crew skills training.

- Nicola Davies holds a master's degree and a PhD in health psychology. She is a member of the British Psychological Society and its Division of Health Psychology.

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## Politics the real price of Egypt's Rafale purchase?

*Egypt has become the first export customer for the French Dassault Rafale fighter-bomber.*

**Jon Lake**  
*explains how the deal came about.*

**D**assault signed a €5.2 billion (US \$5.9 billion) contract for 24 Rafales, a DCNS Group FREMM class multi-mission frigate and an undisclosed package of MBDA missiles in Cairo on February 16.

Negotiations with India for 126 Rafales continue, and Dassault hopes for further orders after unsuccessful attempts to sell the aircraft to Korea, Singapore, Brazil, Switzerland and the UAE.

Egypt was the first export customer for the Dassault Mirage 2000 in 1981 and there have been high-level discussions about replacing its fleet of 18 aircraft for much of the past year.

Detailed discussions began in December, with French president François Hollande and his Egyptian counterpart, Abdel Fattah el-Sisi, agreeing the essential elements when they met at the funeral of the late Saudi King Abdullah in January 2015.

Some analysts have suggested that the arms deal with France is more about politics than security, with Egypt keen to demonstrate that it does not rely exclusively on the US for its military equipment, and that it will stand up to US Congressional pressure (backed by the withholding of such equipment) to change its policies on dealing with dissidents.

The Egyptian Air Force is large and well equipped, with more than 230 F-16 fighters, as well as US-supplied Apache attack helicopters.

### **New waterway**

Egypt is keen to fly the Rafale and show the frigate when it opens a new waterway on the Suez Canal in August. The warship (the Normandie) is being diverted from a French Navy order, with its systems translated into English and Arabic and the naval Cruise missile capability removed.

To meet Egyptian timescales, the first batch of three Rafales will be diverted from Armée de l'Air production, with nuclear missile capability and NATO standard communications removed. Three more Rafales will be delivered to Egypt in late 2015 or early 2016 and another three in 2017, with the remaining 15 to be delivered by mid-2019.

Exports are vital for Dassault if it is to sustain long-term production of the Rafale amid pressure on military budgets at home. Last year the French Government announced that it would slow the pace of Rafale deliveries from 11 per year to just 26 in total over the next five years. Exports promise to allow production to remain at the more economically viable rate of 11 per year.

There was no formal competition for the new Egyptian fighter, though there were, reportedly, exploratory contacts between Egypt and the Eurofighter consortium. Questions had arisen, however, over the availability of rapid export licences from Britain and Germany in the face of concerns over human rights and the coup that deposed Egypt's democratically-elected president.

At the end of the day, pricing is believed to have been the most critical factor in Egypt's selection of the Rafale, with the Egyptian economy under significant pressure.

### **Useful capabilities**

Major General Mohammed Abbas, chief of the Egyptian Air Force's operations department, said he was looking forward to taking delivery of the Rafale, which he described as a "great aircraft with many useful capabilities", but added that "Rafale was the aircraft that we could afford and not necessarily the aircraft we wanted".

The Rafale, frigate and missile orders will each be covered by specific contracts rather than an over-arching global deal, and Egypt will pay for half of the total, with the other half financed by bank loans, reflecting the guidance set by the Organisation for Economic Cooperation and Development.

News website Al-Youm Al-Sabea (reported by Reuters) said that Saudi Arabia, Kuwait and the United Arab Emirates have pledged to deposit \$10 billion in Egypt next month, taking care of the Egyptian contribution, while BNP Paribas, Credit Agricole and Soci t  G n rale are the banks raising the loans, according to French media.

The bank loans will be insured by Coface, the French state-backed export credit guarantee department, meaning that the French Government would repay the banks and the manufacturers if Egypt failed to make its loan repayments.



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**TEXTRON AVIATION**

*The formation of the Emirates Defence Industries Company (EDIC) by Tawazun Holding and Emirates Advanced Investment Group, which took place on December 2, is set to harmonise the UAE's defence industry. Alan Warnes takes an in-depth look at what the transformation might mean.*

# JOINING FORCES

**B**y acquiring the defence and aerospace sector of Mubadala (60% of the company) and the defence side of Tawazun (40% of its business), EDIC will help to strategise the UAE's defence industry.

It will allow different companies to work together instead of competing with one another, as has been the case.

Led by chairman, Homaid Al Shemmari, and former Thales frontman, Luc Vigneron, EDIC will "champion innovation and technology development" under one management team.

It will harness the wealth of knowledge coming from the likes of manufacturing, training, logistics, technology development and communications subsidiaries previously in competition.

A single maintenance, repair and overhaul (MRO) service centre for air, land and sea platforms will be built.

As the new chairman, who once ran Mubadala, said: "We are positioning the sector for more growth and to maximise our potential."

The first phase saw 11 subsidiaries from Mubadala, Tawazun and AIG investment groups being brought into the EDIC fold. They comprised Al Taif Technical Services, Bayanat (mapping and surveying) and Horizon International Flight Academy from Mubadala; NIMR Automotive, Tawazun Dynamics and Tawazun Precision Industries from Tawazun Holding; while C4 Advanced Solutions, Global Aerospace Logistics (GAL), Naval Advanced Solutions, Secure Communications and Thales Advanced Solutions came in from EAIG.

In phase 2, announced on February 21, they were joined by Abu Dhabi Autonomous Systems

Investment (ADASI), Advanced Military Maintenance, Repair and Overhaul Centre (AMMROC), Burkan Munition Systems, Caracal Light Ammunition (CLA) and Caracal International.

Speaking at this year's International Defence Exhibition & Conference (IDEX) in Abu Dhabi, Al Shemmari commented: "These five companies were selected as part of EDIC's strategy to be the region's premier integrated defence manufacturing and services platform."

EDIC also announced several senior management appointments, including Sara Al Shorouqi as executive director of communications, Imad Ayass as general counsel, Mohamed Al Raeesi as senior legal counsel, Laila Saif as acting head of human capital, and Omar Al Faresi as acting head of finance.

Al Shemmari also noted: "As a result of this integration, the defence services industry will benefit from improved alignment, enhanced performance, increased capacity and greater economies of scale. It will be better positioned to serve the armed forces of the UAE and compete for business in the region."

The companies should benefit as the UAE steps up its military spending to combat the increasing threat from Islamic extremists, and to fend off any potential threat from Iran.

The UAE's overall budget is set to grow 8.4% from Dh25.1 billion (\$6.8bn) this year to Dh27.4 billion (\$7.5bn).

Of the 16 companies, ADASI, AMMROC, GAL, Horizon and Tawazun Dynamics currently make up the bulk of the military aerospace business. There is a crossover of responsibilities but this will be



resolved in Al Shemmari's master plan.

ADASI was established in 2007 to develop and acquire knowledge, as well as technological capabilities, in autonomous systems, like UAVs. Today, the company's core activities include the acquisition, operation and maintenance of systems for air, land and sea use, as well as their modification and systems integration, including the addition of alternative payloads.

UAV work started with the Al Sabr system, based on the Schiebel S100. While it's true ADASI assembled the UAVs after they were shipped to the



**It was announced at IDEX on February 23, that Canada's Viking Air had handed over the last of nine Twin Otter Series 400s to Global Aerospace Logistics (GAL). They are then being delivered to UAEAF's Joint Aviation Command. GAL is one of the 11 subsidiaries brought into EDIC, and will eventually function as part of the AMMROC budget.**

UAE, those skills have now been lost because, according to one source, "they were put together by Schiebel employees and Filipino workers, who then left when the work was completed".

This is what EDIC management does not want to happen – its aim is to maintain capabilities. While ADASI has also been involved in aerostats, it is now working with Piaggio on the P180 multirole patrol aircraft (MPA). The two prototypes, with their Saab mission systems, are well behind schedule as the first one was expected to fly in late 2014. A source said: "ADASI will work on the MPA, which will

eventually see a bigger fleet of more than 12 being worked on for the UAE."

ADASI provides maintenance and trains people on the Al Sabr system and aerostats, and plans to do the same with the P180 MPA, but it would probably make sense to transfer the work to AMMROC in a future round of rationalisation. AMMROC, the Abu Dhabi-based joint venture owned by Mubadala, Sikorsky and Lockheed Martin, was formed to provide the best maintenance service and support for military customers across the South Asia, Middle East and

North Africa (SAMENA) region. It is building a massive maintenance, repair and overhaul (MRO) centre at Nibras Al Ain Aerospace Park.

The free-zone project being jointly developed by Mubadala and Abu Dhabi Airports Company will support the establishment of a sustainable aerospace industry in Abu Dhabi.

AMMROC currently provides a full performance-based logistics service or 'power by the hour' as its known, to 18 military aircraft operated in the UAE. For now the work is being done in

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several locations – mainly Al Dhafra and at Al Ain at the GAMCO/Etihad facilities.

Its capabilities are set to include aircraft services for rotary and fixed-wing aircraft; component services; engine services including repair, overhaul and depot work; modifications and upgrades; weaponisation, equipment installation and upgrades.

The latter means there will be a crossover with Global Aerospace Logistics (GAL), which overhauls helicopters, weaponises them and installs equipment. Officially, GAL is a leading provider of government and defence aerospace services encompassing aviation maintenance, component repair and overhaul, aviation logistics, maintenance repair facility, aircraft sales, tactical pilot training, and defence aviation consulting and project management.

According to a GAL source, the company will now work under the AMMROC budget.

In the past, it has been tasked with procuring aircraft and subsequently upgrading them for the Joint Aviation Command (JAC). Not having the technological know-how, the work to integrate weapons, sensors and other mission equipment was usually out sourced to the USA's Sierra Nevada Corporation, Iomax or Canada's Highland Integrated Surveillance Systems (HISS).

**Specially equipped**

For example, the delivery to GAL's Abu Dhabi facility of a ninth and final Viking Twin Otter Series 400 since 2013, took place during IDEX on February 25. The specially-equipped aircraft is configured with paratroop provisions and intermediate flotation gear (IFG) to support the government's operations in the Arabian Gulf region.

Like the others, it was handed over to JAC under a multi-year service contract, which also included HISS upgrading it with Star Safire 380HD sensor turrets.

This business is, in the future, likely to be brought in-house and, according to one observer: "GAL could become mission systems integrators and service them too." The same source admitted there is a need for a company with these skills: "AMMROC has tried but not got very far. With this new impetus it could now work out."



**The Al Tariq family of strap-on weapons is the flagship product of Tawazun Dynamics, which is a joint venture between Tawazun and South Africa's Denel dynamics. However, it is now part of EDIC.**

AAR Airlift was selected by AMMROC in late December to support the design, outfitting and integration of key areas of its state-of-the-art facility in Al Ain.

AMMROC will set up its component repair and depot level maintenance facilities there but needs assistance in building up the 1.2 million square feet of infrastructure.

Randy Martinez, president and CEO of AAR Airlift Group, said: "We have set up a MRO facility in North America, so have the skills to put the systems in and to repair sub-components that need to be transferred from other sites."

It is going to be big task, but the critical design review has been completed.

"We are training AMMROC personnel to set up the capabilities and, after we integrated the F-16 infrastructure at Al Dhafra 10 years ago, we have plenty of experience," said Martinez.

AMMROC is aiming to work on 45 different variants of platforms, spanning 36 types, which will total more than 500 aircraft.

AAR is targeting the implementation of common procedures with work on eight platforms now under way. "These eight – A330 MRTT, AH-64, CH-47, C-17, C-130, F-16, Mirage 2000 and UH-60 – is where the volume is and we are targeting ops to commence with them in May 2016," said Martinez.

Further types operating with the UAE military, to be maintained by AMMROC at Al Ain,

include the A109, AW139, AT802, AS332, AS350, AS365, AS550, AS565, Bell 407 (training/special mission), Cessna 172 Skyhawk, Cessna 208, CN 235, DASH-8, Diamond DA42, Grob 115, Hawk 51, Hawk Mk 102, King Air, MB339, Piaggio P180, PC-7, PC-21, Seeker, and Twin Otter/Guardian.

Al Ain-based Horizon International Flight Academy transferred its fixed-wing training operation to Etihad Airways in May 2014. Its focus is now on helicopter pilot training.

The Cessna 172 and DA42NGs will be maintained by AMMROC, as will the Bell 407s used for the military pilot training.

**Phased out**

The former UAEAF Bell 206s fulfil a basic helicopter training role aimed at civilians, but will be phased out within next few years for a single-engine equivalent with glass cockpit. It will undoubtedly be one that AMMROC will overhaul. Recent customers have included students from Bahrain, Kuwait, Oman, Saudi Arabia and the US Government. The latter sent Afghan Air Force pilots that were once trained in the USA.

Tawazun Dynamics, a joint venture between Tawazun (51%) and Denel Dynamics (49%) was among the first subsidiaries to join EDIC. The company is the Middle East region's first facility for the development, manufacture, assembly and integration of airborne precision-guided munitions. On display at IDEX was the company's flagship Al-Tariq family of strap-on munitions – Mk 81 (500lb), Mk 82 (1,000lb), Mk 83 (2,000lb) bombs known to be in use with the UAEAF Mirage 2000s.

Several air forces, including Pakistan, have been looking at the system to ensure the accuracy of their iron bombs.

Tawazun Dynamics received one of the largest orders at IDEX, from the UAE General Headquarters of the Armed Forces, with an AED1.53 billion (£416 million) contract for precision-guided weapons, including the Al Tariq family of munitions.

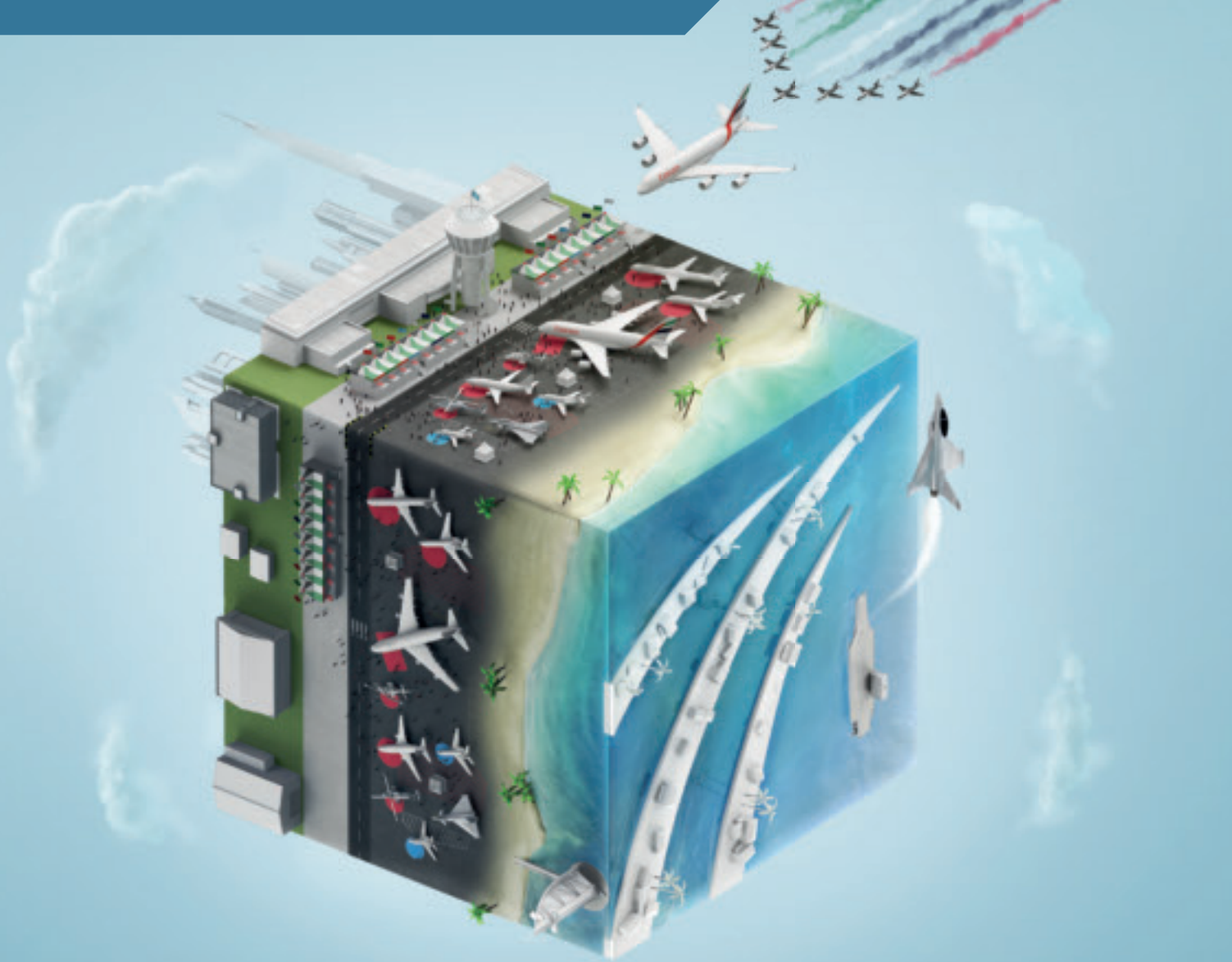
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**EDEC will take on the defence business of Mubadala, Tawazun Holdings and Emirates Advanced Investment Group (EAIG).**



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**Jon Lake** looks at the increasingly complicated scenario as a coalition of countries continue air strikes against Islamic State.



# COALITION ON THE ATTACK

**T**he air campaign against Islamic State (IS) in Syria and Iraq began in earnest last summer following the seizure of large swathes of territory in eastern Syria and across northern and western Iraq.

The US began mounting air attacks against targets in Iraq during August and then began what it called “expanded air strikes” on September 15, widening these to include targets in Syria on September 22.

The US air campaign was supported from the start by an Arab coalition (which operated against targets in Syria) and a Western/NATO coalition (which operated against targets in Iraq), with US aircraft attacking both target sets.

Separation of aircraft and air forces between Syrian and Iraqi targets is believed to be due to an Iraqi unwillingness to allow air forces that are actively supporting the removal of Syria’s Bashar al-Asad, (a regime supported by Iraqi Prime Minister Haydar al-Abadi’s Shia-dominated government) to operate in its skies. The Iraqis have no choice when it comes to the US Air Force (USAF), since they need American airpower.

Participants in the attacks against targets in Syria have included F-16Cs of the Royal Bahraini Air Force, F-16MLUs of the Royal Jordanian Air Force (RJAF), F-15S Eagles and Panavia Tornados of the Royal Saudi Air Force (RSAF), and UAE Air Force and Air Defence (UAE AF&AD) Block 60 F-16E/Fs.

The role of Qatar (whose Mirage 2000s are believed to have played some part in the initial attacks, though perhaps only in a support function) remains unclear.

The Royal Moroccan Air Force joined the coalition on November 26, with the deployment of six Lockheed Martin F-16C/D Fighting Falcon multi-role fighters to the United Arab Emirates.

Further complicating the situation has been the participation of the Islamic Republic of Iran Air Force (IRIAF), though this has been categorically denied by Tehran, who said that “any cooperation in such strikes with America is out of the question”.

Despite this, it is known that IRIAF pilots have been involved in operations by the ex-Iraqi Sukhoi Su-25s that were donated to the Iraqi Air Force by the Iranian Revolutionary Guard Corps

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(IRGC), and that Iranian reconnaissance platforms (UAVs and RF-4E Phantoms) were observed operating over Iraq's Diyala province in November 2014.

The cities of Jalula and Saadia are 25 miles from the Iranian border and have been captured and recaptured several times by IS forces.

Three IRIAF F-4E Phantoms from the 91st Tactical Fighter Squadron (TFS) took off from Vahdati on November 25, attacking IS targets with Snakeye cluster bombs and Zuni rockets. On November 28, a larger force of six F-4Es attacked IS targets using the same weapons, and IRIAF F-4Es dropped Sattar 4 LGBs on an IS HQ the following day. On 30 November, F-4Es used GBU-78/A Ghased TV-guided bombs.

About five Sukhoi Su-24MK 'Fencer' fighter-bombers from the 72nd TFS, supported by further F-4s, have operated from Noujeh, flying similar missions.

The Iranian missions were apparently flown at the request of the Iraqi Government, and did not form part of the US-led operation 'Inherent Resolve'.

The operation has not been without cost to the allies. One USAF F-16 was lost in an accident over Jordan on November 30, which killed its pilot, while the Iraqi Air Force has lost a number of helicopters, including two Mi-24/35 'Hinds', one Eurocopter EC635 and one Bell 407.

On Wednesday December 24, a RJAF F-16 crashed 11km east of Al-Raqqa (IS' self-proclaimed capital), in the northern part of central Syria. The pilot, lieutenant Muath Safi Yousef (Moaz) Al Kasasbeh, of No1 Squadron, was captured by IS militants, who claimed to have shot down the aircraft.

IS forces are known to operate man-portable air defence systems (MANPADS) and have previously downed a number of low/medium flying Syrian Arab Air Force aircraft and helicopters.

Following the loss of the Jordanian F-16, at least some of the Arab members of the coalition stopped flight operations over Syria, complaining that US

Air Force combat search and rescue (CSAR) forces based in Kuwait were too far from the operational area.

The RJAF and UAE AF&AD continued to indirectly support 'Inherent Resolve' by providing basing for other allied aircraft, but stopped taking part in air strikes. On December 30, Rula al-Hroob, a member of the Jordanian parliament, told American National Public Radio that the RJAF had suspended operations over Syria in order to help secure al-Kasasbeh's release, while the Jordanian Government worked on the release of the downed pilot.

On January 1, a special operations mission was launched to recover the Jordanian pilot but this had to be aborted after the commando helicopters came under heavy fire as they approached a private house in Al-Raqqa where the pilot was believed to be held. Some sources suggest that the mission was planned and undertaken by US forces, others that the operation was run by Jordan, using Turkish airspace to launch the mission and relying on Turkish intelligence.

#### Broke off negotiations

On February 3 it was reported that IS had murdered al-Kasasbeh by burning him alive. Jordan broke off negotiations (which had aimed to release the pilot in exchange for a number of IS prisoners in Jordanian prisons).

Jordan executed two prisoners a few hours after the release of the grizzly video showing Al Kasasbeh's death, and vowed to intensify its operations against IS. King Abdullah II said that he was more determined than ever to undermine, degrade and eventually defeat IS, vowing that: "The blood of martyr Moaz al-Kasasbeh will not be in vain and the response of Jordan and its army after what happened to our dear son will be severe." Jordan promised to fight until its military ran out of fuel and bullets.

On February 5, the RJAF resumed operations against IS targets. On that day, 20 Jordanian F-16s were committed to the operation, taking responsibility for every target on the daily target list.

The RSAF also expanded its operations,

committing its new Eurofighter Typhoon multi-role fighters, which had initially begun hitting IS targets using Paveway II laser-guided bombs, before switching to the dual-mode laser GPS-aided inertial navigation system (GAINS) Paveway IV bombs in early 2015.

In response to its allies' concerns, the USAF moved A-10s from Afghanistan to Kuwait, partly to support possible future CSAR missions, while a V-22 Osprey combat search and rescue (CSAR) unit was moved from Kuwait to Irbil in northern Iraq.

Once the USAF had repositioned CSAR assets, the UAE rejoined the air campaign and redoubled its efforts, deploying an F-16 squadron to Amman in Jordan on Sunday February 8, supported by A330 MRTT tankers and a C-17 airlift aircraft.

On arrival at their new Jordanian base, the base commander welcomed the UAE force and praised the historic ties between the UAE and Jordan, pledging the provision of all required facilities.

Colonel staff pilot Saeed Hassan, commander of the UAE Force in Jordan, offered his condolences to the Kingdom of Jordan on the death of Al Kasasbeh and affirmed the UAE AF&AD's readiness to conduct missions in coordination with the Jordanian Armed Forces as part of the global coalition to counter IS.

But, behind all the rhetoric, the air campaign against IS has been modest, with a relatively low sortie count and a limited number of weapons dropped.

Critics suggest that this represents only a fraction of the effort that would be required to deal a decisive blow to IS, though, in fact, it would seem to be more of a reflection of the difficulty in finding and striking what are often fleeting targets, and doing so without causing unacceptable levels of collateral damage.

In any case, in Iraq the airstrikes seem to have blunted IS' momentum as it advanced down the Tigris River valley towards Baghdad, and to have halted the group's advance on Kurdish areas, including preventing it from overrunning the town of Kobani on the Syrian-Kurdish-Turkish border.

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**Jon Lake** charts the rise and rise of Saudi Arabia's Typhoon fleet.

# Typhoons breeze to new heights

**A**s this edition of *Arabian Aerospace* was going to press, Royal Saudi Air Force (RSAF) Eurofighter Typhoons were engaged in their second combat operation, participating in the Saudi-led Asifat al-Hazm ('operation decisive storm') – the airstrikes against Houthi rebel forces in neighbouring Yemen.

But, though this operation was widely publicised in the country's press and on television, it did not mark the Saudi aircraft's combat debut.

That actually occurred late last year, when RSAF Typhoons quietly joined the bombing campaign against IS targets in Syria.

These two combat operations represented the culmination of a busy year for the RSAF's Typhoon programme, which is set to enter a new phase during 2015 with the delivery of Saudi Arabia's first tranche 3 aircraft (already being test flown at BAE Systems' Warton aerodrome in the UK), and with the stand up of a third operational unit (the 80th Squadron) expected at Taif.

Some observers expect even bigger news during the year ahead, with long-running rumours of the Saudis having a requirement for second and third Typhoon batches, which would take the number of aircraft ordered from 72 to 192, 204 or even 216. Sources close to the programme suggest that a contract for a second batch (of 48 or 60 aircraft) may be close to signature.

In 2005, even before the first Typhoon order had been confirmed, crown prince Sultan, then the first deputy prime minister of Saudi Arabia



and minister of defence and aviation since 1962, reportedly declared his intention to have "200-plus" Typhoons in RSAF service by 2015.

More recently, defence commentator David Ignatius, writing in the *Washington Post*, suggested that Saudi Arabia was planning to double its armed forces over the next 10 years. Ignatius said the RSAF would introduce between 450 and 500 new aircraft as part of this process, including 84 F-15SA Silent Eagles and a further 72 Typhoons.

The original Saudi order for 72 Typhoons was divided into three lots. The first 24 were diverted from RAF orders, and were taken from the UK production line at Warton, while the next 48 were originally expected to be assembled in-kingdom, 24 from UK supplied sub assemblies, and the remainder from kits.

Nearly all of the first two lots have now been delivered, with delivery dates confirmed for all

but three aircraft. These have all been from tranche 2 and are effectively identical to the RAF's tranche 2 Typhoon T.Mk 3s and FGR.Mk 4s.

Early plans for the Saudi aircraft to use T.Mk 53 and FGR.Mk 54 designations were cancelled.

The first Typhoon for Saudi Arabia made its maiden flight on October 20 2008 in the hands of BAE test pilot John Lawson

The first two RSAF Typhoons were officially handed over on June 23 2009, leaving for their delivery flight to Saudi Arabia two days later.

The first eight Saudi single-seaters were delivered during 2009, all of them wearing the serials and markings of the 10th Squadron, which had been intended to be the first RSAF Typhoon unit. In fact, plans changed, and the aircraft were delivered to the 3rd Squadron, which functioned as the operational conversion training unit.



The unit's first six two-seaters were delivered between March and October 2010, with four more single-seaters following during the last quarter.

An initial batch of six Saudi pilots (Colonel Al Shahrani, Lt Colonel Al Ibrahim, majors Al Amri, Al Hamad, and Al Qahtani, and captain Al Tamimi) were trained in the UK by No29 (Reserve) Squadron. Two more trained in Spain.

The rising cost of training in the UK led to the cancellation of plans to train an initial cadre of 22-24 RSAF pilots in the UK and the 3rd Squadron graduated batches of seven and eight Typhoon pilots in late 2010 and early 2011.

After a hesitant start, with the tranche 2 aircraft's initial SRP 5.0 software proving disappointing, the adoption of SRP 5.1 software allowed the RSAF to start using its Typhoons operationally. By mid 2011 the 3rd Squadron began standing quick reaction alert (QRA), carrying four Raytheon AIM-120C5 AMRAAM medium-range air-to-air missiles and a pair of short-range IR-homing Diehl BGT Defence IRIS-T air-to-air missiles.

Like Germany, Italy and Spain, the RSAF had selected the Diehl BGT Defence IRIS-T short-range air-to-air missile for short-range use, rather than the MBDA ASRAAM favoured by the UK.

The RSAF then started air-to-air gunnery – beating the RAF to this milestone. Though the unit is primarily an operational conversion training unit, it also maintains an operational role.

A small cadre of pilots began air-to-ground operations in December 2011 as part of a phased workup, with the RSAF taking the decision that it would pursue an interim air-to-ground capability even before the formal release of the phase one enhancement (P1E) package, which was planned to bring air-to-ground capability to RAF and other 'core nation' Typhoons.

Initially, the Saudis practised dropping Paveway IIs on targets designated by Damocles-equipped, TSP-modified Tornados (and by ground-based laser designators). They soon moved to self-designation, using an 'early cut' of the P1E software that was integrated under a service engineering modification (SEM), using a process like a UK urgent operational requirement (UOR) modification.

#### **Chose to be different**

The RSAF chose to be different to the other Typhoon users, selecting the Thales Damocles LDP over the Israeli-designed Litening pod.

The weapon used by the RSAF Typhoons was the legacy Paveway II laser-guided bomb (based on the UK 1,000lb bomb body) that was originally supplied for use by the RSAF's Tornados. This was the weapon used by the RAF's tranche 1 Typhoons when they gained a so-called 'austere air-to-ground capability' in 2008, but the Paveway II was not planned to be integrated on tranche 2 aircraft under P1E.

A contract for the integration of Damocles on the Saudi Typhoons was reportedly placed in

May 2012. After a rapid development and integration programme, BAE Systems flew the Thales Damocles pod on the UK's Typhoon instrumented series production aircraft (ISPA) BT017 ZK305 on November 29 2012 at Warton. The ISPA is a test asset jointly owned by BAE Systems and the RAF, then painted in No17 (Reserve) Squadron markings (and now wearing the markings of No41 (Reserve) Squadron), based at Warton.

BAE Systems undertook development of the Damocles integration, as well as Damocles/P1E training for two RSAF pilots, before testing and integration work transferred to Saudi Arabia.

A first fully self-designated end-to-end Paveway II bomb drop, using the Thales Damocles laser designator pod, was undertaken at the end of 2013, and further bombing trials took place in early February 2014.

The Damocles/Paveway II combination was, therefore, the baseline air-to-ground 'fit' when the 10th Squadron finally began to form as the RSAF's second Typhoon unit, and the first fully frontline squadron, in the second half of 2013.

The new squadron occupied its own complex of hardened shelters at Taif, although it shared aircraft with the 3rd Squadron. Many aircrew transferred to the new unit from the 3rd Squadron, including the cadre of aircrew who had been developing air-to-ground tactics and doctrine for the Typhoon force.

Though the 3rd Squadron had been a training unit with a secondary air defence role and a

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small air-to-ground cadre, the 10th was intended to be a multi-role squadron from the beginning.

Formation of the 10th was delayed by a 21-month gap in aircraft deliveries between September 2011, when the 24th Saudi aircraft was delivered, and June 2013, when deliveries resumed. This production gap was caused by the failure of plans for local final assembly, which would have seen complete sub-assemblies being air-freighted to Saudi Arabia aboard leased Antonov An-124 freighters.

Plans reached an advanced stage before the arrangements were cancelled.

Assembly was to have been undertaken in a new facility built by BAE Systems at King Abdulaziz airbase at Dhahran. Work on this facility (which was to incorporate a Typhoon technical zone for local production) began with the ceremonial laying of a foundation stone by defence and aviation minister prince sultan in March 2008.

**Chose to be different**

The facility was supposed to have been completed in August 2009, with work beginning in the second quarter of 2010 and the first locally assembled Typhoon due to be completed in 2011.

But the in-kingdom industrial programme (IKIP) failed to materialise, after “repeated hold-ups by Saudi Arabia regarding the choice of a build site”.

The failure to establish full local assembly from the 25th Saudi Typhoon onwards was reportedly the cause of great frustration, disappointment and even anger, but the UK was able to persuade Riyadh that its aspirations for full local assembly were unrealistic and local participation in through-life support for the aircraft would be a more realistic ambition, and one that would confer greater benefits than those that might accrue from a narrow focus on final assembly.

A modification to the 72-aircraft project Salam contract was signed in early 2012 and BAE Systems quietly began assembly of the first aircraft from the new Saudi batch in January 2012. The sub-assemblies that had built up at Warton, waiting shipment were, therefore, fed into the BAE assembly line.

The six two-seaters from the second batch were assembled first. The change in final assembly arrangements for the final 48 aircraft naturally involved extra work and extra cost for BAE Systems, but it took until February 2014 for a revised price to be agreed.

On 19 February, BAE Systems announced that: “Both Governments have now agreed price escalation terms relating to the Typhoon aircraft under the Salam programme.” But work continued even before this price adjustment was agreed, and the 10th Squadron’s stand-up continued uninterrupted.

Some new pilots converted to the Typhoon with the 3rd Squadron before being posted to



the 10th – several of them coming from the F-15C, and others straight from advanced training on the BAE Hawk.

Eight early aircraft had been delivered with 10th squadron markings in 2009, and further aircraft were delivered from December 2013. But for the squadron’s first major operation – a four-aircraft deployment to RAF Coningsby to take part in the Saudi-British ‘green flag’ exercise in September 2013, the 10th Squadron used 3rd Squadron aircraft.

Though single RSAF Typhoons had previously deployed outside the kingdom (for example for participation in the Bahrain International Air Show) this was the first significant deployment of the Typhoon outside Saudi Arabia, and it also marked the first time that the A330 MRTT aircraft had been used to ‘trail’ aircraft operationally by any air force – a source of great pride for the RSAF.

In this case, the Typhoons flew directly from Saudi Arabia to the UK, refuelling en-route. During the exercise, four RSAF Typhoons and four Panavia Tornado IDS aircraft worked alongside RAF Typhoons and Tornados, flying mixed RSAF/RAF pairs, allowed the two air forces to work in conjunction with the same aircraft types. This helped the RSAF in understanding how the aircraft could best be used to its full potential, gaining a useful insight into RAF Typhoon operations and tactics.

The RSAF detachment was led by brigadier-general Mohammed Al-Shahrani, who had been the first Saudi pilot to convert to the Typhoon at RAF Coningsby.

The 10th Squadron became fully operational around the end of the first quarter of 2014, eventually receiving 18 single-seaters and six

twin-stick trainers. The 3rd Squadron received 12 of each.

Though the RSAF initially gave its Typhoons an air-to-ground capability via a bespoke software load (an early iteration of P1E), it always intended to incorporate P1E when that software became available, and always intended to integrate the same weapons as the RAF, though in some cases, its required timescales were shorter.

An early priority for Saudi Arabia was integration of the Storm Shadow cruise missile (already in service with its Tornado IDS fighter-bombers). Saudi pressure (and probably Saudi funding) led to Storm Shadow integration on Typhoon being brought forward, and the missile may now enter Saudi service later this year.

The Storm Shadow’s range is such that it allegedly violates the UK’s voluntary commitments under the Missile Technology Control Regime (MTCR). This was of particular concern to the USA, whose then-secretary of state, Condoleezza Rice, requested a “specific assurance” that the Executive branch “would consult with our committees before any approval of a request to sell Saudi Arabia such sensitive weapon systems as Storm Shadow cruise missiles...” in 2008.

**First export contract**

In February 2014, according to French newspaper *La Tribune*, Saudi Arabia reportedly signed the first export contract for the MBDA Meteor air-to-air missile, for a reported £650 million (\$970 million).

With a full integration of P1E expected, Saudi Arabia also ordered the new Raytheon Paveway IV dual-mode bomb – the first Paveway version to incorporate a GPS/INS targeting capability, a programmable detonation capability, and variable attack directions and angles. This gave Paveway IV a formidable capability against targets obscured by smoke, dust or cloud – all of which can prevent the use conventional laser-guided bombs.

Raytheon announced that it had secured its first export order for Paveway IV on March 25, though it did not state that the customer for the £150 million (\$224m) order for 2,400 Paveway IVs was the Kingdom of Saudi Arabia.

BAE Systems announced that the RSAF’s Eurofighter Typhoon fleet had reached 10,000 flying hours on July 9 2014, but few could have guessed that, within six months, the Saudi Typhoons would be at war.

The 10th Squadron’s Typhoons flew an initial phase of operations against IS targets in Syria using the Paveway II laser-guided bomb. The squadron then underwent a brief period of follow-up training, before re-joining the air campaign using the new dual-mode Paveway IV.

More recently, the Typhoon has seen combat in Yemen, though at the time of writing, details remain sketchy.



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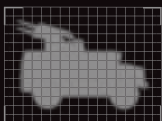


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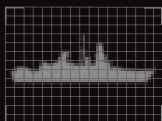
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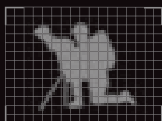
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A pair of UAEAF/Group 10 AH-64D Apaches participated in the IDEX opening ceremony which saw delegations from 55 countries attend.

**Inset left:** The Eurofighter static display included a full weapons load, as per the P3E standard contract, which was signed on February 22 at IDEX.

**Inset below:** Eurofighter GmbH CEO, Alberto Gutierrez, told the media on February 23: "The P3E upgrade gives the Eurofighter Typhoon unrivalled full multi-role and swing-role capability."

*This year's International Defence Exhibition (IDEX) at the Abu Dhabi National Exhibition Centre (ADNEC) took place from February 22-26.*

*Alan Warnes was there with his camera.*



# HIGH FIVE

**FIFTH IDEX IS A WINNER AFTER A GREAT DEFENSIVE DISPLAY**

**T**he fifth IDEX since the event first launched in 2003 boasted 1,200 exhibiting companies, delegations from 55 countries and around 80,000 visitors.

The show's strategic importance was evident from the news that emerged from the event.

Eurofighter released details of a new capability contract. The deal, valued at €200 million (\$215 million) will cover a suite of enhancements to the Eurofighter Typhoon.

As well as introducing a number of upgrades to the Eurofighter's mission and maintenance systems, the contract, known as phase 3 capability enhancement (P3E), will equip the Eurofighter Typhoon to deploy multiple precision-guided air-to-surface weapons at fast-moving targets with low-collateral damage.

Details of the enhancements were revealed during a contract signing in the presence of Philip Dunne, UK minister for Defence Equipment, Support and Technology, accompanied by Alberto Gutierrez, CEO of Eurofighter, and air-vice marshal Graham Farnell, general manager of the NATO Eurofighter and Tornado Management Agency (NETMA) as well as representatives from the other Eurofighter customer nations. These included general Erhard Bühler, director

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ADCOM Systems showed off their new Block 6 naval variant of the United 40, fitted with a WASS torpedo. The company's exhibition area was in the Naval Defence Exhibition (NAVDEX) hence the boat behind.



## New United 40s show their class

Abu Dhabi-based ADCOM Systems made a high-profile presence in the naval exhibition (NAVEX) with three United 40s in three different configurations. The most intriguing was the anti submarine warfare block 6 variant, developed in cooperation with Finmeccanica subsidiary Whitehead Alenia Sistemi Subacquei.

The Navy UAV has a wingspan of 17.53 metres and a length of 11.13 metres, with a payload capacity of 1,050kg, according to general designer Ali Al Dhaheri.

The block 6 can deploy sonobuoys and carry a single lightweight torpedo. Acoustic data collected from sonobuoy arrays will be pre-

processed on board the aircraft and shared with other units via a data link. The aircraft will test drop a torpedo in support of UAE Naval Forces later in 2015.

According to ADCOM, it is building one UAV a week to satisfy the requirements of its customers, which are known to include Russia and Egypt.

### CONTINUED FROM PAGE 57

defence plans & policy (Germany); lieutenant general Enzo Stefanini (Italy); and Pedro Arguelles, secretary of state Ministry of Defence (Spain).

Gutierrez said: "This capability upgrade gives the Eurofighter Typhoon unrivalled full multi-role and swing-role capability. Although the prime focus is the introduction of the Brimstone 2 missile required by the UK RAF, P3E enhances the capabilities of the Storm Shadow long-range strike missile, the Meteor, Paveway IV and ASRAAM weapons, as well as introducing modifications to further improve the aircraft's already impressive availability. Support for the contract will come from all four core nations and the enhancement package will benefit all who use it."

### Hugely successful

Farnell, who signed the contract on behalf of the core customer nations, added: "As the hugely successful Panavia Tornado moves towards the last decade of its life cycle, it is highly reassuring to know that the mantle will be picked up by the Eurofighter Typhoon. Brimstone 2 capability is both a unique and welcome addition to the capability portfolio and, while it is just a part of the P3E story, Brimstone represents an extremely important capability to have."

The four-nation contract between the UK, Italy, Germany and Spain will form the basis for the next major Eurofighter enhancement, the phase 4 capability enhancement contract, now in its 'definition phase'. This will lay the

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The United 40 Block 5 army variant has ten hard points on its four wings. ADCOM are delivering around one every ten days to customers, which are believed to include Egypt and Russia.





Abu Dhabi-based NorthStar Aviation exhibited one of its Bell 407MRHs. The UAEAF's Joint Aviation Command has purchased 30 of these light attack helicopters, with 11 being delivered by the time IDEX had started.

## North Star shines with Bell 407MRH

Abu Dhabi-based NorthStar Aviation was present with one of its Bell 407MRH multi-role helicopters.

The company, with a subsidiary in Washington DC, signed a contract with the UAE's Joint Aviation Command in June 2013 for 30 of its military version of the Bell 407. To date, 11 of these light attack helicopters have been delivered from the company's Melbourne hangar facility, and a 12th was "imminent". The remainder will be delivered at around one a month through to early 2017.

Adam Gunn, the company's technical director said: "We bought the helicopters green, then modified the avionics and put in a weapon and mission management system."

The company is owned by a member of the Abu Dhabi's royal family, sheikh Ahmed bin Saif al Nahyan.

Founded in January 2011 by a management team that has, for the past 10 years worked together delivering complex aviation projects, NorthStar offers a combination of exacting custom product delivery and comprehensive on-going technical and personnel support.

NorthStar claims that it can design, prototype and test systems rapidly and go from initial concept to fielding aircraft significantly faster than a typical original equipment manufacturer (OEM). As a result, it can develop the system in a reduced project timeframe, with increased production capacity and, most importantly, a higher level of overall customer satisfaction.

The Bell 407MRH can perform a number of missions including light attack, light assault, close

air support as well as intelligence, surveillance and reconnaissance (ISR).

Fitted beneath the nose of the much-modified Bell 407 was a FLIR 260HLD electro-optical/infrared (EO/IR) turret, which has an embedded laser range finder and laser designator. There is also an electronic mission-management system built around the Garmin G1000HTM flightdeck in the spacious cockpit. It has a four-station lightweight weapons platform, effectively a stores carriage that can be mounted with a Hellfire missile, GAU-19 machine gun, M134 Mini-Gun and M260 rocket pods.

When the helicopter was launched at the US Army Aviation Association of America's annual conference last May, Gunn, told journalists: "It makes for a cheaper \$9 million alternative to a \$80 million dollar Apache."



The Hellfire missile and M134 Mini-gun 7.62mm are two of the weapons the Bell 407MRH can call upon.

## Iomax Archangel to be fitted with MX-15Ds

L-3 Wescam has received an order from Iomax USA for 28 MX-15D electro-optical/infrared (EO/IR) imaging and designating turrets.

In announcing the deal, L-3 said that they would be fitted to a fleet of Iomax Archangel border patrol aircraft (BPA).

The MX-15Ds will support close air support and armed border patrol missions carried out by "a customer within the UAE", said L-3.

The news comes after the UAE Air Force signed a contract at the end of September 2014 for 24 Archangel BPAs.

According to L3, which had a stand at IDEX: "Four of the 28 will be spares and we expect to start shipping them in May 2015 with deliveries completed in 2016."

Paul Jennison, vice president of government sales and business development for L-3 Wescam said: "The MX-15D's HD imagers, high target-location accuracy and designation capability make it a very secure and trusted choice for the UAE."

The MX-15Ds will be configured with high-definition EO and IR imagers, a dual-channel colour and low-light spotter, a laser illuminator, a dual-mode range finder/designator and a laser spot tracker.

In addition, the system will feature image blending and L-3 Wescam's kinetic moving target indicator (MTI) tool – technology that detects multiple moving targets in an image stream. This advanced capability increases the probability of detecting suspicious activity in any given scene, while significantly reducing operator burden and improving surveillance efficiency, according to L-3.

The Hellfire anti-tank missile, one of the weapons of choice for the Archangel, has already been integrated with the MX-15D and preliminary work is currently on-going with the Denel Mokopa, according to one source.

The Archangel BPA, based on the Thrush S2R-660 agricultural aircraft, will replace the Joint Aviation Command's earlier Iomax Air Tractor AT-802U BPA block 1 and block 2 aircraft. These were based at Falaj Hazza Camp, Al Ain, but six were passed on to Jordan just over a year ago.

In addition, the UAE is also reported to have donated up to 12 more to Egypt for missions against Islamist militants in the Sinai Peninsula.

## Air Tractor wait...

Although there have been suggestions that the UAE Air Force is to give its armed AT-802Us to Egypt, Jordan and Lebanon, Air Tractor VP of business development, Charles 'Chuck' Miller, could not confirm the reports.

However, he did admit four examples were going to the Yemen Air Force for intelligence, surveillance, and reconnaissance (ISR) purposes. "They have been sold green to the USAF, which will outsource the sensor integration work," he said.

He also spoke of six going to the Mali Air Force, although, according to Miller, this "is being held up by a need by the US Government to issue a licence for the weapons and camera that will be on board".

## CONTINUED FROM PAGE 58

foundation for the nations' combat air capability requirements into the next decade.

The P3E contract is scheduled for delivery in 2017. All four core nations will work on flight control and avionics and the contract will centre round a scheduled programme of weapon testing, the development and testing of flight control systems, and finally store clearing and store release testing. The initial deployment for the Brimstone 2 on the Eurofighter will see two launchers fitted to the outboard pylons, each carrying three missiles.

The full swing-role, multi-role weapons complement on the Eurofighter could now include a mix of six Brimstone 2 missiles; up to six Paveway IV bombs, two long-range Storm Shadow missiles, four Meteor beyond-visual-range air-to-air missiles and either two IRIS-T or two ASRAAM heat-seeking missiles.

**Targeting pod**

Also on show in front of the Eurofighter mock-up was a Sniper targeting pod.

Gutierrez said the priority was now to concentrate on growing markets in the Middle East, Asia and Europe.

There are two customers in the Middle East – Oman and Saudi Arabia – but he admitted: “We are in discussion with several other countries in the region.” Bahrain, Kuwait and UAE are known to be among them.

On the UAE, Gutierrez said: “One-and-a-half years ago we were in close contact with them, there were good prospects, but discussions were stopped. We are now in a much better position than we were then and ready to provide another offer if asked.”

To date, seven nations have taken delivery of 420 Eurofighters, which have flown 270,000 hours.

**Hammerhead first**

Piaggio Aerospace announced the successful maiden flight completion for its P.1HH Hammerhead prototype 001 (c/n XAV-5A-002) unmanned aerial system.

The flight had taken place on December 22 at the Aeronautica Militare Italiana's (AMI – Italian Air Force's) Trapani-Birgi Airbase, but had not been publicised until IDEX.

The sortie followed completion of flight-testing using the technology demonstrator P.1HH demo air vehicle, XAV-5A-001, which first flew at Trapani on November 14, 2013.

The new prototype is representative of the final aerodynamic configuration of the aircraft. This includes a revised, extended span main wing and new on-board control systems.

A comprehensive development and certification flight-test campaign will now follow.

An unmanned derivative of the Piaggio Aero P.180 Avanti II executive aircraft, the Hammerhead is designed as a multi-mission intelligence, surveillance and reconnaissance platform. Its main features are an enhanced airframe and an improved aerodynamic configuration, with a reinforced wing providing an increased surface and higher aspect ratio.

**Scorpion milestone**

Having made its first flight on December 12, 2013 the Textron AirLand Scorpion has now completed more than 300 hours of flight-testing.

Touted as a multi-role intelligence, surveillance, and reconnaissance (ISR) strike, lead-in jet trainer with potential to fill a maritime patrol capability, the Scorpion is a 6G aircraft, with a maximum speed of 450 knots and a 45,000ft ceiling.

The company's president, Bill Anderson, said: “Two weeks after appearing at the Farnborough International Airshow (FIAS) last July, we flew a mission for a potential customer. The US Department of Defense challenged industry to do something different, so we did our market analysis and built the prototype.”

**UAE confirms AW139 deal**

The UAE Armed Forces confirmed a contract for nine AW139 medium-twin helicopters.

The 739 million dirham (\$199 million) deal with AgustaWestland was revealed by major general Obaid Al-Ketbi, chairman of the organising committee for IDEX and spokesman for the UAE General Headquarters.

He said that six will be used for search and rescue (SAR) duties and the other three for VIP transport.

Deliveries of these helicopters have already begun – three in SAR configuration and one of the VIP examples were airfreighted out of Milan-Malpensa Airport, Italy, in two flights by a United Arab Emirates Air Force and Air Defence C-17A Globemaster III during January.

**HISS integrating Star Safires**

With the UAE aerospace industry going through a major reorganisation, it will be interesting to see what happens with the missions systems work. Until now global aerospace logistics has mostly been outsourced.

Highland Integrated Systems Solutions (HISS) is one of the companies doing the work.

The company is working on a third modernisation programme, integrating FLIR Star Safire 380HDs on eight Cessna 208 Caravans for the Joint Aviation Command (JAC). It has also done similar work on three JAC Twin Otters acquired from Viking Air.

**DADS in the market**

Quebec-based Discovery Air Defence Services (DADS) was keen to market its adversary training to the United Arab Emirates Air Force.

“We can see an opportunity working with their advanced tactical leadership course at Al Dhafra,” said Scott Shrubsole, director international programs. “Why use your own aircraft for a ‘red air’ role, putting all that wear and tear on a Block 60, when we could do it for you?”



The Denel Sniper is an armed version of the Seeker 400 surveillance UAV and can carry up to four Impi-S missiles, which has evolved from Denel Dynamics' short range Ingwe and Mokopa anti-armour munition.



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## Calling up the ArchAngel

The border patrol and ISR aircraft are derivatives of the same basic Snow S-2 agricultural aircraft.

The original Snow S-2 was built in more or less revised forms as the Aero Commander Ag Commander, the Rockwell Thrush Commander, the Air Tractor, the Ayres Turbo Thrush, and as the Thrush Aircraft Model 400, 510, 550 and 660.

Iomax developed its block I and block II Border Patrol Aircraft using the airframe of the Air Tractor AT-802, adding weapons and ISR capabilities to the crop sprayer airframe in the same way that Ayres had unsuccessfully tried to do with its earlier Vigilante aircraft.

Air Tractor had already supplied armoured versions of the AT-802 to the US Department of State for counter-drug operations – spraying narcotics production facilities with herbicides and defoliants – and developed the Air Tractor AT-802U in response to the United States Air Force's light attack/armed reconnaissance (LAAR) and light air support (LAS) programme.

Iomax used the AT-802U as the basis for its AT-802i, which was offered to a number of potential export customers. The company supplied 10 block I BPAs to the UAE's Special Operations Command Group 18 between November 2010 and May 2011, and from January 2012, these were followed by 14 block II BPAs.

*Jane's Defence Weekly* reported that the UAE's Iomax BPAs may have been heavily involved in flying combat missions against Colonel Gaddafi's forces during the NATO-led operation 'unified protector', and certainly the type's usefulness was such that the UAE decided to procure "an enhanced squadron" of block III BPAs.



In 2013, the UAE donated six of the earlier block I aircraft to the Royal Jordanian Air Force. These were handed over in an unarmed configuration for ISR duties, though the US Government subsequently authorised Iomax to re-weaponise these aircraft.

This left the UAE operating 14 BPAs and the intention of increasing its fleet to 38 aircraft by 2016.

The new block 3 BPA is based on the Thrush S2R-660, rather than the Air Tractor 802 aircraft. This change will allow Iomax to make modifications on the production line, rather than modifying the aircraft

after manufacture. There are also some performance benefits and equipment changes.

Iomax soon dropped the block III designation in favour of using the name ArchAngel to reflect the extensive changes and change of airframe, which together make the new BPA variant essentially a new aircraft.

The UAE is also examining the possibility of acquiring Embraer AT-29 Super Tucanos as it recapitalises its special operations light strike capability.



## RSAF finally retires the F-5 series

The Royal Saudi Air Force (RSAF) received approximately 127 F-5B/F-5E/F-5F and RF-5E Freedom Fighter and Tiger II aircraft under the US Peace Hawk programme.

At the peak of RSAF F-5 operations, these operated with the 3rd and 10th Squadrons at Taif, the 15th Squadron at Khamis Mushait, the 17th at Tabuk, used in light attack, close air support, advanced training and reconnaissance roles.

The 3rd Squadron was initially assigned as the F-5 conversion unit, though the training commitment later passed to the 15th.

Saudi F-5s were armed with AGM-65 Maverick ASMs, GBU-10/12 laser-guided bombs, and Rockeye cluster bomb units – and, according to some sources, even AGM-45 Shrike ARMs.

For self-defence, they could carry AIM-9 Sidewinder AAMs, and were also reportedly capable of carrying French-built Matra R.550 Magic air-to-air missiles. The aircraft were fitted with the Litton LN-33 inertial navigation system, ALR-46 RWR, and provision for ALQ-101/119 ECM pods. Most had AAR probes to allow in-flight refuelling from the RSAF's KC-130H tankers. The two-seaters had Northrop AVQ-27 laser target designators.

The aircraft were initially withdrawn from service some years ago (and certainly by 2008), allowing the 3rd and 10th Squadron identities to be used for the first two Typhoon squadrons. At that time, the kingdom offered its surplus F-5s for sale, putting 55 aircraft on the market in 2009. No sale resulted, though interest was reported from Singapore and Central Equatoria (one of the 10 states of South Sudan).

But soon afterwards, a number of F-5Es, F-5Fs and RF-5Es were returned to service, probably serving with a re-constituted 17th Squadron, or perhaps with the 15th Squadron. These were retired again in 2010 or 2011, and all 79 remaining F-5s were gathered at Taif, and lined up along the reserve runway.

On December 18 last year the proposed sale of 79 remaining Northrop F-5E/F aircraft was posted on the AvBuyer website, with an invitation to tender – which needed to include a "2% bank guarantee of the actual bid value of the tender to be sent in a sealed envelope".

The opening date for all bids was set at February 20 2015. With Northrop and RUAG Aviation and Astronautics providing an F-5 Tiger and T-38 Talon support and sustainment programme, the aircraft could find a number of potential buyers.





## ***Iraqi F-16IQs begin Arizona training missions***

With the deteriorating situation in Iraq preventing planned deliveries of new fighters to Balad, 80 kilometres north of Baghdad, the first three F-16IQs were, instead, delivered to Tucson International Airport, Arizona in December 2014.

Further single aircraft followed each month between January and May, bringing a new Iraqi training unit to eight aircraft.

Tucson is home to the Arizona Air National Guard (AZ ANG) 162nd wing, which acts as an international F-16 training wing, and where Iraqi pilots were already learning to fly the F-16, using United States Air Force (USAF) aircraft.

The first Iraqi pilot to graduate specialised undergraduate pilot training and join the Iraqi Air Force F-16 programme was captain Mohammed Hama Ameen, who began the academic phase of F-16 training in January 2012, followed by flying training from February through September.

The Iraqi pilots underwent a basic F-16 conversion course and then moved forward to gain wingman, flight lead and instructor qualifications in training that could span up to 57 months.

By the end of 2014, 14 Iraqi pilots had finished or were undergoing training on the F-16, four more were waiting to transition to the F-16 after they graduate from advanced pilot training on the T-38, and another six were waiting to begin flight training after they complete their studies at the Defense Language Institute.

Iraqi pilots began flying their own F-16IQs for continuation training in January 2015, following their graduation from F-16 training with the 162nd.

The training mission in Arizona is intended to be a temporary solution until the security situation in Iraq can be stabilised and until the Iraqi F-16s can be delivered to Balad. This new phase of training could last into 2016, according to USAF sources.

The Iraqi F-16 programme began on August 27 2008, when the country's government made a request for pricing and availability information.

In March 2009, Iraq formally requested the supply of 18 Block 52 F-16IQs, consisting of 12 single-seat F-16C IQ aircraft and six F-16D IQ two-seaters, subsequently requesting another 18-aircraft batch.

## ***Saab E-2000 Erieye in Saudi service***

A photograph of the arrival ceremony for a new Royal Saudi Air Force (RSAF) Saab 2000 aircraft, equipped with the Swedish company's Erieye airborne early warning and control (AEW&C) radar, emerged on social media on December 16.

The ceremony reportedly took place at the King Faisal Air Academy in Riyadh, and it emerged that the aircraft would be operated by the RSAF's 60th Squadron from Prince Sultan Air Base at Al Kharij, which is also the home to the RSAF's 18th Squadron with its five Boeing E-3 Sentry aircraft.

These aircraft are undergoing a lengthy upgrade programme and the new Erieye promises to augment them, and to offer advantages against low/slow targets, with better ground and maritime scanning, making it especially useful along the Yemeni frontier.

It is understood that the aircraft (which may be one of an initial pair) was initially based in Sweden for an extensive training programme, before being ferried to the kingdom in late 2014.

Though Saab had been forced by financial reporting

rules to reveal the SEK4.5 billion (\$670 million) deal to sell a single system to an undisclosed air force in 2010, it said then that: "Upon the customer's request, no further information regarding the customer will be announced."

Subsequently, in March 2013, a five-year, SEK 1.1 billion (\$170 million) spares and support contract was announced for this 'previously delivered Saab E-2000 AEW&C system', running from 2013-2017. *Jane's Defence Weekly* then reported that Saudi Arabia was the customer involved.

Swedish media reports in March 2015 suggested that the Swedish Government would be cancelling its 10-year-old defence cooperation agreement with Saudi Arabia, closing the door to any further deliveries, and possibly threatening future support arrangements.

However, Pakistan also operates the Erieye-equipped Saab 2000, while the neighbouring UAE has a pair of Saab 340 Erieye aircraft, offering the possibility of 'back door' support arrangements for the Erieye system while, as a commercial aircraft, the Saab 2000 airframe is relatively easy to support.



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Plenty of space. How the B787 interior looks before the cabin outfitters get to work.

*Intellectual property ownership for innovative materials and processes on new aircraft types is marking a paradigm shift in the way completions centres work with aircraft manufacturers, writes Liz Moscrop.*

# THE RIGHTS STUFF

**E**ggs are part of most people's staple diet and when it comes to aircraft design they have been nature's own patent for all successful aircraft designs from the Wright Flyer onwards.

Even the ultra-modern Airbus A350 and Boeing 787 use semi-monocoque fuselages – where, just like an egg, the skin supports much of the load, with some internal bracing and bulkheads in place to maintain structural integrity.

So why is there so much clucking in completions centres about kitting out such a long-established shape on these brand new types?

The answer lies partially in the patented designs and materials used to form them.

Today, the Dreamliner has more than 1,000 patents granted or pending. Boeing has stated: "The Dreamliner will play an enormous role in our business performance for years to come. Given the 787's technological edge, we have gone to great lengths to protect our intellectual property (IP)."

The jet is the most significant airliner advancement in decades, using less fuel than its predecessors, as well as flying higher and more efficiently.

The aerospace giant is now testing emerging authorisation technology as part of a first-ever plan to deploy standardised access control to protect the IP it shares with partners and customers. It has openly stated its intent is to increase its IP protection as it distributes documents with suppliers and partners.

Airbus, too, has created a game-changer with the A350, and is putting greater emphasis on protecting its IP. For example, it has five revenue generating licence agreements out on its avionics full duplex switched ethernet (AFDX) data network – an inter-system communication network developed for such new-generation aircraft as the A380, A400M and A350 XWB.

In the meantime, VIP customers are clamouring for the new types, and managing the transition to kitting out the new fuselages is proving to be somewhat fraught.

A key issue is that one point to consider when working with the composite material used on new aircraft designs is the strength of mechanically-fastened joints under both static loads and fatigue loading.

Both new types are constructed slightly differently. On the 787, the barrel

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## CONTINUED FROM PAGE 65

sections of the fuselage are bolted and bonded together in joints that surround the circumference. On an A350, composite panels are bolted and bonded to composite and metallic frames.

Two VIP outfitters started work in 2011 on cracking the new requirements for Boeing. Both San Antonio-based Gore Design Completions (now Saudi's MAZ-Aviation-owned GDC Technics) and Jet Aviation Basel in Switzerland sent engineers to receive training at the airframer's Seattle facilities. Boeing also sent teams to its approved outfitting centres to provide training and support.

Adam White, Jet Aviation's senior director engineering completions, explained: "You cannot do an aircraft the way we did it five years ago. We are walking through the new technology. We now know what Boeing needs from us for the airframe."

He continued: "It's been a huge investment for us. It has taken time and effort to get to where we are. We have about 20 engineers working on the project and are developing our own IP and interface that will work with Boeing's."

**Major impact**

He added that the advent of new aircraft has had a major impact on traditional completion processes and tooling. Although all VIP projects are individual, familiar airframes have meant a fairly similar production process for metal airframes. According to White, this used to go something like this: The completions centre reviews a 2D layout of passenger accommodations (LOPA) or floorplan, which is an engineering diagram of the aircraft's cabin interior. It also offers a general risk assessment of the modification performed based on its experience, plus load calculations based on the requirements of the industry standard metallic materials document – MIL-HDBK5. It also uses known industry guidance in dreaming up the interior, such as that provided by the aviation authorities, like the US Federal Aviation Administration or the European Aviation Safety Agency.

The outfitter then has to check the fuselage to see if it is capable of accommodating the new interior concept, as well as (possibly) separate in-flight entertainment (IFE) and cabin management software (CMS) that may differ from the OEM's own installed systems. Once it begins work there are easily identifiable thermal circuit breakers on board, based on the traditional industry standard STD 400hz electrical systems. There are also standard manufacturer repair manuals, encompassing more than 50 years of experience on type. Lastly some systems power comes directly from bleed air routed from the engines, another familiar process for engineers to work with.

In the no-bleed architecture found on the 787, electrically driven compressors provide cabin pressurisation, with fresh air brought on board via dedicated cabin air inlets. This approach provides significantly more efficient fuel



The B787 offers a range of design possibilities thanks to the open space.

consumption than on the traditional bleed system because it avoids excessive energy extraction from engines.

Indeed, the Dreamliner is a different beast altogether in every way. Pre contract, said White, the outfitter Jet Aviation Basel's completions centre has developed the tools to create full 3D LOPA and floorplan, plus a full risk assessment. They also calculate the new interior loads caused by attaching structures to the aircraft and send them to Boeing for validation to see if the design will work with the composite structure. These calculations must extend to encompass the entire airframe, since load alterations in one area affects another.

**Circuit breakers**

The IFE/CMS are also more integrated into Boeing's own systems, and altering the electronic circuit breakers also requires the OEM's involvement. The electrical system has a variable frequency, and there is limited experience in constructing a standard repair manual, thanks to the aircraft's short history.

There are other considerations, too. There is a lower cabin altitude in the 787, which significantly changes decompression requirements, especially for the closed private rooms that are typical for VIP aircraft. Although there is minimal available bleed air to provide power, there are even more electrically powered systems on board.

White explained: "As commercial operators demand more features in baseline aircraft it has an effect on traditional completion processes and tools. This requires a much higher focus during the initial stages of customer specifications. We are seeing about a 30% increase in real engineering modelling and analysis pre-contract in order to realise initial contract specifications requirements at initial committed redelivery dates."

While Jet Aviation says it is very happy with its cooperation with Boeing, the new technology and processes have ruffled a few feathers in some

interiors shops. While it is generally accepted that the new types come at a development cost, some feel that Boeing could do more to work with its partners. A spokesman for one house said: "The difficulties come attaching monuments to the sidewalls. Because of the complexity of the project it's not like an A350. It would be helpful if the completions centres knew upfront how much they were going to need to pay for the extra data – or for there to be a flat fee integrated into the sale for customers."

"It has added around 10% to the completions price because of the extra work involved. It would be useful to introduce a different pricing model, such as a flat fee. It would also be good to see Boeing and Airbus amortise the development work over time. At the moment the completions centres are squeezed in the middle."

**Royalty fee**

If Boeing's behaviour in the training world is anything to go by, amortisation of costs is unlikely to happen. The airframer charges a "royalty fee" on the use of data for training purposes on any Boeing model simulator built after 2009.

But the OEM has a different take on its insistence on retaining control of its IP. Martha Ries, vice president of the airframer's intellectual property management division said: "As innovation accelerates and we maximise and leverage its potential, it's more important than ever for us to safeguard technology that's critical to our business."

Airbus declined to comment, saying that the popularity of the A350 means that it won't be available to VIP customers for some time yet, however it is promoting its upgraded A330 hard. There is good news on that score, however, according to White: "By the time we come to work on it, with all of the investments we have put into the 787, putting an interior in an Airbus composite frame using non traditional fixing won't be as big a deal as it was for the first few 787s."



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Dassault's new flagship the Falcon 8X will be appearing at Paris Airshow in June.

Right: The wide body feel to the 5X is impressive ... and the aircraft is due to roll out from the Bordeaux factory this month.



# X marks Falcon's sweet

*Dassault's two new aircraft types are on track for their predicted entries into service.* **Liz Moscrop reports.**

It's full steam ahead for Dassault Falcon Jet as it pushes through with a major expansion of its Falcon line.

With two new types joining the fleet – the 8X ultra-long-range trijet, unveiled last May at the European Business Aviation Convention and Exhibition (EBACE), and the wide-bodied super midsize 5X twinjet – a spokesman for Dassault said: “Both aircraft have been warmly received by operators in the Middle East.”

The region accounts for 20% of worldwide sales for the 5,200nm Falcon 5X, which can fly non-stop from Dubai to Cape Town, or from Riyadh to Tokyo.

On track for a first flight in the second quarter of 2015, Dassault says that the type should enter Middle East fleets in the second half of 2017.

The new ultra-long range flagship 8X rolled out on December 17 and completed its first flight a little more than a month later, in an hour-and-three-quarter demonstration that greatly pleased the OEM.

Test pilots Eric Gérard and Hervé Laverne were at the controls, and aircraft 8X s/n 01 lifted off from Dassault's Merignac plant near Bordeaux in France at 14:00. The aircraft levelled off at 5,000ft (1,500 metres) and raised its landing gear before beginning flight handling

manoeuvres and system tests at 15,000ft (4,500 metres). It later climbed to 12,000 metres, accelerating to Mach 0.80, then finally descended for approach and landing at 15:45.

Gérard said: “Throughout the flight, the Falcon 8X demonstrated excellent handling qualities. We reached each of the performance objectives set for the first mission and, in a few cases, surpassed target goals. I am confident that the remainder of the flight-test programme will proceed just as smoothly.”

#### Right on target

Falcon CEO Eric Trappier confirmed that Dassault is “right on target” for a mid-2016 certification and second half 2016 deliveries. Falcon 8X s/n 02 and 03 were scheduled to take to the air as *Arabian Aerospace* went to press, joining the 500 flying hour flight-test programme. Serial number three will subsequently leave in mid year for the Dassault completion facility in Little Rock, Arkansas, where it will be fitted with a complete interior and undergo a stringent system-test campaign.

With an anticipated range of 6,450nm (11,945km) the \$58 million 8X outstrips the 5,950nm (11,020km) 7X's legs by some 500nm (925km). With eight passengers and three crew,

it will be capable of flying at up to Mach 0.80.

The aircraft comes with on-board systems largely proven on the existing top-of-the-line 7X, including an enhanced version of the 7X's digital flight control system, plus a redesigned cockpit featuring an optional combined synthetic/enhanced vision head-up display.

It will also be capable of performing up to six-degree approaches, allowing it to serve challenging airports such as London City and Lugarno, Switzerland.

In mid-March, the campaign to open the full-flight envelope began with the first aircraft, while the second was starting its engine ground run tests in Merignac, with a view to flying on to the flight test centre. The third is set to enter the programme once it has been configured with an electronic flight bag, plus satellite and cabin communications.

The OEM anticipates that the increased range of the 8X over the 7X will be the real sweet spot for the market. At present, like all the major business jet manufacturers, new aircraft entering the market are equipped with avionics that will start to address some of the known air traffic control mandates that will come into play from 2020 onwards.

The 8X is likely to prove popular in the Middle East region, where Dassault's best seller is the 7X, which accounts for half of all Falcon sales in the region over the last five years.

The current flagship offers a strong pedigree, and recently set a new speed record between



# spot in the market

Teterboro, New Jersey and London City Airport. At the time of writing, it is set to become the first business jet approved for operation at Daocheng, China, the world's highest commercial airport.

Alongside the 8X development, Dassault is quietly plugging away with the all-new 5X, which, lest we forget, was only announced at the National Business Aviation Association's annual convention in 2013. It is due to roll-out at Merignac near Bordeaux on June 2.

Company pilots flew the aircraft in a simulator in a virtual environment about 18 months ago and Dassault says it is still on track to fly the first prototype by this summer, adding that first deliveries are on schedule for 2017.

Even though its 5,200nm (9,630km) range is not as high as that of the Falcon 7X, the jet has a larger fuselage diameter (slightly larger than that of the Gulfstream G650) and greater cabin volume, which is particularly appealing to a region that prefers to travel in larger business aircraft.

The cockpit will feature the industry's most advanced head-up display (HUD) technology, provided by Elbit Systems. The new HUD will combine enhanced vision and synthetic vision for increased situational awareness, even in total darkness, fog or dense haze. Enhanced vision uses infrared sensors to display terrain in darkness and reduced visibility, while synthetic vision uses a global terrain database for the same purpose. In the 5X, they will be combined for the

first time, providing a high fidelity view of the outside world even when actual visibility is zero.

The aircraft has a new fuselage, new wing, and flies on two new Safran Snecma Silvercrest turbopfans. It is also equipped with a digital flight control system and will compete with Gulfstream's 4,200nm G450, and Bombardier's 5,400nm Global 5000. Inside, the cabin also has several new design features. The seats have hollowed-out armrests, plug-in ports for individual seat monitors, and Wi-Fi, which will support iPads or iPhones. The mock-up on display at the Middle East Business Aviation show last year demonstrated what the company described as "a new benchmark in terms of cabin comfort and space".

## Twin-engine jets

To date, more than a quarter of all Falcon models sold in the Gulf region are from the long-running Falcon 2000 variant, with the first of the new 2000S entry-level twin-engine jets in the Middle East going to a Saudi Arabian customer last October. The 3,350nm 2000S, certificated in 2013, combines a wide-body cabin with competitive operating economics and flexibility.

Falcon jet sales in the Middle East also come with a solid after-market presence. The OEM operates an authorised service centre, spares distribution centre and regional sales office in Dubai, plus offering an authorised service centre and technical office in Jeddah.

In order to bolster its customer care offering,

Dassault also recently introduced its 'Falcon Airborne Service' that provides passengers with alternative transportation options in the event of an aircraft-on-ground (AOG) situation. A spokesman said: "We are now doing much more for our customers. While having the technical support centre lowers the headache of finding spares, having an aircraft to provide an immediate flight is also a key factor."

A key differentiator is that the aircraft is outfitted to cater for VIP passengers, and will take travellers on to their destinations if required, in addition to delivering parts and engineers. Middle East customers can access the service via a dedicated Falcon 900 aircraft based at Le Bourget.

In March, Dassault Falcon Service completed an initial C-check on an in-service Falcon 7X, preparing the way for the start of routine overhauls. The checks are the largest scheduled maintenance events on the Falcon 7X and are due every eight years or every 4,000 cycles, whichever comes first. DFS decided to move up the first inspection to demonstrate the ease and quality of the overhaul process.

According to CEO Trappier, this bodes well for the new types coming online. He said: "Dassault's tradition of innovation and excellence helps explain the success of the Falcon 7X. More than 250 aircraft have been built, and demand remains strong. We anticipate a similarly bright future for the 8X."

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**Barbara Saunders** meets *Captain Mahmoud Ismael, Falcon Aviation Services COO, to discover why the Abu Dhabi-based company is definitely one to watch.*

# ISMAEL IS ON THE FAST TRACK



Anyone who hasn't closely followed the fortunes of Abu Dhabi's Falcon Aviation Services (FAS) for the past 18 months could be excused for not recognising the organisation today.

Having made its name as a helicopter transport provider, this soon-to-be decade-old organisation has undergone a transformation that has taken it into the international commercial aviation sector and, according to its bullish chief operating officer, is poised for some "game-changing" deals.

Perhaps it's not surprising that the COO, captain Mahmoud Ismael, would work with the Falcon leadership to enter the commercial sector, joining the company as he did 18 months ago with a strong track record in legacy airlines, including two start-ups.

That's not to say that Falcon is reneging on its own legacy – oil & gas transportation remains a core competency – though the company is bringing its revitalised energy to this sector too.

"We have recently renewed contracts with our

long-standing partners and are adding another helicopter to our offshore fleet," explained Ismael.

The new addition is a twin-engine, 19-seater, medium-lift Augusta Westland 189, which is due for delivery in the next few weeks. It will be the first AW 189 operating in the UAE and Ismael says much can be deduced from that fact, particularly in the challenging hydrocarbon landscape.

"We are working with the industry in the wake of oil price challenges because we take a long-term position on partnerships. The purchase of the AW 189 is testament to our belief in the sustainability of this sector," he said.

And further investment in the Falcon offshore transportation fleet could be on the cards with fixed-wing aircraft being mulled over. "Yes we are looking at adding fixed-wing aircraft to our oil transport offering and have participated in a recent tender for offshore transportation services accordingly."

Up there with the contenders has to be Bombardier's Dash 8 Q400 NextGen. Falcon already has three of the twin-engine, medium-range, 78-seater turbo-props in its 30-plus fleet, with another three due for delivery this summer.

"The Dash 8 Q400 is ideal for certain offshore services, particularly as there are now

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airstrips on three islands in Abu Dhabi – Das, Zirku and Arzanah – which service this industry,” Ismael pointed out.

A review of 2014 – which the COO dubbed “the year of efficiency” – shows major gains for Falcon. Beyond the fresh, cleaner logo, which suggests a new era for the company, came results that must have brought a smile to the faces of the private owners.

“Last year we grew revenue 28% on 2013 without adding any additional equipment,” explained Ismael. “Revenue growth was achieved by improved utilisation of our helicopter fleet and more efficient asset performance. Other efficiencies have involved a move from wet leasing of Bell 412 and Dash 8Q400 simulators to dry leasing, resulting in a 50% saving on training costs. We also brought all our despatching operations in-house and more than doubled our MRO revenue.”

**Aerial sightseeing**

Improved utilisation of the helicopter fleet included beefing up its aerial sightseeing offering, particularly in the tourism hub of Dubai. “We are now one of the largest sight-seeing operators in Dubai. We have three helicopters operating out of Atlantis, The Palm in cooperation with Alpha Tours – an additional helicopter was added last November,” explained Ismael.

But the most remarkable Falcon game-changer has been its strategy of widening its offering and penetrating the commercial sector. “We needed to open new revenue streams,” said Ismael. The company’s website now details its offering as: oil & gas aviation support; aircraft management; Falcon MRO; Falcon Aerospace and Aircraft Solutions.

Africa has been, and is, a key Falcon commercial focus. The company has a total turnkey solutions contract, including the wet lease of a Dash Q400, with Ghana’s domestic private carrier Starbow, which is now eyeing the regional market. FAS now has a line station in the Ghanaian capital, Accra.

The Starbow deal came hard on the heels of another west African breakthrough deal, this time with Dakar-headquartered Senegal Airlines, which operates domestic and regional flights out

**The most remarkable Falcon game-changer has been its strategy of widening its offering and penetrating the commercial sector.**



of Leopold Sedar Senghor International Airport. The contract covers the wet-lease of two Dash 8 Q400s – one already in service – provision of aircraft, crews, spares and maintenance.

And Ismael said more sub-Saharan developments are in the pipeline with a major glass-ceiling deal “imminent”.

The FAS African accords mean the emerging aerospace player has two of its recently acquired Dash Q400s operating within the continent. Ismael said the Q400 is “the aircraft for Africa” because of its extreme short take-off and landing (STOL) performance, capable of servicing the continent’s ‘thin’ routes and more remote landing strips.

Another game-changing move is the plan to open the region’s first VVIP aircraft interior completion centre and MRO facilities at Dubai World Central (DWC) this year.

The new Falcon wide-body Code F hanger is being built at DWC’s Aviation District, and will be able to house an Airbus A380, including multiple under-wing projects. “It will be open in time for the Dubai Airshow,” said Ismael.

The centre is aimed at servicing the large

concentration of business jets within the Gulf Cooperation Council (GCC) region – a market Ismael said FAS now has in the bag.

“As part of the agreement with DWC, no one else can do completions there for the term of our 15-year lease, which is renewable for another 15 years,” said Ismael. “And even before opening we already have projects lined up.”

FAS already operates an MRO facility at Abu Dhabi’s Al Bateen Executive Airport, which is Embraer and Airbus helicopter approved and is part 145 certified by the UAE’s General Civil Aviation Authority and now has European Aviation Safety Agency (EASA) accreditation.

**Year of growth**

If 2014 was “the year of efficiency” for FAS, 2015 will, according to the COO, be “the year of growth”.

“We have some very big game-changing deals nearing completion, which are designed to expand our footprint further into these new revenues streams,” said Ismael. “And they are deals which are the first of their kind for this region.”

Hints of more international business coups are forthcoming. “We are negotiating with a new Asian start-up for a turnkey solutions contract,” explained Ismael. “Our commercial operations will continue to grow and we will be getting involved with national airlines and our business in Africa will expand – we are already in discussion with a couple of other players on the continent.”

And, as FAS readies itself to mark its 10th anniversary next year, the COO says 2016 will be the company’s “year of innovation”.

“We will expand our operations not only in Abu Dhabi but in DWC,” explained Ismael. Falcon will also take delivery next year of a narrow-body Bombardier CS300; this will be the first VIP-configured CS300 aircraft in the world.

“We intend to be an aerospace company with aerospace projects,” he added.



**FAS plans to open the region’s first VVIP aircraft interior completion centre and MRO facilities at Dubai.**

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The aircraft is a completely rebuilt Beechjet 400A/XP with Williams FJ44-3AP engines and the Rockwell Collins Pro Line 21 integrated avionics suite.

# The Beech

*The remanufactured Beechjet has scored in Saudi Arabia. Liz Moscrop meets the team behind the win.*

Introducing a new aircraft type to a region is always going to be a mighty goal, but Nextant's exclusive sales agent for the Middle East has achieved just that as an unnamed Saudi customer has taken a remanufactured 400XTi jet, bringing the type to the Gulf for the first time.

Agent JetHQ's managing director, Garrett Jerde, is highly enthused by the sale. He said: "It is a big deal for us and augments the recent sale of five 400XTis to Plane Sense in the US.

"Interest is strong in the Middle East and this really helps our credibility. Our owner is also

allowing us to use it to show off to other prospective customers. Bringing the first one in shows other people that it's okay to do this. If he can do it, maybe they could do it, too."

Another good signal that it is, indeed, "okay" to use the type around the Gulf is that the customer intends to get his licence to fly the aircraft himself, eventually.

Nextant offers two initial or recurrent training courses with each aircraft it sells, taught at Simuflite in Dallas, giving pilots either a type rating for the 400XTi, although pilots with a Beechjet

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# is back...

400A/XP (or derivative) rating can fly the aircraft. However, Jerde cautioned: "We encourage customers to go for recurrent or initial for the new aircraft. It is very different, with thrust reversers, Pro Line Fusion 21 and different engines."

The aircraft is a completely rebuilt Beechjet 400A/XP with Williams FJ44-3AP engines and the Rockwell Collins Pro Line 21 integrated avionics suite. It is delivered with full factory warranties backed by a worldwide network of owned and authorised service centres – including the recently appointed Jet Aviation Dubai.

The fact that the G90XT starts delivery at the end of this year should also offer a fillip to sales in the region. Jerde said: "We expect a lot of interest out of India for the G90XT. It really is a turboprop market – typically in the Middle East turboprops are more of a special mission aircraft, and not yet accepted as well as jets. Although we expect there will be a great deal of interest from training schools. Etihad signed up for Embraers last year, and it is a fairly easy transition to go from a turboprop to a jet, which develops good pilots."

JetHQ also covers Turkey, which he believes is another good market for the G90XT. He added: "Training is growing in the region but going out and getting a private pilot's licence in the Middle East is not something that has been too prevalent yet. Fujairah is growing

under the sheikh's guidance, which is really good."

He pointed out the pitfalls of bringing new aircraft into a country, and why it is essential to have experience of doing so. He explained: "We know of one customer who bought an aircraft in India last year and it hasn't flown yet. We can deliver a perfect aircraft and help customers overcome any regulatory challenge required.

"We also have Ted Farid as chairman. He knows so many people here and there isn't a challenge with importing aircraft he hasn't seen or dealt with," he added.

Although the 400XTi and the G90XT have some way to go before strong take-up in the Middle East, and are unlikely to be initially chosen for high-end transport, they are potential platforms for air ambulance, freight, training, surveillance, and high-density seating, as well as cloud seeding. Consequently, Nextant has said it sees "significant potential" for both business and special missions applications for the G90XT in the region, especially in the dynamic private aviation markets of Saudi Arabia, the UAE, Turkey, and Lebanon.

For now, Jerde is quietly confident he has a winner on his hands. He concluded: "We expect it will lead to more sales this year as we're experiencing lots of interest in the platform. It just takes getting one person to go after a new idea then it explodes."



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# BEAUTY AND THE BEAST

*At 200 feet long and 20 feet wide, kitting out Boeing's behemoth in VVIP configuration is quite a feat. Liz Moscrop looks at how AMAC has risen to the challenge.*

**A**MAC Aerospace was on the verge of delivering what it believes is the world's first VVIP Boeing 747-8 business jet to an unnamed client as *Arabian Aerospace* was going to press. The work took two years for full nose-to-tail outfitting at the firm's Euro airport Basel Mulhouse facilities.

Last December, Washington's Greenpoint Technologies delivered a VIP 747-8. However the Swiss-based firm believes its offering is kitted out to a much higher specification.

AMAC COO Bernd Schramm explained: "We have an excellent product and are hoping to be the first to deliver a VVIP 747-8. The delivery is imminent and we believe we will be the first to deliver a VVIP nose-to-tail customised aircraft."

So what makes it so special?

According to Schramm, the aircraft is of a modern design and incredibly luxurious. The aft section is decked out with first-class seating, while the upper deck includes a fully customised VVIP interior, incorporating two bedrooms (one master), a private office, plus two master lavatories with showers. There is also a dining room and travellers can enter via the ground or upper deck. There are other guest areas and special lighting and configurations for both day and night.

There is also an Greenpoint Technologies' Aeroloft installed, which provides eight private sleeping berths above the main deck in the aft section.

Schramm continued: "VIP clients appreciate the benefit of providing guests with a private rest area for additional relaxation and comfort."

There are huge television screens throughout – up to 60-inch, specified to the latest technology, and the on-board satellite communication system is both Ku and Ka band capable, meaning passengers can take advantage of the latest technology as it comes online this year.

## Hollywood films

For those wishing to be entertained or kept up-to-date with news and sport, there is also Live TV on board, as well as audio video on demand. The aircraft is also the first in the industry to offer early window content – the opportunity to watch Hollywood films before they are available on the open market.

Schramm said the main difficulty in certifying the aircraft had been the sheer size of it. "It's like four or five BBJs in one project," he explained.

The tough stuff comes with the amount of work required to coordinate to get everything designed and engineered in the right sequence. Although, he said, there was nothing "extremely new" to consider, he continued: "It is a different challenge providing an in-flight entertainment (IFE) system for a 30-to-40-seat aircraft to one with 130-140 seats in a much bigger area. The integration of the cabin management system and IFE and lighting needed around three tonnes of additional cabling, although that had no effect on its overall weight in terms of range and fuel required."



The aircraft was due for certification as *Arabian Aerospace* was going to press, and he was confident that it would pass muster. "We kept our deadlines and ensured the quality of the engineering and detailed tooling documentation were up to European Aviation Safety Agency (EASA) specifications. We have submitted a report on every process."

The next steps are to bring the crew in for training on the IFE, emergency lighting and LiveTV systems, as they will need to cater for up to 100 people travelling at once.

It has been a real labour of love for the firm, which has assigned up to 200 people on the project at any one time. However, the fact AMAC has kitted out two VIP Boeing 777s to date has been help, said Schramm. "People expect that the design of a VVIP 747 is a dramatic challenge. However it is the same for a BBJ; what makes it beautiful is the quality of the workmanship."

**Bernd Schramm: "VIP clients appreciate the benefit of providing guests with a private rest area for additional relaxation and comfort."**

**The world's first VVIP Boeing 747-8 business jet on its way to the client.**

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# Gulf 'pack' hunting down business at EBACE

*Forget those wolves on Wall Street; Middle East companies are pursuing new opportunities in the private aviation sector. Each year this sophisticated group is growing in number and expanding worldwide. Liz Moscrop hunts out the hunters, who will be using the European Business Aviation Convention and Exhibition (EBACE) to promote their wares.*

**T**hirty years ago, when British band Duran Duran had a platinum-selling worldwide hit with "Hungry Like the Wolf", Dubai's Hadid International Services was barely a twinkle in its founder's eye and many of the staff in today's Middle Eastern private aviation services companies were not even born.

Scroll down the years and it's evident that the region has bred a gifted pack of entrepreneurs, who band together to provide innovative and wide-ranging portfolios of services to the private aviation community.

Since EBACE in Geneva, Switzerland, has evolved into a major annual meeting place for the Middle East business aviation community, where better to go to promote their wares?

This year's EBACE takes place from May 19-21 and a key theme for the Gulf 'pack' will be the broad range of services many of their companies offer via organic growth and acquisitions. These range from flight handling to aircraft management, charter and sales.

So who's taken real estate on the show floor?

The aforementioned Hadid is based in Dubai. In December it partnered with Florida's Satcom Direct to offer flight planning, aircraft datalink, flight-

following and international trip support services. Hadid describes the partnership as "a revolutionary benefit to the 24/7 team of professional and certified Hadid dispatchers using high tech industry-standard flight systems".

Aircraft crew can see flight-critical data in real time, all thanks to the FlightDeck Freedom datalink service, which integrates flight deck and cabin communications.

Jetex, the Dubai-based ground-handling and trip-planning company, is a show regular. The company scented a good opportunity last October in Miami, where it launched its US operations with a new base adjacent to the city's international airport.

Jetex said it based its decision to enter the lucrative yet competitive North American market following a "significant increase" in US-based customers.

The Miami location will offer the full-range of Jetex support services, including trip planning, handling, permissions, flight plans and fuel, along with general logistics and concierge-related services. The company also offers access to Honeywell's Global Data Center (GDC) Flight Support Services.

Jetex said the Miami office is

Continued  
on Page 80

## CONTINUED FROM PAGE 79

“the first step” in its US strategy, and it “plans to continue to expand its North American footprint”.

Other Dubai companies include Access Flight Support, which has more than a decade of experience in catering for the corporate aviation community, providing trip support services, such as permits, ground-handling, fuel, flight plans weather and notice to airmen (NOTAMS) information or, as it says on its website, “virtually anything else”.

Operating a 24/7 service, the firm has agents and vendors all over the world.

In neighbouring Sharjah, Continental Jet Services offers a similar service, with branch offices in Africa, too. The company provides international trip planning and flight assistance services, such as: overflying, landing, short notice, urgent, seasonal and block flight permits “to any country”.

Saudi’s Alpha Star Aviation Services, meanwhile, is at the forefront of aircraft management and charter in the region. Last December, it signed a long-term partnership contract with satellite communications service provider Satcom 1, in order to bring the latest, fastest, and most advanced satcom technologies to its fleet.

Turkey delights with a ‘pack’ of its own. Show stalwarts Gözen Air Services will be at EBACE with a full service business aviation company that offers ground-handling, fuel, VIP transportation, catering arrangements, dispatch and flight support, brokerage, concierge, hotel accommodation, aviation consultancy, hangar and lounge services at every airport in the country.

**Full range**

Also look out for Celebi, which provides a full range of special handling services for private jets and helicopters – definitely one to watch as it makes inroads into the market. The Turkish firm is best known for domestic ground-handling, cargo and warehouse operations. However, in recent years, it has made major advances into the German air cargo business, most recently with the purchase of Aviapartner Cargo. It’s worth tracking what its ambitions for territory in the private aviation sector might be.

Stuttgart-headquartered operator DC Aviation is a big player in Dubai. The firm also has branches in Zurich, Malta and Moscow, and offers a complete portfolio from aircraft management, via aircraft chartering, to maintenance. It has partnered with Al Futtaim and now has a UAE General Civil Aviation Authority (GCAA) aircraft operator’s certificate (AOC) for Al Maktoum International Airport at Dubai World Central (DWC).

At present, DCAF has the only fully integrated business aviation facility at DWC. The addition of the AOC means that it can operate and manage third-party business aircraft commercially, which includes aircraft charter. It started commercial operations this March with a Bombardier Global XRS aircraft.

The maintenance, repair and overhaul (MRO) sector is growing, too, with Abu Dhabi-based private charter company, Royal Jet, awarding

Zurich’s SR Technics a five-year contract to look after its CFM56-7B engine fleet, in service on the operator’s six luxurious Boeing Business Jet (B737-700 IGW) aircraft. Abu Dhabi’s Mubadala owns the Swiss company.

Although regional players are dominant in the Middle East, the canny companies work closely alongside foreign packs, too. And MRO goes hand-in-hand with fixed-base operations (FBO), which is a rapidly evolving market.

ExecuJet Middle East recently celebrated a successful first year at its FBO in Riyadh, and says it expects to see up to a 40% growth this year, especially with the addition of a new Royal Terminal, which it will open and operate in conjunction with Saudi’s NasJet.

The firm also has FBOs at Dubai International Airport, as well as Sabiha Gokcen and Ataturk in Turkey.

Another company attracting attention will be the



**An all-premium class A319 has joined Qatar Executive fleet.**

newly merged British business aviation companies, Hangar 8 and Gama Aviation, now known as Gama Aviation plc. The merged company manages 144 aircraft and is present in 44 different locations in 15 countries across five continents, including a base in Sharjah.

General Dynamics’ Jet Aviation is in Geneva, too. Its Dubai operation recently received EASA Part 145 approval to provide base maintenance to Dassault Falcon 7X aircraft, which means it can fully support the aircraft, adding to its capabilities on F900 EX Easy; F900DX; F2000; F2000 EX Easy and F2000 DX aircraft. It also has full Federal Aviation Administration (FAA) approval to provide line and base maintenance to the entire Dassault Falcon family. It also holds approval for the Gulfstream G650 type.

The Gulf region is renowned for using such types, so interiors play a huge role in the market. Last year Dubai Aerospace Enterprise-backed Associated Air Center added space to accommodate wide-body completion wins. The firm recently signed a deal to outfit an Airbus ACJ320 for an undisclosed

customer. The aircraft will arrive at the facility in August, and is scheduled for delivery in the fourth quarter of 2016. It is the company’s 18th ACJ completion since 2003.

In 2013, Saudi aviation consultants MAZ Aviation bought San Antonio-based Gore Design Completions, which morphed into GDC Technics at the last EBACE show. The firm became the newest tenant at Fort Worth’s Alliance Airport in February. With a 25-year lease for 840,000sqft, GDC anticipates investing in major capital improvements. The company also plans to maintain its base in San Antonio, where it has about 650 workers.

Switzerland’s Comlux Aviation operates the largest aircraft available for charter in the world – a Boeing 767, based in Bahrain. The firm announced at the Middle East Business Aviation (MEBA) show that it had ordered two BBJ MAX 8s – the first BBJs to be selected by the VIP charter operation for its fleet.

“The two BBJ MAX 8s are a great addition to the Comlux fleet because they give our customers the flexibility to fly further and also more comfortably thanks to the lower cabin altitude,” said Richard Gaona, CEO, adding: “The long-range capability of the MAX 8 is critical to all of our customers, but especially our Middle East customers, who often use Comlux aircraft for long-haul flights.”

**Reconfiguration contract**

Also in December, fellow Switzerland-based AMAC Aerospace announced the signing of a new cabin reconfiguration contract for a Boeing Business Jet with an undisclosed Middle Eastern customer. The company has added a further A320-200 completion to its portfolio of nose-to-tail completion projects.

Another big local player prowling for new business is Qatar Executive. The private aviation division of Qatar Airways is now recruiting sales staff and first officers, a strong indication that the service is flourishing.

In February it added an all-premium class Airbus A319 to its growing corporate jet fleet, to meet the rising demand for charter luxury group and incentive travel. The 40-seat Premium One aircraft, which has a 2-2 seating configuration and a range of up to 3,700nm/6,850km, can easily connect destinations throughout the Middle East with major cities in Europe, Africa and South Asia.

The MEBA show naturally has a booth. It has become a major force on the international corporate aviation scene, and is the brainchild of former vice president of finance and administration at Presidential Flight, Abu Dhabi, Ali Al Naqbi, who recently retired after 25 years of service.

If you’re interested in the region, there are plenty of intelligent hunters from the Middle East at EBACE. Although today’s regional young entrepreneurs are likely more familiar with X-Men’s Wolverine than Barbarella’s Duran Duran, don’t be fooled – the hunger is still very much present.

A red arrow graphic pointing upwards and to the right, with a white curved line trailing behind it from the bottom left towards the top center.

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# PAS MASTERS

*The continuing slump in Egypt's tourism sector is affecting a substantial part of Petroleum Air Services' business – but, as Alan Dron discovers, the operator is still turning in profits and plans to expand in the next few years.*

Few airlines specialise in providing services for the oil and gas industry. Even fewer combine that specialisation with normal commercial flights.

Since 1983, however, Petroleum Air Services of Egypt (PAS) has been one of the small number of companies that handles both types of service.

Its daily flights mix excited tourists bound for the splendours of Upper Egypt's ancient artefacts in Luxor, Aswan and elsewhere, with weary engineers and roustabouts returning from weeks based in remote drilling locations in the North African desert and the Red Sea.

Cairo-based PAS is owned by the Egyptian General Petroleum Corporation (75%). The remaining 25% is held by one of the world's best-known helicopter operators, Bristow Group.

#### Vast experience

Bristow, initially UK-based but now headquartered in Houston, Texas, has partnered PAS for more than three decades, with the Egyptian company benefiting from Bristow's vast experience in operational and technical rotary-wing issues.

PAS is the sole service provider of helicopter and fixed-wing services for hydrocarbon companies in Egypt and its aircraft criss-cross both the North African nation's Western Desert and Red Sea to provide the country's oil and gas industry with personnel and supplies.

In the past few years, the political turmoil that has periodically enveloped Egypt has radically changed PAS' business. Prior to the Arab Spring in 2011, the oil and gas sector accounted for 60% of PAS' work, with tourism making up the remaining



A quartet of helicopter types – an AgustaWestland AW139 and Bell 206, 212 and 412s – wait in the midday sun for their next sorties.

40%. Today, the slump in visitor numbers due to unrest in the country means that just 10% of the airline's operations are tourism-related.

Given this difficulty, PAS has done well in continuing to turn in healthy financial figures. Net profit last year was \$24 million.

Despite the loss of tourists, PAS still flies almost the same number of fixed-wing hours as it did a few years ago, following a drive to find new avenues for its fleet, notably using its first passenger jet, a Bombardier CRJ-900 NextGen regional jet for services to Basra in Iraq.

Acquisition of the CRJ-900 in 2011 raised some eyebrows both within the company and among observers, given the company's focus on turboprops for its short domestic sectors. However, said a spokeswoman, the purchase was made following a feasibility study that looked at both the company's plans and clients' requirements, which

narrowed the choice to the Canadian-built jet. It is now used both for oil sector work in Egypt's Western Desert, near the Libyan border, and for international services for both the oil and tourism sector.

The success of the aircraft in these roles led to PAS firming up an option, in November 2014, for a second CRJ-900, which will be delivered this summer. The aircraft's range – roughly 1500nm/2800km – gives it the ability to cover the entire Middle East, and as far south as Djibouti. Both Africa and the Gulf are regions in which PAS has expressed a wish to expand.

"When we purchased our first CRJ900 NextGen aircraft we were seeking a proven jet aircraft to enhance services to our customers and for our tourism destinations," said General Yehia Hussein, PAS' chairman and managing director, announcing the firming of the second order for the aircraft. "The CRJ900 NextGen aircraft has delivered exactly what we were seeking and is performing very well in the harsh environmental conditions that are typical in the African environment. It is also delivering outstanding fuel efficiency and reliability, so we are purchasing another to further expand our operations."

PAS was notable in recent years as being one of the few remaining operators of the de Havilland

## THE PAS FLEET

**PAS' fixed-wing fleet currently consists of a single Bombardier CRJ-900 NextGen regional jet (with a second due to join in June) and five Dash 8 Q300 turboprops.**

**Its helicopter arm comprises 15 Bell 412HP/EPs, 10 Bell 212s, six Bell 206 LongRangers, two Bell 206 JetRangers, three Eurocopter EC135s and a pair of AgustaWestland AW139s.**

**The final De Havilland Canada Dash 7 – until a few years ago PAS was one of the last users of the four-engined STOL airliner, with five on strength – was recently retired and is awaiting disposal.**



Main picture: Bombardier's Dash 8 Q300 now undertakes most of PAS' fixed-wing operations. The last of the company's STOL Dash 7s has recently been retired.

Inset: PAS's first CRJ-900 has proven sufficiently successful in service for the company to firm up a second example.



Canada Dash 7, the niche four-engined short take-off and landing (STOL) airliner. Five of the 1970s-vintage design were operated at one time, but the last was retired recently, due to a combination of age and declining requirements from clients for the 50-seat aircraft's capabilities. The airline plans to replace these with aircraft of the same capacity, but has not yet revealed which type it will acquire.

Currently, some 85% of fixed-wing services are domestic, with 15% international.

One unusual facet of the company's operations is what it describes as 'semi-scheduled' services, which are charter trips requested by clients but with regular, fixed dates.

While some fixed-wing operations take place outside Egypt's boundaries, PAS' rotary-wing services – which constitute the bulk of its operations – are wholly domestic. More than 50 helicopter sectors are operated on an average day and are all offshore.

As well as transporting personnel and supplies to oil and gas platforms, PAS undertakes a 24-hour medevac service for the oil industry, and its oil-related activities include both pipeline surveillance and aerial photography.

The company, which has a workforce of around 1100, including 150 pilots and 465 engineers and technicians, has long undertaken deep

## Tapping into oil and gas

**To those outside the Middle East, the Egyptian oil and gas industry is little-known. While small by Saudi or Kuwaiti standards, it still provides a useful revenue stream for the nation.**

**According to the US Central Intelligence Agency, Egypt had proven oil reserves of 4.4 billion barrels in 2013. It also estimated Egypt's natural gas reserves at 2.19 trillion cubic metres, just over 1% of the global total and equivalent to around 35 years of production.**

**The country is, in fact, a net exporter of oil. While quantities have declined in recent years, the high price of hydrocarbons until recently has played a significant role in Egypt's economy. The country also exports liquefied natural gas.**

**Exploration for hydrocarbons is increasing rapidly and PAS anticipates increasing its fleet "in the near future" to cope with this, said a spokeswoman.**

maintenance, including 'D-checks', of its own aircraft, but is now expanding its activities in this area. It has recently received approval from the Egyptian Civil Aviation Agency to undertake third-party repairs and has struck agreements to provide these services with several neighbouring nations.

Given the recent rush to find a means of tracking aircraft in the aftermath of the disappearance of Malaysian Airlines flight MH370 in the Indian Ocean, it is notable that PAS has, for some time, operated a tracing system known as 'Sky Connect' to meet oil and gas industry requirements.

### Satellite system

This is a flight-tracking system from US electronics company Honeywell that allows PAS' operations centre to monitor on a real-time basis the movements of all company flights. It makes use of the Iridium satellite system to enable instant voice and text communications and allows the aircraft to send messages to alert operations centre personnel to any abnormal situations.

In the operations centre, web-based software displays the aircraft location, GPS flight plan, crew status and weather overlays on topographical maps to give ground personnel an overview of all airborne aircraft. Incoming text messages from the aircraft are displayed on the map.

# P Twenty-Ten



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*"Designing and building aeroplanes isn't just a job,  
it's an extension of our passion for flying." (Luigi Pascale)*



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# SHINING FLIGHT

*This century's pioneers of flight – the Solar Impulse team – are pushing the boundaries of flight beyond our wildest dreams by flying around the world... with no fuel. Liz Moscrop is dazzled.*

**T**his is potentially the most important story that's unfolding on our planet right now. Think about it. In a world fuelled by dead dinosaurs, heated political rhetoric and instant digital communications, two Swiss blokes are slowly circumnavigating the globe – using nothing but sunshine.

Engineer André Borschberg, together with psychiatrist and aeronaut Bertrand Piccard, are flying the Solar Impulse (Si2), a Swiss-built carbon fibre aircraft, in the first round-the-world flight by a piloted aircraft using only solar power.

To put it in context, at nearly 22 metres (72ft) long and just over 6 metres (21ft) high, Si2 has similar dimensions to a mid-size business jet, like a Bombardier Challenger 605, only with a wingspan of around the 63 metres (208ft) – something akin to that of an Airbus A340-600. Imagine a small child walking in its mother's shoes.

Where Solar Impulse differs from any commercial plane, is that its entire upper wing surface, and that of the horizontal stabiliser, are covered with 11,628 photovoltaic cells rated at 45kW, making a 200sqm (2,200sqft) suntrap.

Under the single wing are four nacelles, each with a set of 21kWh lithium polymer batteries, a 10HP (7.5kW) electric motor and a twin-bladed propeller.

Continued  
on Page 86



André Borschberg (left) and Bertrand Piccard are setting world records with their solar flight.

## CONTINUED FROM PAGE 85

Over an optimum 24-hour cycle, the motors can deliver a combined average of about 8HP (6kW), roughly the power used by the Wright brothers' "Flyer" in 1903.

Meanwhile, your A340 carries four Rolls-Royce Trent 500 engines, producing around 249kN (56,000lb) of thrust. Even a tiny one-engine Cessna 172 Skyhawk (sporting a Lycoming IO-360-L2A powerplant) coughs up 180HP.

This loss of man-made energy comes with a sacrifice in the ability of what Si2 can carry. At about as heavy as a small family car, it has a maximum take-off weight of 2,300kg (5,070lb), nearer to the Cessna at 1,157kg (2,550lb) than the Challenger, which weighs in at 21,000lb (9,525kg). However, it leaves the ground at a mere 35kph (22mph, or 19kts) – slower than Usain Bolt on a good day – and cruises at 70kph (43mph or 37kts). Compare that to a cruise of 204kmh (127mph/110kts) for the Skyhawk or the 881kmh (543mph/475kts) that the Airbus achieves.

The huge gain, which has far-reaching implications for green energy, is that despite Solar Impulse's slow speed, it can last for up to 36 hours in the air (9,800km or 6,100 statute miles). This distance compares massively well with both the A340, which has a range of 14,630km (9,091 miles) or the light aircraft, which can fly for 1,185km (736 miles).

**Battery-powered**

The battery-powered version can also fly high – it has a service ceiling of 8,500 metres (27,900ft), with a maximum altitude of 12,000 metres (39,000ft) – roughly the difference between the flight paths of the Cessna and the airliner.

One of the Indian legs – from Ahmedabad's Sardar Vallabhbhai Patel International Airport to Varanasi's Lal Bahadur Shastri Airport – covered the 1,128km in around 13 hours. On landing, Borschberg said: "This is the first aircraft to fly one week, one month...it's unlimited. The plane uses so little energy that, with the energy we collect during the day from the sun, we can fly through the night."

That is amazing – as is the reality of what Piccard and Borschberg are putting their bodies through.

Make no mistake, this is an heroic aviation adventure. The cockpit is not pressurised, and temperatures will vary between -40c to +40c. These extremes would kill, so there is thermal insulation installed, which will prevent them from feeling such massive fluctuations.

However, to fly solo without fuel for five consecutive days and nights, such as when they are over the Pacific, is a superhuman feat delivered by two superhuman gents, who, while fit as butcher's dogs, are not in the first flush of youth.

They are using yoga, meditation and self-hypnosis techniques to cope with sleep deprivation and the extreme cockpit conditions, and have learned skills that allow them to reach a state of deep sleep quickly, as well as boost their concentration while they are awake.

They're also using science-based personalised

The Solar Impulse was neatly packed to be air freighted to Abu Dhabi to begin its global adventure.



## The route

Log on to [www.solarimpulse.com](http://www.solarimpulse.com) to track the flight:

1. Abu Dhabi, UAE
2. Muscat, Oman
3. Ahmedabad, India
4. Varanasi, India
5. Burma Mandalay, Myanmar
6. Chongqing, China
7. Nanjing, China
8. Hawaii, USA
9. Phoenix, USA
10. TBD (mid-USA)
11. TBD (mid-USA)
12. New York, USA
13. TBD (Southern Europe or Morocco)
14. Abu Dhabi

nutrition plans developed by Nestlé Health Science, to meet their needs of 2.4kg (5.2lbs) of food, 2.5l (84.5oz) of water, and 1l (33.8oz) of sports drink per day, during the long legs of the flight.

Doctors and specialists of high altitude medicine are on hand, too, to give medical advice prior and during flights.

Piccard has previous experience. In 1999, together with Brian Jones, he flew the first non-stop balloon circumnavigation in the Breitling Orbiter 3, which took 19 days, 1 hour and 49 minutes, covering 42,810km (26,600 miles).

He and Borschberg initiated the Solar Impulse project four years later in November 2003 after a feasibility study in partnership with the Ecole Polytechnique Fédérale de Lausanne.

By 2009 there was a multi-disciplinary team of 50 engineers and technical specialists from six countries on board, assisted by about 100 outside advisers and 80 technological partners. The resulting aircraft's major design constraint is the capacity of the lithium polymer batteries. In addition to the charge stored in its batteries, Si2 uses the potential energy of height gained during the day to power its night flights.

The flight is expected to circle the world in the northern hemisphere. The closest it will get to the equator will be a flyby of Honolulu at 21.3° N.

There are 12 en route stops, and it's due to land back in Abu Dhabi in August. The legs of the flight crossing the Pacific and Atlantic oceans are the longest and are each expected to take about five days, covering a distance of up to 8,500km (5,270 miles).

There is more to this voyage than creating a ripping yarn. When Borschberg piloted Solar Impulse's first international flight – a 13-hour stint from its home base in Switzerland to Brussels – in May 2011, Piccard explained: "Our goal is to create a revolution in the minds of people... to promote solar energies – not necessarily a revolution in aviation."

Although that's a possibility, too – just not anytime soon.

Borschberg said: "We have to realise that we are between the Wright Brothers and Charles Lindbergh periods in the 20s of last century. So it will take, as it took in the past 25, 30, 35 years to fly clean. New technologies will have to be developed, this will take time."

**Climate change**

For the time being, the journey is meant to help push politicians and global leaders to act to address climate change.

Borschberg and Piccard are especially focused on drawing attention to those tasked with developing the next global climate agreement during the United Nations' summit in Paris at the end of this year.

They'll surely succeed, for as they say on their website, the epic flight is: "A great historic first: for such an adventure, as for any premiere, there are no references. We were, and will be, faced with a number of challenges, leading us to push the limits of technological, human and piloting performance."

So, in today's world of dwindling fossil fuel, plentiful political hot air and cats on demand on the internet, two yoga-practising Swiss blokes are reminding us we can slow down and tap into the vast 12/7 natural heat source that is available 365 days a year and which has powered our planet since its birth.

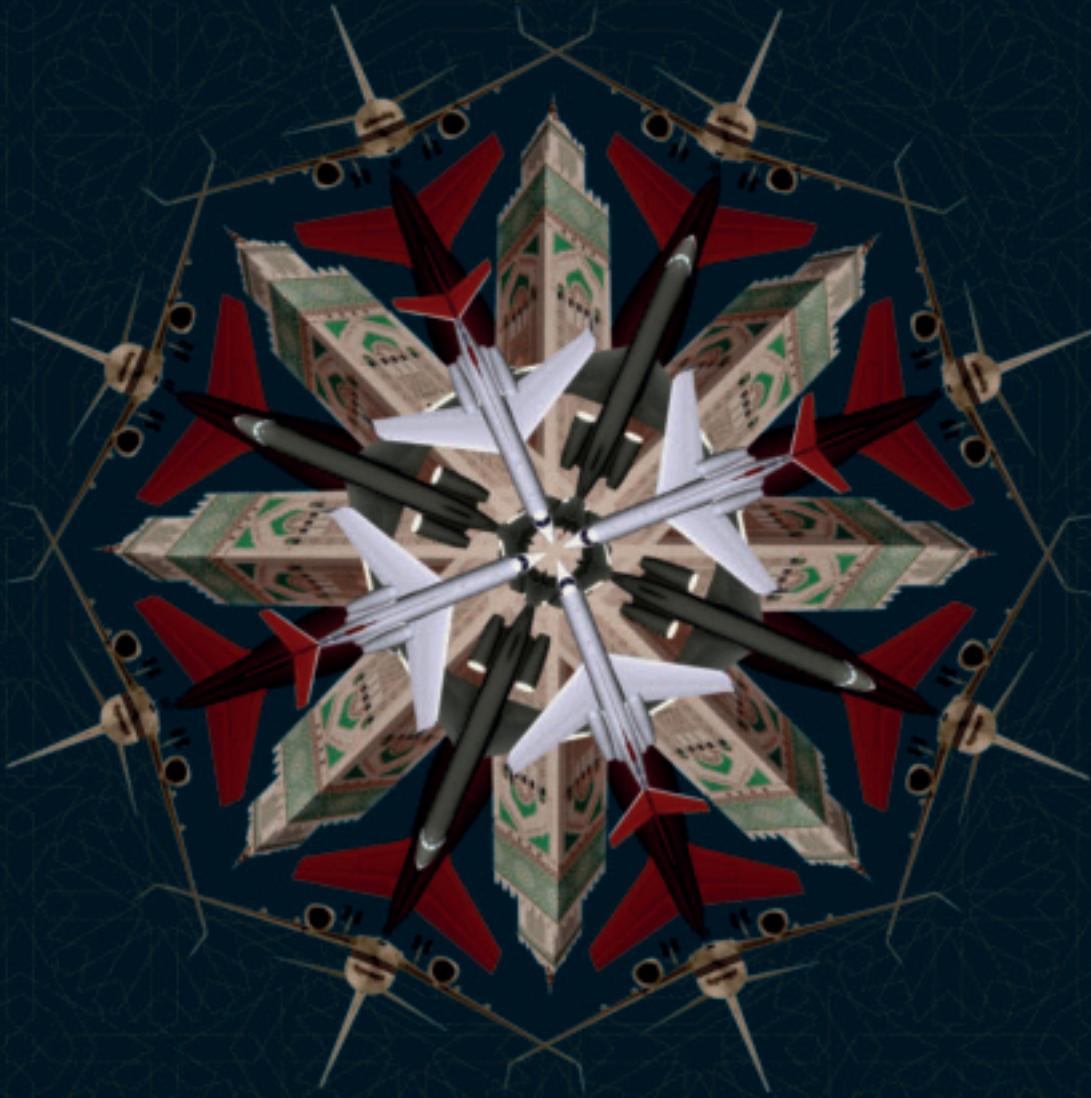


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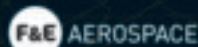
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# Airships could give

*Giant airships carrying huge loads into remote areas could be part of the Dubai World Central aerotropolis in a few years' time.*

**Dave Calderwood reports.**

**A**irships Arabia is a new company, set up by British businessman Gregory Gottlieb, with the intention of operating a new generation of hybrid airships.

Hybrid airships combine lighter-than-air technology with dynamic lift from forward propulsion through air. They can carry heavier loads, fly faster and have more control than conventional airships. Most importantly, they can fly to places where there are no facilities for aviation.

"You don't need to put in an airstrip at all," said Gottlieb. "A hybrid airship will land on anything reasonably flat, including water. It allows you to have a very cost-effective logistics operation with no impact on the ground environment and minimal fuel burn."

The two manufacturers leading development of hybrid airships are Lockheed Martin in the USA and Hybrid Air Vehicles (HAV) in the UK, though there are others. Both have flying prototypes originally developed to meet a US Army contract, won by HAV in 2012 but cancelled the following year after budget cuts.

## Bigger version

HAV brought the prototype back to the UK and renamed it Airlander 10 with plans for a bigger version able to carry 50 tonnes – the Airlander 50.

Lockheed Martin's P-791 is being developed for commercial use to carry 20 tonnes of cargo but with the possibility of being scaled up to 500 tonnes. Both companies are racing for certification with 2018 being the target.

That timing would be perfect for Airships Arabia, which is currently seeking seed funding.

"Our plan is in three phases," said Gottlieb. "Once we have received seed funding we will spend a year putting all our plans in place."

"No hybrid is currently type certified by any authority so we have work to do with the authorities here in the Middle East to ensure that when they [hybrid airships] receive Federal Aviation Administration (FAA) or European Aviation Safety Agency (EASA) certification, that will be reciprocated here. In addition we need to determine what regulations we will operate under."



**TOP:** The Airlander heavy-lift airship could find a role supporting hard to reach mines.  
**ABOVE:** The Lockheed P-791 could be scaled from current 20 tonne plans.

"In phase 2, we will build the hangar, recruit and train operators and maintenance technicians, and place orders for the first aircraft. Phase 3 is when the aircraft arrive. Our business model shows that within the first year of aircraft arriving we will be making an operating profit."

Gottlieb believes Dubai's position as a logistics hub for the Middle East and Africa provides a ready market and cites three examples.

"I'm talking to one company that operates an oil production facility in a remote part of the desert," he said. "At the moment they fly workers into an international airport followed by a 17-hour bus drive across the desert. The workers need at least half a day to recover and then a half-day mandatory safety briefing before their three-week shift."

## Safety briefing

"We can pick them up at the airport in the hybrid airship and fly them direct to the operating site in comfort. They receive the safety briefing in flight and save at least a day on each shift."

"Another example is food aid. Something like 60% of all food aid delivered by the World Food Programme in Africa originates from warehouses in Dubai. However, only 50% of the food actually reaches the point of delivery because of damage, spillage and theft in transit. We would land the hybrid airship in the car park of the warehouse, load and then fly directly to the refugee camp, where we can guarantee 100% delivery."

"The third example is oil exploration. If the

# cargo a huge lift



**“A hybrid airship will land on anything reasonably flat, including water. It allows you to have a very cost-effective logistics operation with no impact on the ground environment and minimal fuel burn.”**

**GREGORY GOTTLIEB**

exploration is in a remote area, the first phase is to build a road to the site, then truck all of the heavy equipment, people and services to the site, and operate for six weeks with re-supplies coming by road.

“We would carry all the equipment and personnel to the site without the need to build the road, and re-supply personnel, food and fuel by air for the six-week period. At the end of it, if it becomes a production rig, build the road. But if they haven’t found anything, we simply fly everything out again. It is much more cost-effective for a hybrid to do this than build the road.”

Gottlieb should know. Following a 20-year career in the British Army, including a spell managing the Army’s lighter-than-air activities, he went to work for Cargolifter in Germany, which attempted to develop a 160tonne heavy lift airship. In recent years, Gottlieb has been working on unmanned aerial systems in Abu Dhabi.

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The H160 medium twin-engine helicopter launched at the Heli-Expo show in Orlando.

# SON OF DAUPHIN

*The new-look Airbus Helicopters is fighting back with a Dauphin successor; as Dominique Elias discovered at the HAI convention in Florida.*

**A**irbus Helicopters has finally unveiled the successor to the AS365 Dauphin – one of the rotorcraft industry's most iconic platforms – with the launch of its new H160 medium twin-engine helicopter on March 3.

Despite a loyal following, the AS365, which made its first flight 40 years ago, and its sister aircraft in the Dauphin family, the EC155, have seen their share of the market decimated in recent years.

Challengers such as the Sikorsky S-76C++/D and, particularly, the AgustaWestland AW139, have both stolen the Dauphin's crown in the medium segment. Airbus Helicopters is, therefore, pitching its latest product firmly against the latter type, with chief executive Guillaume Faury describing the H160 as “the AW139 killer”.

To take on AgustaWestland's fast-selling model, Airbus Helicopters has significantly altered the proposed capabilities of the H160 over the past 24 months.

When the then-Eurocopter first hinted at the new rotorcraft back in 2012 – referred to at the time as the X4 – it was pitched as a direct, albeit impressively high-tech, replacement for the 4.5-5tonne-class Dauphin line.

The X4 envisioned back then featured fly-by-wire controls and a phased introduction of a new advanced cockpit, alongside other innovations, such as its curved hockey-stick-style Blue Edge main rotor blades.

Engines were to be a straight choice between the latest iteration of the Pratt & Whitney Canada PW210 and a clean-sheet development from Turbomeca called Arrano, both in the 1,100shp range.

But the vast majority of these features have now been ditched in favour of early maturity and reliability as Airbus Helicopters repositions the H160 according to the market's view of “what a medium helicopter is today”.

Maximum take-off weight is now pegged at 5.5-6tonne, and the airframer promises the H160 will be able to carry 12 passengers a distance of 120nm (222km) with a cruise speed of 160kt (296km/h) at International Standard Atmosphere (ISA) +20°. Hover out of ground effect is 5,000ft. In other words, it will match the performance of the AW139 while

weighing a tonne less. Some 68 patents have been registered for the new helicopter, said the manufacturer. It will feature a fully composite airframe with the main fuselage made in-house at its Donauwörth composite manufacturing centre and the tail boom fabricated by France's Daher.

The five-blade main rotor still uses the Blue Edge blades and avionics will be the latest iteration of the Helionix suite that entered service on the EC175 and EC145 T2 last year.

Other notable features include a shrouded Fenstron tail rotor, which is canted at 12° to provide additional lift; a rear ‘biplane’ stabiliser on the tail to improve low-speed stability; and electric landing gear and brakes.

Engines are now sole-sourced from Turbomeca, with the Arrano described as a 1,100-1,300shp turboshaft. The move to ditch the P&WC powerplant came just days before the official unveiling of the H160 at the Heli-Expo show in Orlando.

Airbus Helicopters cited a need for more power – clearly aware of the 1,600shp PT6 engines powering the AW139 – for its decision.

It is the first helicopter born under the Airbus Helicopters brand. As such, the manufacturer has taken great steps to ensure the aircraft's maturity, even before its first flight, adopting a number of development initiatives from its fixed-wing sister company in Toulouse.

Key among these is the dynamic helicopter zero test area, a brand-new facility at its Marignane factory in the south of France. This three-storey concrete tower will allow full testing of all the rotorcraft's dynamic components, driving out faults much earlier in the programme's gestation.

A similar test area, system helicopter zero, performs parallel evaluations of the avionics and aircraft systems.

Faury remains confident of achieving first flight this year, with certification and first delivery slated for 2018.

AgustaWestland has already responded to the commercial threat posed by the H160. It has announced that the AW139 will now be available with an increased gross weight kit, also available for retrofit, taking maximum take-off weight to 7tonnes.

## Letters of intent

Aside from the new ways of working being brought into Airbus Helicopters from its bigger brother down the road in Toulouse, there is another change to reflect the shared parentage.

That alteration is to the manufacturer's helicopter designations. Anything with an EC prefix will be replaced with an H. So, for example, the EC135 becomes the H135 and so on.

This does not apply to AS-prefixed models, however, which remain as before; with the solitary exception the AS355, which is now the EC125.

In addition, Airbus Helicopters will now distinguish a military variant by adding an M as a suffix, rather than the change to the first numeral used at present. Therefore, under the new system, the EC725 will be known as the EC225M.

“It's extremely simple – in Airbus the A is for airliners and H is for helicopters,” said chief executive Guillaume Faury.

*The fifth Global Space and Satellite Forum (GSSF 2015) takes place at the Abu Dhabi National Convention and Exhibition Centre (ADNEC) from May 26-28. Steve Nichols looks forward to the event.*

# GSSF aims to cash in on the benefits of space

**T**his is an exciting time for space and the UAE, and indeed the whole MENA region.

The country's investment in space technology has already substantially exceeded AED 20 billion (\$5.44 billion), both in commercial and scientific space projects.

The UAE is now progressing steadily towards becoming a truly international player within the space sector.

GSSF, which is held every two years, is coinciding this time with the official launch of the UAE's new space agency. The event promises to bring together key regional and international stakeholders and decision-makers from the space and satellite industries.

GSSF 2015 will consist of parallel strategy sessions and two main forum days.

The international forum will provide a number of 30-40 minute presentations, panel discussions, live interviews and round table discussions, featuring up to 50 leading speakers.

The overriding theme will be how space is proving to be a key economic driver for the

region; the summit promises to be a platform to discuss how commercial space and satellite technology are creating new economic, social and educational benefits.

The event will also provide in-depth coverage on key issues facing emerging space programmes.

It will give delegates the opportunity to meet with commercial space and satellite technology providers and companies.

#### Earth observation data

A competition is being launched to find a project that can best utilise Earth observation data from the DubaiSat-2 satellite, and events devoted to encouraging budding new Emirati space scientists are also planned.

GSSF 2015 includes multiple networking events, giving participants the opportunity to interact with thought leaders, government and defence officials.

The highlights on the third day are a hosted visit to the campus of the Emirates Institution for

Advanced Science and Technology (EIAST), the headquarters of Yahsat, or the Thuraya centre of excellence.

The establishment of a new space agency is the latest step in the UAE's plans to build a solid scientific base for developing its space industry.

As part of its work, a high-level delegation, led by HE Dr Khalifa Mohammed Al Rumaithi, chairman of the UAE Space Agency board, and the agency's director general, HE Dr Mohammad Nasser Al Ahababi, recently held meetings with key stakeholders in several European countries to strengthen cooperation and partnership between the UAE Space Agency and Europe.

The UAE already has two satellites in orbit – DubaiSat-1 and DubaiSat-2 – with a third, KhalifaSat, planned for launch in 2017.

KhalifaSat will build on the technologies pioneered aboard DubaiSat-2, including a new camera system, which will image at a resolution of 70cm, has more storage capacity, faster download speeds, and better computing capabilities.

**TÜRKSAT 6A: The programme will be coordinated by Turkey's Scientific and Technological Research Council (Tubitak).**





GSSF is coinciding with the official launch of the UAE's new space agency.

The UAE also recently announced plans to send an unmanned probe to Mars. If the project goes ahead, the craft could reach the Red Planet by 2021.

Abu Dhabi-based Yahsat is also blazing a trail with its two EADS Astrium and Thales Alenia Space-built satellites, which provide Ka-band communications to commercial and government users in the Middle East, Africa and South-West Asia.

A third satellite is on the drawing board. Arianespace will launch the Al Yah 3 satellite into geostationary transfer orbit (GTO) in the fourth

quarter of 2016, using an Ariane 5 ECA rocket from the Guiana Space Centre, Europe's Spaceport in Kourou, French Guiana.

Saudi Arabia also invests heavily in science and technology, and has set aside a budget of around \$4.4bn to help the kingdom achieve its goal of becoming one of the leading technological nations in the world.

It has so far launched 12 satellites and has a strategic plan to help it join the world's leading countries in terms of advanced scientific and technological achievement.

## Turkey to develop first indigenous satellite

Turkish President, Recep Tayyip Erdogan, signed the contract for the development and manufacture of TÜRKSAT 6A at an official ceremony in December.

The programme will be coordinated by Turkey's Scientific and Technological Research Council (Tubitak).

Tubitak Space, Turkish Aerospace Industries (TAI), Aselsan and CTECH, will all work together to produce the satellite.

Its structural, thermal, chemical propulsion and mechanical subsystems, plus ground support, will be TAI's responsibility. TAI will also co-develop its on-board data handling, command and control software.

TÜRKSAT 6A's assembly, integration and testing (AIT) will be completed by Tubitak Space at TAI's test centre in Ankara.

Meanwhile, TÜRKSAT 5A is planned for launch in the second half of this year. If all goes well, the satellite will be placed in a geosynchronous orbit at 31°E, providing telecommunication and direct TV broadcasting services over a broad

geographic region, including Europe, Central Asia, the Middle East and Africa.

TÜRKSAT 5A will have a launch mass of approximately 2,900kg, carry 16 Ku-band and four C-band transponders.

It is hoped that TÜRKSAT 5A and 6A will continue to build upon the country's other space satellite successes. Turkey's first high-resolution remote-sensing satellite, GÖKTÜRK-2, has now completed its second year in space.

TAI and TÜB TAK Space designed GÖKTÜRK-2 between 2007 and 2012. The satellite was also integrated at TAI's AIT facilities in Ankara before being launched from the Jiuquan Satellite Launch Centre in China aboard an LM-2D launcher.

In two years, the satellite has recorded more than 10,000 passes with nearly 5,000 images covering 9,850,000sqkm of the Earth's surface.

GÖKTÜRK-2, which is under the control of the Turkish Air Force, is still imaging from its 684km orbit.

## UAE seeking Emirati space pioneers

The UAE is tracking down bright Emirati graduates to help it achieve its goal of getting into space.

Shaikha Al Maskari, chief corporate officer at the new UAE Space Agency, recently attended the UAE-UK Pioneers Forum 2015 in London to track down would-be space scientists.

The fair attracted hundreds of Emiratis, who are currently studying in British universities.

Al Maskari said that the next generation of Emirati scientists would need to be hard-working, smart and team players.

She said that the UAE Space Agency had received dozens of CVs from young people hoping to be involved with the UAE's unmanned mission to Mars. The plan is to send a probe to the Red Planet by 2021.

The probe's prospective nine-month journey will be timed to coincide with the 50th anniversary of the UAE's independence from the UK.

Al Maskari added that the UAE needed graduates from many different disciplines if it was to reach its goal.

The new UAE space agency was set up to "maximize the contribution of space industries to the national economy", according to sheikh Mohammed bin Rashid Al Maktoum, ruler of Dubai and the UAE's vice-president.

## Yahsat gears up for launch of AlYah 3

Yahsat, the Abu-Dhabi-based satellite operator, says its AlYah 3 satellite is set to be launched in the fourth quarter of 2016.

This third satellite will extend the company's commercial Ka-band coverage to an additional 17 countries and 600 million users across Africa and Brazil.

The operator initially launched two multi-mission satellites, serving both the government market in the UAE as well as commercial markets across the MENA region. But it is now looking to broaden its horizons.

AlYah 3 will extend its coverage to an additional 17 countries, creating new commercial opportunities in South America.

The satellite will be built by Orbital Science Corporation and Arianespace will launch it into its geostationary orbit from Korou in French Guiana.

HE Jassem Bu Ataba Al Zaabi, chairman of Yahsat's board of directors, said: "Having worked with Arianespace for the launch of Y1A, one of the world's most advanced satellites currently in orbit, and with Orbital's impressive track record of building more than 150 satellites that have amassed over 1,000 years of in-orbit experience, both companies have proven their ability to meet and exceed our expectations for world-class connectivity in Africa and Brazil."

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HOW DUBAI MADE IT TO BE THE WORLD'S NUMBER ONE AIRPORT

*Dubai International Airport is making headlines for all the right reason. In an exclusive interview, Keith Mwanalushi asks Dubai Airports CEO Paul Griffiths what it takes to be the world's number one airport.*

It's certainly been a busy couple of months for Dubai Airports – Dubai International Airport (DXB) got off to a flying start this year when it secured the position of number one airport for international passenger numbers and outperforming long-time incumbent London Heathrow. Figures from Dubai Airports show 2014 full year passenger throughput totalled 70.4 million – up 6.1 percent from the 66.4 million recorded the previous year. Projections for 2015 will go up to around 78 million.

“It’s a game of numbers,” Griffiths stated – “and obviously, it’s very good knowing that the numbers through the airport have reached a point where we are the number one international airport in the world. It feels like a great achievement and it’s something that I think every single person working at Dubai International feels very proud to achieve. There is a great sense that we all did this together,” said Griffiths enthusiastically.

It’s no secret that the UAE in particular has put a

lot of emphasis on investing in its airport infrastructure, supposedly, one reason why DXB is now the busiest international airport. Griffiths believes there is much to be learnt from the Dubai experience especially in other developed markets. He said to begin with, airports and GDP growth needed to absolutely link hand-in-glove. “If a country wants to prosper and develop socially and economically, then you have to have a very proactive airport infrastructure and transport policy.”

He cautioned about having the short sighted view common in other more developed parts of the world where the industry is prevented from actually seeing the link. “People think they are immune to the economic benefits of not having a proper sustainable airport infrastructure policy. Look at London, in Germany too and sadly many other examples exist in other parts of the world,” Griffiths noted.

Clearly in the case of Dubai, having a common goal has done

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wonders for the airport. Dubai Airports along with national carrier Emirates and the UAE set out on the same path to become number one several years ago and Griffiths stressed on the importance of working towards achieving that same goal.

“I think it’s absolutely essential. It’s a complex industry and there are many distributed dependencies in the supply chain which aren’t always properly aligned. Having a closer relationship and empathy of the challenges that some of the very precarious business models of some of the airlines is something that is a positive asset when you are running an airport because after all we are in the supply chain,” Griffiths elaborated.

**Key strategic partners**

Generally, airports are key strategic partners for airlines, they provide the business-to-business facilities and infrastructure that airlines need to successfully manage their business and consumer relationships. Griffith continued to emphasise the need for a common understanding throughout the supply chain stating the exact goals and objectives needed to ensure success.

Griffiths said: “I really believe that’s one of the key reasons why Dubai is successful. You have got the common link in the supply chain and there is empathy and understanding. It’s a very clear direction and leadership from the very top here, so we all know how important it is to keep this sector growing, to keep it vibrant as a result of these objectives.”

The idea that UAE airports [and airlines] receive State hand-outs to develop infrastructure

**“I really believe that’s one of the key reasons why Dubai is successful. You have got the common link in the supply chain and there is empathy and understanding. It’s a very clear direction and leadership from the very top here, so we all know how important it is to keep this sector growing, to keep it vibrant as a result of these objectives.”**

**PAUL GRIFFITHS**

has been a hot topic for years. The shift in the balance of power from the liberal European airlines to the nationalised Middle Eastern carriers sparked a heated debate. Concerns over anti-competitiveness from Europe was met with strong opposition by the Gulf carriers. Some believed these were very legitimate concerns, while others felt Europeans carried foul because they were beaten at their own game.

Some European airlines such as British Airways have since jumped into bed with one or more of the Gulf carriers but more recently the war of words has come from North America. Relations

went sour earlier this year when a group of U.S. airlines compiled a dossier that claimed major Gulf carriers had received U\$40 billion in subsidies and urged the U.S. government to renegotiate or completely scrap an Open Skies trade pact. Delta CEO Richard Anderson was forced to apologise for comments associating Gulf carriers to the 9/11 attacks on the U.S. – the apology was reportedly rejected by Dubai carrier Emirates.

**Gulf state handout**

Speaking on the Gulf state handout issue Griffiths felt that it was all emotional rhetoric – “It’s usually based on substantive and unquantifiable facts and to me it’s just merely a reflection of the lack of ability of other stakeholders in aviation jurisdictions around the world to be able to properly embrace the opportunity of a proper joined up strategy and what it can deliver.”

Griffiths quickly gave an example of his own experience at Gatwick. “When I was running Gatwick Airport in London one of the biggest challenges was trying to get the airlines and the airport aligned around some of the key operational issues that we faced as an industry and there was so much debate and argument. It was very difficult to make forward progress. Here we know what the objective is, we know what we’ve got to do and we get on and do it.”

He further added that the impediments to success common in other parts of the world such as taxation, union restricted practices and poor execution were non-existent. “We don’t have any

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**CONTINUED FROM PAGE 96**

of that, we set an excellent standard and we make absolutely sure we achieve it.”

In the meantime, every single square metre of the airport space is being looked at as a potential solution to creating more capacity at DXB, which may include room for additional remote stands. Griffiths believes that if the airport is to exist at the current airport site for some considerable period of time (minimum of at least 10 years) then solutions are needed for more capacity at the existing airport.

**Individual measures**

He asserted that very significant amounts of individual measures were being taken to be able to achieve those capacity increases. “Since about 2009 we have invested US\$7.8 billion in capacity and service improvements at Dubai International and our programme is not yet over. We still have Concourse D to open which provides another 17 contact stands and there are areas on the airfield that we are developing.”

In addition to extra concourse capacity and throughput improvements inside the terminals according to Griffiths, that will contribute to take the airport beyond its 90 million passenger capacity that Dubai Airports identified back in 2009 as part of the strategic plan 2020 project.

In terms of whether Dubai can succeed as a dual airport system along with Al Maktoum International Airport Griffiths responded with a resounding yes. “Absolutely, there are plenty of examples in the world where major cities have more than one airport. Look at New York, they

**“We can all name corporations around the world that are the biggest but can we actually say there is a corporation that is the biggest and the best? That’s the goal that I’m striving to achieve.”**

**PAUL GRIFFITHS**

have five or six airports. There is certainly enough traffic and enough facility and capabilities to make the whole thing work,” Griffiths said.

Moving skywards, there has been much debate about the increasingly congested airspace around the UAE and the Gulf region. This may possibly impact recently revised growth projections at DXB that will secure its pole position.

Griffiths believes congestion in the short term would not impact growth due to the nature in which the airport is growing effectively concentrating on passengers and aircraft movements. “We are currently now up to 208 passengers per movement which I think is probably the highest rate of movement in the world. However having said that, yes the strategic risk posed by the lack of increase in capacity in the airspace around the UAE and adjoin region is still a significant issue.”

Griffiths stressed that the lack of progress in

creating a single coordinated air traffic control area was a significant impediment going forward. His comments echo those made at the recent ATM Congress in Madrid where the lack of a centralised ATM system in the Middle East was identified. “There are many technical solutions out there. I think one of the problems we have is the regulatory acceptance of those solutions, it’s not yet mature but I think the principal problem is not a technical one but it’s one of politics and coordination that needs to be overcome to be able to achieve the objective of getting the ATM capacity to be where it needs to be in the future.”

**Aspirational goal**

Firmly back on the ground and speaking about DXB’s recent achievements Griffiths sees that for him, there is a far more aspirational goal to being the best. “We can all name corporations around the world that are the biggest but can we actually say there is a corporation that is the biggest and the best? That’s the goal that I’m striving to achieve,” Griffiths said.

After beating Heathrow for the top spot and while discussing the ongoing issues surrounding the London airport capacity drama Griffiths advised that in the UK there is need to detach the emotion out of it. “The question you’ve got to ask is where the investment in another runway would be most effective for the good of the nation, growth of GDP and would also have the lowest level of environmental impact. I have to say that I do believe that the Heathrow solution ticks all of those boxes.”

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# AIRPORT CONVENTION

*Dubai's Airport Show is expecting a record number of exhibitors for this year's edition. Marcella Nethersole looks at what's in store.*

**T**he Airport Show is back this month and it will do what it does best – provide companies with an ideal B2B platform to present their airport and aviation-related products and services.

Touted as the largest airport show in the world, it will take place on May 10-12 at the Dubai International Convention and Exhibition Centre (DICEC).

In 2014, the event gathered 6,441 aviation professionals who networked, sourced their product requirements and created more than \$20 billion worth of regional business possibilities.

Organiser, Reed Exhibitions, said this year's event is expecting to welcome more than 275 global companies from over 30 countries to participate, and expects 7,000 attendees, including 150 hosted buyers, 300 forum delegates and over 50 regional aviation authorities.

#### Huge interest

"The last edition further established the show as the world's largest annual airport exhibition and provided access to the largest airport developments globally. The huge interest in the region's aviation industry continues and show serves as the platform for international companies to support the region's goal to become the world's travel hub by 2015," said marketing director, Daniyal Qureshi.

"The show allows visitors to learn about new technologies and emerging trends and this year's event continues to serve as the sourcing platform of aviation stakeholders and key decision-makers for more than \$100 billion worth of mega airport projects in the Middle East, Africa and South Asia region."

Qureshi added: "The Middle East is among the fastest growing aviation markets in the world today – whether you look at it from the airport



development, airline growth or passenger growth perspectives.

"The Airport Show plays a key role in showcasing the most advanced aviation equipment from around the world, enabling regional aviation authorities to fulfil their expansion, modernisation and passenger safety and satisfaction objectives.

"The Middle East's aviation business also continues to expand quickly, and Emirates and Dubai International Airport are at the heart of that process."

Last year's show highlighted its role in continuing that expansion with positive feedback from exhibitors.

Muhammad Musharraf Khan, project director, Pakistan's Civil Aviation Authority, said: "Our team, as hosted buyers at Airport Show 2014, met several exhibitors to finalise the procurement of technologies and solutions for the New Benazir Bhutto International Airport in Islamabad.

"The \$90 million greenfield airport, with three runways, will have a passenger handling capacity of six million in the first phase, followed by nine million in the second and 25 million in the third. Airport Show was an ideal platform for us to see the latest technology and what we could get from here in terms of our requirements."

Suzanne al-Anani, chief executive officer,

Dubai Aviation Engineering Projects (DAEP), added: "Our participation at Airport Show 2014 contributes to our ultimate goal of serving the region's thriving aviation industry, as the event gathers the world's leading brands that provide state-of-the-art technologies and solutions that become part of new standards in airport and aviation-related infrastructure development."

This year's show will also co-host a number of other popular events.

#### Buyers programme

AirportConnect, the hosted buyers programme, will bring more than 100 representatives from 45 authorities and 25 countries to the show, including EgyptAir Cargo, Bahrain Airport Services, the Airport Authority of India, Libya Ground Services, Sudan Airways and Middle East Airlines.

"The co-located events are providing more valuable networking opportunities as well as being important for sharing information, knowledge and expertise," said Qureshi. "The global airport leaders' forum (GALF) will also return and that will provide an unparalleled opportunity to hear from top industry leaders as they discuss global aviation challenges and opportunities.

"International Civil Aviation Organization



## “Travel Catering Expo has established itself as the most important platform in the Middle East for international travel catering.”

DANIYAL QURESHI

Cooperation Council (GCC) area and many others across the region. Airlines are looking increasingly at travel catering solutions to differentiate themselves from competitors and provide a more enjoyable passenger experience.”

He added: “The expo attracts new products, ideas and technologies and regional airlines are committed to the event to meet the global and regional suppliers that can help them deliver a better passenger experience and achieve greater passenger loyalty. The event has established itself as the most important platform in the Middle East for international travel catering suppliers to meet with regional airline, airport and catering buyers.”

### New trends

Ananya Narayan, managing director, Hunter Foods, said the industry could benefit immensely from the expo by exploring new trends in the global food sector and seeing what was on offer from suppliers in the region.

He said: “Middle Eastern airlines are trying to show their place in the global arena by redefining the meaning of luxury. They are able to redefine the travel experience to global customers by upping the game, including that in the quality of food.”

According to a latest study by Global Industry Analysts (GIA), the global market for in-flight catering services is projected to reach \$17.6 billion by 2020, driven by growing air passenger traffic and effervescent service innovations from airline companies.

Emirates, Etihad and Qatar Airways alone are expected to handle more than 190 million passengers on their expanding route networks by 2020, the year in which the Arabian Gulf region will handle 450 million passengers.

(ICAO), International Air Transport Association (IATA) and Airports Council International (ACI) leadership will be headlining the forum this year, highlighting the importance of the Middle East to the global aviation community and creating new opportunities for international aviation leaders and experts to collaborate with their regional peers.”

Qureshi added that the third edition would help airport, policy, business and technology leaders gain exclusive strategic insights into the perspective of international airport leaders and help people benchmark to ensure that their organisation had a leading-edge approach that would convert into enhanced performance.

He said: “GALF will help them expand their professional knowledge base and find what it

takes to be the world’s top ranking airport. At GALF they will be able to network with 30 or more international aviation top-level speakers and more than 300 delegates from around the globe.”

Also taking place at the show will be the Travel Catering Expo, hosting more than 20 authorities and 30 buyers from 15 countries.

Among the sponsors are Italian Footwear Solution, Les Grands Chais de France, Sanaye Plastic Khouzestan, Saudi Airlines Catering Company (Hajj & Umrah Catering), JiangSu Canasin Weaving Company, and Henan Hengtai Aluminium Technology Company.

Qureshi said: “One of the strongest indicators of the show’s importance is the large attendance from virtually every important airline in the Gulf

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#### Contact Details:

**Silvestre Mabuiangue**  
Sales Manager

E: Setivaldo@afrikgse.com  
Direct: +27606500657

**Falone Tshitente**  
Sales Executive

E: Falone@afrikgse.com  
Direct: +27716494344

**Laisse Lichucha**  
Technical Manager

E: Laisse@afrikgse.com  
Direct: +27737023789

**Afrik GSE** - 101 All Black Avenue, Anderbolt, Boksburg, South Africa.  
E: support@afrikgse.com | T: +27 11 829 0468



The new airport in Salalah will have modern facilities to allow for international traffic.



# OMAN'S DATE WITH DESTINY

*Last year saw an exceptional year of growth at Muscat and Salalah International airports in terms of passenger increases and infrastructural developments.*

*Keith Mwanalushi speaks to the Oman Airports Management Company to ask how this was achieved and what lies ahead.*

**A**s the economies grow in a handful of countries in the Middle East region so, too, do ambitions.

The likes of Abu Dhabi, Doha and Dubai have set the bar as high as the Burj Khalifa in terms of airport development but the smaller players, with possibly less sexy airport projects, are also keen to get in on the action.

Last year was one of the busiest for Muscat International Airport, reaching a total turnover of nine million passengers – a growth of 5% compared to the previous year. The airport's top five routes in volume included Dubai, Salalah, Doha, Mumbai and Abu Dhabi.

There have also been infrastructure developments, including the new air traffic control (ATC) tower standing at just over 100 metres tall, and a new runway, which is designed to accommodate code F aircraft (A380s and 747s).

"We are going through an expansion phase and traffic has grown rapidly over the past years," declared Kimmo Ruotsalainen, the head of sales and marketing at Oman Airports Management Company (OMAC). "In fact, traffic has grown by

more than 330% since 2007 and we have currently 33 airlines operating to more than 60 destinations and over 30 countries."

Growth at Muscat is directly linked to national carrier Oman Air – the carrier launched new long-haul routes at the end of last year to Manila and Jakarta – as well as increased capacity from other existing airline customers on several point-to-point city pairs.

#### Substantial growth

Ruotsalainen said traffic to and from the Indian subcontinent, as well as other Middle East countries, generated substantial growth. "Thus, we foresee steady growth in the future by Oman Air and also from the low-cost carrier segment, which today represents slightly above 10% of total passenger volume.

"We have a route development strategy, which we execute by meeting our airline customers regularly at Routes events, face-to-face meetings with airlines' network managers and tourism-driven events. Additionally, we actively promote our Oman Airports master brand in all

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international airline collaboration and related events,” Ruotsalainen explained.

Salalah International Airport also saw considerable passenger growth during 2014, transporting 842,044 passengers in comparison with 2013’s 746,994 – a growth of 13%.

The top four routes in volume last year included Muscat, Dubai, Sharjah, and Doha.

Neos, a charter operator based in Lombardo, Italy has started operating from Salalah and OMAC is confident that the airline will also start future charter flights into Muscat.

The new airport in Salalah will have all modern facilities to allow for international traffic on airside (a 4km runway able to handle the Airbus 380) as well as in the passenger terminal, where all systems will be able to handle international passengers in a streamlined process for security, immigration, emigration and customs.

The new passenger terminal at Salalah, scheduled to open this year, will add capacity of up to two million passengers.

**State-of-the-art facilities**

Muscat International is currently undergoing redevelopment and will have state-of-the-art facilities and capacity for up to 12 million passengers in the first phase of the expansion within a couple of years. There will be a special focus on the development of transfer traffic via Muscat between China and Africa, as well as connecting traffic to Indian subcontinent from key growth markets.

“The infrastructure development is well under way at Muscat International and Salalah,” Ruotsalainen said. “Muscat Airport already has the new runway and new air traffic tower in use. The new airport will have 96 check-in counters, 29 passenger boarding bridges and 30 stands, with a total floor area of 344 995sqm.

“The new passenger terminal building to be opened in Salalah during 2015 is equipped with 24 check-in counters, eight stands and eight passenger boarding bridges.”

From March this year, travellers flying from Muscat and Salalah to international destinations were hit by a new charge of U\$20 (OMR8) up from the previous U\$13 (OMR5) according to local media reports. Ruotsalainen defended the charges and said they had not been increased for quite some time.

“The prevailing landing fees were established in May 1982 and the passenger charge (international departing passengers) was set in 1998. They have not been modified since, with the exception to the parking charge in 2012,” Ruotsalainen clarified.

He also said that inflation, various improvements and increased staffing levels had necessitated the increases.

At the key domestic and regional airports, new development projects at Sohar, Al Duqm and Ras Al Hadd have concluded or are in final stages. Ruotsalainen confirmed that both Sohar and Duqm were now fully operational – “Oman Air is



**“We have a route development strategy, which we execute by meeting our airline customers regularly at Routes events, face-to-face meetings with airlines’ network managers and tourism-driven events.”**

**KIMMO RUOTSALAINEN**

operating to both these new regional airports from Muscat Airport about three or four times a week.”

Within the terminals, the Government of Oman has deployed border management systems from air transport and government IT specialist SITA, to facilitate visitor movement and streamline the sultanate’s visa and residence permit processes.

Under the agreement, SITA is deploying its iBorders solution that encompasses risk assessment of traveller data from air and cruise lines, a comprehensive border control system used at immigration checkpoints across Oman, a complete e-Visa solution and a centralised visitor information system.

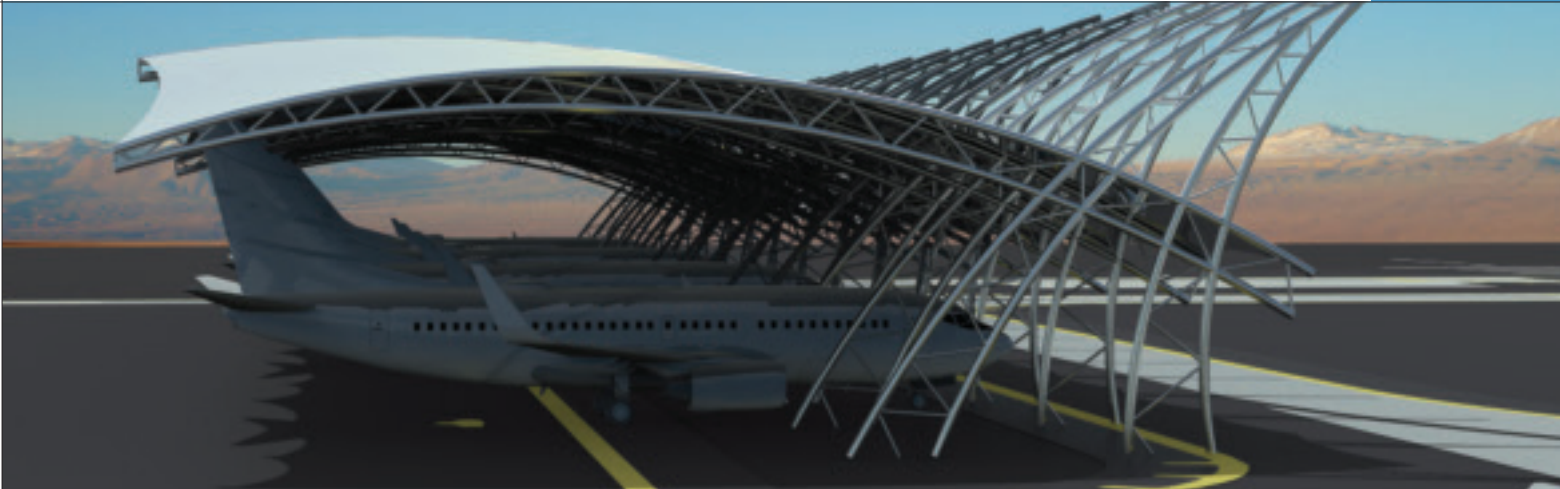
Hani El-Assaad, SITA president, Middle East, India and Africa, said: “SITA is providing Oman with a fully integrated border management solution, as well as the tools to manage, monitor and operate its borders effectively. This will enable Oman to provide the highest quality experience at the first point of contact for its

visitors, and will be flexible to facilitate future growth.”

The number of visitors to Oman is growing and the country is anticipating significant future increases, aiming to attract 12 million people by 2020.

If Oman can capitalise on its favourable geographic location, linking Asia and Europe, Asia and Africa, as well all emerging markets to the Indian subcontinent, then it may very well share some of the spotlight with its much larger neighbouring competitors.

Ruotsalainen also foresees future growth potential via closer collaboration with Oman sea ports like Salalah, Sohar and Duqm, and developing new transportation solutions together with them such as sea-to-air products. “Due to Oman’s advantageous geographical position, overseas shippers and consignees can reduce their transportation lead times by three or four days, which will further enhance the demand for sea-to-air transportation services via Oman,” he said.



# LIGHT AND SHADE

*ArcCan, which built shaded areas for the O2 Arena in London, is now spreading out to the Middle East, offering products that managing director, Colin Puttick, says will protect aircraft, while saving on hangarage. Marcella Nethersole reports.*

**C**olin Puttick heads a team of just five staff at ArcCan, a small UK-based company that offers complete lightweight fabric architecture solutions providing sunshade and shelter structures from rain and wind.

Since its launch in 2004, the company has provided its shelters in homes, schools, colleges, hotels, retail and commercial enterprises, to clients mainly in the UK; including Morgan Sindall, Kier Group, and Laing O'Rourke.

However, it has also been slowly spreading its wings and making its mark on the global map too, with projects in Nepal, Armenia and Ethiopia.

And its new structures for aviation are making a bigger impact, especially in the Middle East.

"We have designed and produced a range of shade structures specifically for the aviation industry," said Puttick. "These range from cantilever "planeports" to large span cable net "planesshade" structures. All have been designed to meet the special needs of Middle Eastern airports – a region that is hot and dusty and has elements that can damage aircraft unless protected.

"Solar radiant heat is the primary heat-stress problem in aircraft. Traditionally, aircraft have been parked in air-conditioned hangars but this can be an expensive option as the building materials, usually steel, actually absorb the heat energy and then radiate it inwards so the air-con equipment is working overtime to lower the temperature to a reasonable level.

"All avionic equipment is affected at elevated temperatures and large areas of glass or Plexiglas produce a greenhouse effect, causing thermal energy to be trapped in the cockpit. The temperature in the cockpit of aircraft parked on airfield ramps may be 10-15 degrees Celsius higher than those parked in the shade."

Puttick continued: "Also, the tanks are unable to be filled to the correct level as the fuel will have expanded and, as the plane reaches its operating altitude, the levels will become lower. This affects flights where fuel levels are critical.

"Paint degrades, fades and peels sooner due to high levels of radiant heat and airframes may need to be repainted within three to four years instead of the usual five to six.

There is also the degeneration of rubber."

ArcCan has designed and produced cheaper-to-build lightweight shaded hangers to protect aircraft from all these elements, while reducing costs.

"Being an open structure, airflow is maintained and heat build-up is reduced," explained Puttick. "The use of special low emissivity (Low-E) fabrics reduces radiated heat by up to 44% over the traditional shade fabrics in wide use throughout the Middle East. They protect the aircraft the same as within a hangar."

Other benefits include fewer regulations applying to usage; the modular designs allow for expansion by adding bays using identical components; they have a projected lifespan of more than 40 years; and the structures can be dismantled and moved to new locations.

## Customer choice

The structures allow the customer a choice – from a large span offering fleet in a line to having a roadway between so passengers can embark under cover.

"Parking aircraft in a hangar is not always a convenient solution, especially where turn-around times are short. Even very large hangars restrict the number of aircraft it can accommodate at any one time and the lack of manoeuvrability is a serious issue," said Puttick.

Away from aviation, ArcCan is also in discussions about a working on a shopping centre in Sharjah. And, with various projects happening in the region, the company is thinking of opening a branch in the Middle East – Puttick said likely to be in Dubai.

He added: "We're concentrating on serving the airports now in the Middle East, so it makes sense to open a plant there. We know our shades will make a huge impact in the region. Put simply, traditional hangars do not meet the high architectural expectations of modern airport designers, where competition to excel has become paramount. What ArcCan has are 12 completely different designs ready for production, anywhere in the world. We're just waiting to press the button."

**"The temperature in the cockpit of aircraft parked on airfield ramps may be 10-15 degrees Celsius higher than those parked in the shade."**

**COLIN PUTTICK**

*Ever-increasing passenger numbers at Middle East airports and evolving security regulations have led to new smart ways of thinking at airport security checkpoints.*

**Keith Mwanalushi** reports.

# Security vision encased in smart thinking

**C**abin baggage X-ray machines, body scanners and pre-airport checks are all intended to improve the flow and processing of passengers through the security checkpoint.

Some experts even envisage a point when there will be no visible airport security checkpoint.

For now, however, in order to cope with the demands of air travel, we need to think smarter.

"The Middle East is one of the fastest growing regions in the world in terms of passenger traffic, and key airport hubs including Dubai, Abu Dhabi, Doha and Riyadh are striving to offer an unmatched and hassle-free security experience to their passengers," said Paul Baker, managing director, Middle East at Smiths Detection.

"Incorporating smart solutions at checkpoints can immensely enhance the integration capacities and operational efficiencies at airports," said Baker, who added that these solutions offered operators the ability to gather real-time and historical data for analysis, allowing them to share information and monitor the entire screening operation remotely for early intervention.

"Adapting smart solutions can also facilitate a new approach to checkpoint security, adding fast, passenger-friendly and cost-efficient processes to the highest levels of security," he continued.

Major global airports are no longer only focused on offering the best passenger experience; they are, instead, constantly working towards redefining the overall passenger travel experience. Dubai Airports, for instance, recently announced growth projections of 126 million passengers by 2020 as the aviation demand continues to soar. In addition, it has been announced that Dubai World Central (DWC) will have a passenger capacity of 220 million on completion of its second phase.

Formerly known as 'checkpoint of the future',



**"Smart solutions at checkpoints can immensely enhance the integration capacities and operational efficiencies at airports."**

**PAUL BAKER**

'smart security' is now a joint programme between the International Civil Aviation Organization (IATA) and Airports Council International (ACI).

According to IATA, today's passenger and cabin baggage security screening works, but at great cost to authorities, to the airline industry, and to passengers. Given the predicted growth in air travel, continuously evolving security threats, and passengers being increasingly dissatisfied with queues and intrusive measures, the industry agrees that today's model is not sustainable in the long term.

IATA believes the 'smart security' vision will be achieved through the introduction of risk-based security concepts, advanced screening technologies and process innovation.

Doha's new Hamad International Airport is among the more recent airports to join trials for the 'smart security' concept. Chris Goater, IATA corporate communications lead for Africa-Middle East, said the trials at Amsterdam Schiphol and London Heathrow airports had demonstrated that several 'smart security' components already had the potential to be game-changers in the short term. "When combined, they can deliver important improvements in security effectiveness, operational efficiency and an improved passenger experience," he added.

"Proof-of-concept implementations will continue in 2015 at these airports, and at new partner airports in Doha, Melbourne and Dublin. The lessons learned and knowledge gained from these trials will be documented into a comprehensive set of guidance materials that will facilitate wider adoption of these principles."

In January this year, Smiths Detection unveiled its latest advanced security solution – the Checkpoint.Evo – during the Intersec 2015 event.

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The British company said the new solution had been designed to significantly enhance efficiencies at airports in the Middle East, while also offering a fast and hassle-free security experience for passengers.

Checkpoint.Evo connects individual sensors to a fully networked system to provide real-time data collection, distribution and management, thereby improving both the inspection process and operational efficiency. It's designed with centralised remote screening that helps speed up inspection of hand luggage, as image evaluation and alarm resolution can be centrally monitored away from the noise and distractions of the checkpoint.

In addition, the advanced recheck functions of Checkpoint.Evo electronically mark suspicious areas in bags, to enable a more focused search for illegal items by on-the-spot operators, resulting in faster throughput and reduced queuing times.

Furthermore, Checkpoint.Evo's data management capabilities offer real-time and historical data for analysis and reporting, which allows airport operators to share information and monitor the entire screening operation via remote portable devices, such as tablet PCs.

**Significant role**

Baker said one of the company's other solutions – eqo – had played a significant role in revolutionising screening procedures since it was launched.

"Used to detect concealed threat objects under passenger clothing, eqo operates within a minimal footprint," Baker explained. "This process provides full privacy for the passenger being screened, with a graphical representation of the person being presented to the operator. The system software indicates concealed objects with a marker on the appropriate part of the graphical display."

Smiths Detection recently won a \$125 million Abu Dhabi Airport contract to provide a comprehensive range of advanced detection equipment for the new terminal. The security detection specialist will equip the entire hold baggage and passenger screening checkpoints with a range of systems to help increase the airport's annual capacity towards 40 million passengers.

The so-called Midfield Terminal building project is due to be completed in 2017.

The hold baggage systems include the HISCAN 10080 XCT – a next generation high-speed explosives detection system combining X-ray and computed tomography technologies.

For carry-on baggage screening, Smiths will deploy its advanced threat inspection X-ray (aTiX) systems, supported by trace detection sensors, bottle liquid scanners and radiation detectors. The terminal will also install 3D workstations for outbound equipment screening by the police and 2D workstations for the inbound screening by customs.

Technologies that could efficiently scan liquids

## **"Airports must recognise the importance of smart checkpoint solutions that can significantly contribute to enhancing inspection and integration capacities of airports' security checkpoints."**

**PAUL BAKER**

and laptops while inside the bags (without removing them) would drastically improve the screening process and are continuously being studied. It is currently a challenge for technologies to detect liquids in carry-on baggage, due to the dense nature of laptops and electronics, which can hide threats if they are overlaid, according to Baker.

"As a result, these dense objects can cause high false alarm rates. However, the technology is only one part of the solution, and the whole concept of operation must also be considered," he added.

"Cabin baggage scanning procedures are currently heavily influenced by X-ray technology, with already relatively advanced capabilities for liquid detection, but other innovations and technologies will slowly enter the market, when they are proven as a better solution to existing X-ray technology."

**Scanning of liquids and laptops**

Goater said regulators, together with airports and aviation stakeholders, were currently working with technology providers to develop the algorithms that will make scanning of liquids and laptops without removing them from bags possible.

"While it is unlikely to be deployed in airports in the near term, it remains an on-going priority for the industry and for the 'smart security' programme," he said.

Due to the complex regulatory nature of the changes required and the level of global stakeholder engagement, Baker anticipates seeing a change to operations within the next five to 10 years. "Our advanced solutions will lead the way and play a pivotal role in offering seamless, quick and hassle-free travel for passengers, which will include the screening of laptops and liquids in cabin bags, as well as more automated processes that will contribute to smoother procedures, improved multiple checkpoint networking capabilities and remote screening operations," he said.

In future, Baker predicts that airport checkpoints will place more focus on redefining

the overall passenger experience with smooth, efficient procedures and the integration of 'smart security' solutions to support this change.

Technology experts in the Middle East are also exploring pre-airport passenger risk assessments for 'trusted travellers' that go through voluntary screening processes similar to programmes by the US Transportation Security Administration (TSA). Such concepts have a huge potential in all markets, not only in the Middle East.

However, Baker warned: "Similar to the adoption of 'smart security' solutions, these concepts need the buy-in and cooperation from multiple global stakeholders, such as the civil aviation authorities, airlines, airports operators, and vendors, in order to facilitate their adoption and success. As with any new technical solution and process, consideration of cultural differences must also be taken into account – for instance processing women and children, and privacy in general."

**Traveller schemes**

Goater agreed and said that while a number of states, including in the Middle East, were considering known traveller schemes, they required a high degree of international coordination and agreement. "Airports looking at ways to develop expedited screening on the basis of passenger information will only proceed once regulatory approval has been obtained," he said.

"The 'smart security' programme and key stakeholders continue to look at how airports might be able to introduce expedited screening into their operations in the event their home state decides to proceed with such an arrangement."

In any case, due to the Middle East being a strong, growing market, the region will have the influencing power to drive these new processes among these global stakeholders.

Self-service and the removal of costly and inflexible legacy processes, have improved checkpoint solutions already. However, the task of physically screening and clearing the identity of millions of passengers a year is still a huge undertaking.

Baker concluded that existing checkpoint areas at airports could not expand without undertaking massive developments, hence one of the key challenges is getting an increasing number of passengers through that space safely and quickly. "With the exponential increase in passenger traffic witnessed across key airports in the Middle East region, comes a challenge of quickly detecting and neutralising threats in passenger luggage," he added. "This is why airports must recognise the importance of smart checkpoint solutions that can significantly contribute to enhancing inspection and integration capacities of airports' security checkpoints. Another key factor that poses a challenge is the adaptability of integration efficiencies of these technologies into existing checkpoint solutions."



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Smartgates at Dubai International Airport have speeded up border control but (inset) UAE's Emaratech were at Future Borders to unveil even quicker new technology.



*A global conference to study the future of borders took place in Dubai in March. Alan Peaford was there to look at the effect new technologies and demands will have on Middle East aviation.*

# UAE borders have the edge

**B**order control agencies worldwide need to be well prepared to deal with the emerging challenges as the number of passengers travelling is set to rise exponentially over the next couple of years.

That was the message from Dubai civil aviation president, sheikh Ahmed bin Saeed Al Maktoum, when he opened the Future of Borders conference in Dubai in March.

And the UAE is setting the pace.

The UAE's advanced passenger information (API) system went live at Dubai International Airport during the conference and Leyla Hareb, assistant director of strategy & international affairs at the General Civil Aviation Authority (GCAA) said: "This system has been developed in just two years. It has taken other countries 10 years to implement."

Sharjah will follow later in the summer.

As of now, 30 countries require airlines to send API before a flight's arrival. Another 32 countries are planning to introduce similar requirements in the near future, said Michael Herrero from the International Air Transport Association (IATA).

API information usually consists of data found in the machine-readable chip on passports and other travel documents – full name, date of birth, gender, passport number, country of citizenship, country of passport issuance – but Fergus Wilson,

the COO of Irish national carrier Aer Lingus warned that there were some major challenges ahead.

"It is important we get standardisation," he said. "We are geared up to the IATA and International Civil Aviation Organization (ICAO) requirements. If we are to see more countries getting this, then we need to be consistent.

Over the years, more and more governments require that airlines transmit API or passenger name record (PNR) data, too often in "non-standard and inefficient ways".

#### Machine-read

IATA has developed an API-PNR toolkit in partnership with ICAO and the World Customs Organisation (WCO) but Wilson's concern was that some countries require information that cannot be machine-read.

Adel Al Redha, Emirates chief operations officer and senior vice president, said that the use of 'smart' technology allows a smooth transfer through the airport and helps the airline's customers get a good passenger experience.

"In Dubai there has been good cooperation between the government, the airport and the airline. Multiple stakeholders have been involved and the use of e-gates for UAE nationals and residents has speeded up the processes," he said.

"We are privileged that in Dubai and the UAE we are all working with the same vision and mission, which is to enhance passenger experience," he added. "Air travel has undergone transformation. Gone are the days when people travelled only one or a few times. These days, some passengers travel multiple times during the same day. Also the numbers are rising exponentially.

"In such times, process barriers lower the standards. One of the ways to enhance the passenger experience is to share database of, for example, frequent flyers. Airlines could share it with authorities and we could have a scenario where, using a single card, the passenger could enter or exit. We must do that," he said.

Online and technology solutions company, Emaratech, used the conference to announce the launch of a new system that performs simultaneous document and iris scans to quickly verify travellers' identity when integrated with border gates.

The latest iris recognition system engineered and launched by Emaratech has an average acquisition speed of up to two seconds.

Called 'Eyen', which in Arabic means guard, sight, and noble, and in English means sight and vision, it has been integrated into a new intelligent travel gate that will be launched soon.

"The new gate using "Eyen" technology will





enhance passengers' experience with minimal amount of changes in habit norms," said Thani Alzaffin, director general of the UAE technology company.

"The system also maintains the highest level of security using the latest iris recognition technology. At Emaratech, we focus first on people and then on process. We study behaviours, review existing processes and analyse the operational and technical challenges in order to deploy business solutions that enhance the overall experience by process re-engineering."

#### Greater cooperation

Another keynote speaker, Angela Gittens, director general of the Airports Council International (ACI), called for greater cooperation between stakeholders to develop and agree on interoperable equipment and common international standards.

Gittens said: "There is a lot to be done – we have big job ahead of us."

"It will take substantial collaboration within the industry, with governments and other interested parties to accommodate the growing demand for air travel safely and securely, to meet our environmental commitments and to sustain our businesses."

*Robust passenger growth at UAE airports – projected at 5.6% annually until 2034 by the International Air Transport Association (IATA) – higher expectations of travellers about seamless experiences, and ceaseless technological advancement, are prompting Arabian Gulf airports to turn 'smart'. Mohammed Mahmoud reports.*

## The smooth and smart way to expand

UAE airports are investing up to \$50 billion in new and expansion projects, with smooth and efficient operations being the key expectation.

The investment comes ahead of a capacity increase from about 100 million passengers last year to an astounding 250 million passengers by 2020.

And the technology that surrounds passengers is stepping up too.

"The airport experience has changed at an amazing pace and it will change even more and for the better over the next five years," said Mohammed Fouz, CEO of system integrator and digital ICT service provider Smartworld.

Smartworld is a joint venture between Etisalat, the UAE-headquartered telecommunications operator, and Dubai World Central (DWC), the aerropolis that has designs on becoming the world's biggest airport.

Smart technologies are transforming airports for better passenger facilitation as they grapple with a big rise in passengers.

"In the past five years, smart technology has overrun virtually every part of our private and public lives, and air travel is no exception. Airports can benefit through a 25% cut in operational costs and enhanced capacity-handling by turning to smart technologies," Fouz said.

Smartworld was established in 2008. The company has a strong track record of successful deployments and implementation of the state-of-the-art ICT systems at the Al Maktoum International Airport at DWC and the installation and implementation of a first-of-its-kind open and equal access gigabit passive optical network (GPON) at DWC.

It also implemented a unique project at Terminal 2 of Dubai International.

Fouz said the revolutionary technologies are

**changing the business model of airports. "The demand for smart technologies integrated into centre**

**infrastructures will skyrocket in the next few years. All airports will be transformed into intelligent, adaptive and responsive environments. Changes**

**in the ways we travel are coming at us faster. New technology promises to make travel even easier, more efficient and safer. Some changes are right around the corner and others are decades away," he said.**

Industry studies suggest the global market for smart airports will reach \$13.5 billion by 2020.

IATA wants aviation stakeholders to develop and use information technology to drive improvements in the passenger experience.

Most airports are dealing with three business imperatives: improving the passenger experience; optimising operational processes; and improving the commercial and financial performance.

Fouz said the mushrooming mix of devices, applications, networks and services will open up a whole new world for the systems integration in the airports environment.

Gulf airports will welcome more than 450 million passengers by 2020.

By 2020, about 100 million passengers will use Dubai International Airport, while Al Maktoum International Airport capacity will increase to 200 million passengers upon its completion. By 2020, aircraft movements in the UAE will be over 1.2 million. ICAO predicts 5.2% annual growth in regional air traffic until 2030.

Fouz said: "Technology is the only way ahead to enable all stakeholders to achieve their goals. Governments want to bring in more visitors while enhancing security. Airports want to accelerate travel, generate more revenues, while reducing the costs. Airlines want to differentiate themselves and keep their customers happy."

"Passengers are looking for stress-free journeys with diversified options and seamless experiences. All stakeholders want to be efficient, fast, cost-effective and secure. Without a strong and modern IT infrastructure all those plans and scenarios, it will be just a wishful thinking," he concluded.



Local companies are sharing technology to develop smart ideas for Dubai airports.

# Experience

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Al Jallaf (left) and Guitteye discussing ATM issues in the Middle East and Africa.



# SPANISH STEPS

*The world's air traffic management experts converged on Spain in March for the third edition of the World ATM Congress. High on the agenda was the situation in the Middle East and Africa. Keith Mwanalushi reports from Madrid.*

**T**he 2015 edition of the ATM Congress was the biggest yet. According to figures released by the organisers – the Civil Air Navigation Services Organisation (CANSO) in association with the Air Traffic Control Association (ATCA) – the event drew 6,929 attendees, 199 exhibitors, and 313 conference delegates.

The congress opened with a statement by Ana María Pastor Julián, Spain's Minister of Transport and Public Works, who stressed the importance of aviation to tourism and the Spanish economy and highlighted progress in the Spanish air traffic management sector.

During the three-day event, experts from around the world discussed pressing topics, including how best to harness the powerful impact of the data revolution and the possible impact of disruptive factors on the air traffic management industry, as well as how to build sustainable ATM networks – its the latter topic in particular that attracted participation from the Middle East and Africa regions.

A number of key issues were addressed, including how long the current ATM model would continue. Around the world there is growing need for seamless ATM delivery that recognises the diverse business requirements of

users, the diverse cultural requirements of different parts of the globe and the new technologies becoming available.

Joe Sultana, network manager at Eurocontrol, highlighted the successes of European regional collaboration and network management, so the spotlight quickly turned to the Middle East, asking if a network manager or some other emerging technology would be required to manage the traffic congestion issues in the region.

#### Regional strategy

"I agree with Joe that regional starts with local, but local must also be complemented and integrated with a regional strategy," said Ahmed Ibrahim Al Jallaf, the UAE General Civil Aviation Authority (GCAA) assistant director general for air navigation services (ANS) and chairman of the International Civil Aviation Organization (ICAO) Middle East airspace enhancement programme.

Al Jallaf highlighted a UAE example, which is in line to have the most modern infrastructure and the latest updated ATM systems. "But we also have regional constraints that are out of our control that made us change our strategy towards initiating certain initiatives and working together with our stakeholders and enhancing our

cooperation in the region," he added.

During the panel discussion, Sultana also stressed the importance of cross-regional collaboration. Al Jallaf agreed on the necessity of flow management solutions for ATM in the Middle East but he pointed out that the situation there was quite different. "With the various political unrests and the uniqueness of the problems in the Middle East, it may not be the perfect time or period to have a centralised ATM solution," he said.

He added that another very important aspect was data sharing but pointed to the absence of a global data sharing legal platform. "Yes the Middle East and the UAE is in need of such an ATM or network management solution, but we have to work out certain constraints in the region," he said.

Collaborative networks in some regions are more easily imagined than implemented. From Africa to the Middle East to Europe, experts envision collaborative networks and a 'single sky' but the realities are often more complex, including situations where growth might outpace the infrastructure available.

Al Jallaf cited statistics showing that, in 2010, the region had 644,457 flights. By 2020, that's

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expected to increase to 1.2 million, and to nearly 1.9 million in 2030.

In Africa, the Agency for Aerial Navigation Safety in Africa & Madagascar (ASECNA) was created in 1959. Amadou Ousmane Guitteye, director general of ASECNA, said this non-profit organisation manages an airspace 1.5 times the size of Europe, covering 18 member states, six flight information regions, and about half of the continent's land mass.

Guitteye said ASECNA was expected to be fully mature by 2016 in terms of air safety and administration.

"Today, we have achieved a lot through our strategic objectives, one of which is to enhance safety and to balance safety and economy," declared Guitteye.

"I would like to stress, however, that we are facing some challenges and most of them are hard to oversee. We are composed of many states and every country would like to oversee their activity. It's quite a burden because you lose money and time if you have to deal with every state individually. It would be impossible," he added.

Another challenge, albeit related, is the membership size limit. According to Guitteye, it's difficult to grow beyond the current 18 members.

"Membership is free but we have to remain efficient. What we would like to urge is for the other areas on the continent to set up regional ASECNA regions so we have at least three of them in the sub-Saharan area, one in eastern and another in southern Africa. The goal is to have a common network for communication and surveillance across member states."

Guitteye recalled in the early days the critical lack of expertise. "Initially we had to prove that the services we provide are complying with ICAO provisions and then the states had to individually accept the way that we manage the airspace. We also had to recognise all the deficiencies that we encountered. Today, these civil aviation authorities are better able to take control of their activities, particularly on the air navigation side."

Back on the Middle East and looking at the challenges presented in the region, Al Jallaf was asked if there was need to split the ATM regulatory part from the service provision in order to progress.

He believed separating the air navigation service providers (ANSPs) from the regulator could be done in two ways – full separation, two different entities with different financial framework – and partial separation.

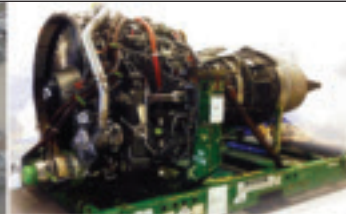
"We have those service providers who are

considered to be separate entities and we have ANSPs that are functionally separated completely."

Al Jallaf cautioned that there were pros and cons with both approaches. "Either way you need to ensure safety and that you have no conflict with the regulatory aspects, but also we totally need to have some sort of flexibility in terms of financial management. I don't see that there is a big difference as long as you have common operational concepts to govern your project management aspects. You must have that flexibility."

Finally, and commenting on the overall ATM event, CANSO director general Jeff Poole, said: "The successful combination of top-level conference; busy and informative exhibition; and numerous workshops, demonstrations, and presentations has rightly attracted leaders and decision-makers from across the aviation industry in record numbers.

"The World ATM Congress has developed year by year as it reflects the feedback and views of those attending to produce a compelling event. In its third year, the congress has successfully fulfilled its original aim of becoming the premier ATM global event, organised by the industry, for the industry, which has shown massive support, commitment, and appreciation."



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# Bayanat's thrust for growth

Lidar windtracer technology at Dubai.

*Bayanat Engineering Group is in expansion mode. Elie Hannouche, marketing and corporate communications manager, explains to Keith Mwanalushi, from the sidelines of the World ATM Congress, how the company is shifting gears from not only being a systems integrator but also to becoming a major aerospace player.*

**B**ayanat Engineering Group operates and manages its companies in sectors with a high-tech engineering profile using a combination of joint venture, investment and strategic partnerships.

The UAE acts as its Gulf hub and the company has operations in Qatar, Saudi Arabia via a partnership, and is also setting up shop in Oman.

"We are recently established in Casablanca, Morocco. This will be acting as a hub for Morocco and also north Africa. The licence has just been issued," said Hannouche.

In terms of development, Hannouche said the group was enjoying geographical expansion as well as growth in terms of systems and services and going beyond airport system integration to becoming a solution provider. "We are able to play with our capabilities and engineering, bring in technologies from outside, demonstrate the capabilities to the end-users and provide that as a solution to address the issues, problems or needs of the aviation authorities," he said.

Hannouche then gave an example of recent work done for Dubai International Airport. "They wanted to look at the way they separated their flights, so we got the WindTracer light detection and ranging (LIDAR) technology to reduce separation of flights." WindTracer is a LIDAR system that measures the strength and behaviour of wake vortices caused by arriving aircraft. Its wake measurements are used for proving new concepts to help reduce aircraft separations during arrivals, thereby increasing airport throughput.

"We are confident that WindTracer will be deployed elsewhere. It is now a proven technology that is being used at a number of airports, and its results have been proven," said Hannouche. "There is no need to have such a big gap from one take off to another," he added.

Essentially, Bayanat operations have revolved around its airport systems integration activities. The company has been active in civil airports for runways, airfield ground lighting, lights, instrument landing systems (ILS), radars and navigational aids. "In terminals, we have supplied different systems, such as flight information, passenger check-in and baggage reconciliation, but also in the past year or so, we have really gone deeper in the security IT systems as well."

Hannouche said Bayanat had just been awarded a CCTV

project for Abu Dhabi Airport. It included the public address systems and the CCTV access control, while also developing IT infrastructure that goes along with these projects. "And on the air traffic control side it's all the consoles – communication, navigation, surveillance (CNS) systems as well, so we are actually going a step beyond and also providing services."

Runway services, such as runway friction testing, is an area the company is keen to expand. Hannouche believes there is need to bring in technologies that will help airports, especially in the Gulf Cooperation Council region.

"We are looking to expand our service offering beyond the runway to look at more air traffic control and management and also in the terminals. "We were in Abu Dhabi doing the service level agreement (maintenance) for the terminal systems. So essentially, we are bringing back the service offering within the group," Hannouche clarified.

Other areas of interest to the Bayanat Group are metrological systems and the military sector.

## Airside lighting systems

Hannouche said that in the past two years the company had had four or five projects commissioned for air traffic control systems as well as runway and airside lighting systems for military airstrips, in addition to some other specific systems that pertain to the military.

"We have been working a lot with the military and we are looking to expand in this field. There is a lot we have done and there is more that we could do. Today we are looking at satellite systems for the military; the military, but it's not only military, working on the satellite ground stations overall is a path we are looking to get into," Hannouche said.

Regarding the ATM Congress, Hannouche announced that The Bayanat Group is now a Civil Air Navigation Services Organisation (CANSO) member.

"CANSO has been very excited to have us on board because we are the first Middle East and Gulf-based company to be part of this exhibition," said Hannouche. "Our role here at this exhibition is to bring the region (the Gulf) to such an event and to promote the region and to also see what technologies we can take back to the Gulf. It's exciting to be the first Middle Eastern company as part of the show."

**Barbara Saunders** reports from the *Future Air Transportation Systems* conference in Dubai.

# Regional approach key to crowded skies solution

**T**he Middle East's crowded skies dilemma needs a regionally collaborative approach across military and civil airspace.

That was the view of the vast majority of speakers at the recent Future Air Transportation Systems conference in Dubai.

Speaker after speaker warned of the dangers facing the region and most came down firmly on a regionally inclusive approach similar to Europe's single sky initiative.

Failure to adequately address the issue will impact regional and global development, according to Jeff Poole, director general of the Civil Air Navigation Services Organisation (CANSO).

"Governments here understand the importance of aviation yet, even here, there's the potential of more congestion, which will have an impact on other parts of the economic growth of this region and globally," he said.

## Spectacular growth

The conference heard that the region's spectacular growth was causing airspace congestion, with several corridors closed to the commercial sector and earmarked only for military use. Jeff Johnson, president, Boeing Middle East, said the region's aviation sector faces 5% annual growth over the next 20 years, putting added pressure on air traffic management (ATM) systems. "Airspace management is going to be the big issue in capturing that 5% safely," he said.

Improved airspace management, said Johnson, means better airport and airspace capabilities. "We have to work on getting the regulators to understand the issues and collaborate," he added.

For Rudy Kellar, executive VP service deliver, NAV Canada, the need is an end to silo management. "The entire structure needs to be revamped. More collaboration is required with the military, which occupies 40% of airspace in the UAE."

Wing Commander Rob Dargan, of Britain's

## Influencers for the Mid East's crowded skies

- 40% of the UAE's airspace is dedicated for military only use – rising to 60% in some parts of the Gulf;
- The region's passenger traffic is estimated to grow 7% over the next 20 years;
- By 2030 the region will account for 12% of global passenger traffic;
- Only 30% of the air traffic traversing the region actually lands there;
- 150 million passengers are expected through UAE airports by 2020;
- The combined fleet of the four UAE airlines will double to 800 by 2020;
- There are currently six Flight Information Regions in the GCC.

### Benefits of ATM investment according to Airbus ProSky:

- Decreased flights delays;
- Minimised impact on passengers and business;
- Less fuel burn;
- Fewer CO2 emissions;
- Increased capacity.

Royal Air Force, pressed the case for following a UK lead in bringing military and civil ATM together for integrated aerospace planning and management. "Airspace has to be a shared resource and is only segregated for the safety of users," he said. "Robust civil and military cooperation is vital. The benefits to the military are hard to quantify and there's often a reluctance to get involved. But to handle growth, flexible use of airspace is required. ATM operators from both sectors working as a unit deliver a single team ethos."

The burning question remained: who would be the driver of change? Johnson said: "OEMs have to take the lead in the dialogue and bring human assets to the table."

Ahmed Al Jallaf, assistant director general, air navigation services at the UAE's General Civil Aviation Authority (GCAA) said whoever was to lead needed to do so regionally. "Commitment to joint regional initiatives are needed," he said, adding that the GCAA's cooperation with the UAE military had improved.

"This has resulted in availing more flight levels for approved carriers through military airspace and to foster this cooperation, a full-time military aviation officer is employed. The web-based forum UAE Airspace Coordination and Contingency Cell (UACACC) has also been introduced for all stakeholders to share relevant information and it is playing a vital role in doing this on a daily basis.

"These initiatives can only give the desired benefits to operators if they are matched by downstream units and we urge and support the transformation of air traffic control throughout the Middle East."

## GCC centre

Adel Adil, CEO of Air Arabia, agreed: "Whatever can happen, has to happen. Why not a Middle East centre for air traffic management? A GCC centre would at least be a start."

The UAE's GCAA has undertaken strategic initiatives, including establishing the UAE national airspace advisory committee, the development of the UAE ATM strategic plan 2030, and increased collaborative decision-making.

The Emirate has also proposed and supported the establishment of a Middle East ATM enhancement programme as a regional platform within International Civil Aviation Organization-MID region – a basis for a collaborative approach towards planning and project implementation.

Yet, in pursuing a regional agenda, the GCAA's assistant director general, aviation



safety affairs sector, Ismael Al Blooshi, called for realism.

“We have to recognise there’s no one-size-fits-all solution,” he said. “It’s all about priorities and some states have different priorities from others. Our job is not to seek harmony, but to see that the systems each use are compatible. This has not been the case so far, and this scenario is likely to continue for some time to come.”

But time, according to captain Alan Stealey, divisional SVP flight operations of Emirates, “is of the essence”. Regional carriers, he said, were becoming “frustrated with the lack of progress”.

The captain called for a regional “step change” citing the UAE and Qatar as the two main countries to suffer if change was not forthcoming.

**User community**

While acknowledging frustration among the user community, Todd Donovan, VP strategy – air traffic manager, Thales, said user leadership could be key to collaboratively finding solutions.

“We cannot look towards the regulators alone. Almost all the changes that come in the industry start from the airspace users. The Middle East has challenges that are somewhat unique and all users could adopt a combined leadership role to solve the problem in a wider collaborative approach,” he said.

Stealey, though, doubted the ground-up approach. “We have no leverage. This is a really sensitive region politically and we are looking for continuous support from regulators and air navigation service providers in the area. It’s going to be tough. The sense of urgency is not there. We need to persuade others that there’s a huge change needed.

“This part of the world is very strategic and there are some big issues around military use of airspace obviously, but we have to come up with a better way of using our airspace.”

## UAE SET TO PIONEER UAV USE REGULATIONS

The region’s spectacular growth is causing airspace congestion but Airbus Prosky is one of the companies stepping in to help plan for the future.

**The UAE will be one of the first countries to regulate unmanned aerial vehicles – including leisure drones – according to one of its General Civil Aviation Authority (GCAA) directors.**

**Addressing the Future Air Transportation Systems conference in Dubai, Mohammad Faisal Al Dossari, director, aviation safety affairs, air navigation & aerodrome, said the authority was well advanced with the first steps towards regulation and an all-inclusive stakeholder consultative process would begin soon.**

**“Our challenge is to regulate the commercial side first and then the leisure side, whether people operate as clubs or are private users who view them as toys – we even want to regulate these activities.**

**“We anticipate a lengthy consultative phase to think about the processes needed to obtain necessary approvals and the guidelines that need to apply. At some point, we also have to develop the implementation plan. We are even going to regulate unmanned systems that are less than one kilogramme,” he said.**

**Meanwhile the use of drones is banned in Abu Dhabi while being encouraged in Dubai which recently held a \$1m competition called “Drones for Good.” The focus intensified however when Dubai International Airport had to be closed for three hours in January when a leisure UAV was flown in the approach path to the runway.**

**Al Dossari said the GCAA was focusing on four key issues – safety, security, the environment and efficiency.**

**“We already have a complex aerospace scenario here and we are introducing new systems into this equation so all these considerations will be the drivers behind the new regulations,” he said.**

**“We are going to make the whole process very consultative and will regulate the systems based on weight and by operator types, including clubs and private users, to ensure control of our airspace.”**

**Al Dossari said the consultative phase would begin imminently and that he expected it to last at least six months. “As long as it takes,” he said.**

**This summer the consultations will be reviewed. “Once we have taken everything into consideration, we may go back for a second consultative phase,” he explained. “We will also decide on an implementation phase but the regulatory framework will definitely be decided this year and I anticipate the implementation coming into effect around January 2016. This will put us among the first countries in the world to have such regulations.”**

**Douglas Raaberg, CEO UAE for Northrop Grumman, described the need for UAV regulatory control as “the challenge of the future” for a “new realm” with the technology certain to “migrate into the commercial sector”. He said a balanced approach, involving all users, airlines and regulators, could deliver a “new gold standard”.**

**Last year the UAE announced plans to launch a fly-by courier service that uses eyeball-scanning unmanned aerial vehicles to drop off government documents.**

*Few organisations embody the decision to make aerospace a major pillar of the UAE economy more than Mubadala. As Alan Dron reports, the multi-faceted Abu Dhabi-based company is expanding rapidly, with further major announcements expected at this year's Dubai Airshow.*

# MUBADALA IN THE FAST LANE

**W**hen the emirate's aerospace strategy was being formulated in 2007-8, there was one fundamental question in the minds of its planners: were they creating an aerospace industry in Abu Dhabi or for Abu Dhabi?

"We decided we were creating it for Abu Dhabi," said Grant Skinner. It was to be an organisation that would help to drive Abu Dhabi's wider economy, both in economic and socio-economic terms. As well as (hopefully) generating profits, it would also generate jobs that could be taken up by Emiratis, broadening the emirate's skills base and providing employment for the young population.

Skinner, now Mubadala's executive director, aerospace & defense services, oversees a spectrum of activities that demonstrates the UAE and Abu Dhabi's joined-up thinking and long-term vision for the sector. That vision includes getting to where the organisation wants to be – a world-class player in its field – in a hurry.

"Organic growth is too slow for us. We have a lot of ambition and a healthy impatience to get there. We like to do things as quickly as reasonably practicable. Doing it organically would take a long time," said Skinner.

"Are we open to overseas acquisitions? Yes, we are. One of the things we've talked about is the potential to expand our aerostructures platform, Strata, in North America."

## Major customers

One benefit of such a move would be that the UAE dirham is pegged to the US dollar. Another is that Strata would be much closer to Boeing, one of its major customers.

Such a plan "is likely at some point in time", said Skinner. But acquisitions are not a major thrust of the company's activities: "It's not our prime focus when we wake up every day."

As Strata grows in stature, will it increasingly design parts as well as manufacture them? "It used to be our ambition to be one of the top five aerostructures companies in the world by the end of the decade. If you look at the competition, that means some quite significant expansion in size, scope and capability," said Skinner.



"With that in mind, I hope to have discussions with Airbus and Boeing etc to understand what they will need several years in the future. [Boeing] seem to be retaining more of their design in-house – more than they did on the 787."

The outsourcing of huge parts of the technically advanced twinjet's construction and assembly process stretched the US airframer almost to breaking point in the first decade of the century.

"We thought at one point that we needed full-scale design capability. Now that is probably unlikely. We need major manufacturing capability," said Skinner.

Strata is one of several Mubadala components heading for rapid growth. Its expansion is being aided by a Mubadala joint venture with US pre-impregnated materials (pre-pregs) specialist, Cytec.

The latter two companies will build a factory that will primarily export the composite material but also supply it to Strata. The precise timescale for this is currently under discussion with Cytec and Boeing, which is likely to be the ultimate destination for at least some of the factory's production. An announcement is expected at this year's Dubai Airshow. "It will very definitely be up and running by the end of this decade – and sooner rather than later," said Skinner.

Together with the Advanced Military Maintenance Repair and Overhaul Center (AMMROC) and Turbine Services & Solutions

Aerospace (TS&S Aerospace), Strata will be one of the 'anchor tenants' in the first phase of the Al Ain aerospace park, now renamed Nibras.

Strata and the Horizon International Flight Academy are already in the area, adjacent to Al Ain International Airport.

The first phase of Nibras will see infrastructure – roads, water, sewerage and electricity – being installed over a 5kmsq area to allow a major expansion of Strata's existing facility. Several further expansion phases are planned over the next 40-50 years.

## Emirati women

Expanding Nibras takes advantage of Al Ain's educated population, plus the fact that Emirati women traditionally prefer not to travel too far from home to work; of the 45% of Emirati staff currently in Strata, for example, more than 80% are local women, another facet of the socio-economic thinking behind Mubadala's expansion.

The new facility for AMMROC is due to be completed within Nibras in mid-2016, while TS&S Aerospace also plans to set up shop there.

TS&S Aerospace was established in 2014 and emerged from the engine services division of Abu Dhabi Aircraft Technologies; the latter organisation was acquired by Etihad Airways. TS&S Aerospace "is a relatively small business at the moment", said Skinner, but "it will frankly explode in size towards the end of this decade".



**“Organic growth is too slow for us. We have a lot of ambition and a healthy impatience to get there. We like to do things as quickly as reasonably practicable. Doing it organically would take a long time.”**

**GRANT SKINNER**



Part of this growth will come via Rolls-Royce, which plans to put its Trent 700 turbofan, which powers the Airbus A330, through the MRO facility, as well as the International Aero Engines V2500. Towards the end of the decade the Trent XWB and GENx turbofans are also likely to be handled by TS&S Aerospace.

Additionally, the company is also starting to undertake third-party engine MRO work from Turkey's Onur Air and is in discussion with other carriers to handle their powerplants.

Powerplants and components are the focus of another part of the interlocking jigsaw of Mubadala companies that are helping to create an aerospace eco-system in Abu Dhabi. Sanad Aero Solutions is one of the few companies worldwide that leases engines and components to airlines.

Engine leasing is not uncommon but far fewer companies lease out spares. Sanad's service enables airlines to optimise their spares inventories and frees money that would otherwise be tied up in components that can potentially sit in a carrier's warehouses for months or even years. By early this year, Sanad had around \$950 million invested in engines and components.

Also on the MRO side of the business is SR Technics, which Mubadala acquired in 2007. Operating in a highly competitive marketplace has not been easy. A “quite painful restructuring” saw

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**Left: The P.1HH Hammerhead Mubadala and Piaggio believe it could form the new European standard for a medium-altitude, long endurance (MALE) class UAV.**

**Right: Strata could open in North America to be closer to Boeing.**



## CONTINUED FROM PAGE 119

SR Technics' Dublin facility closed down in 2009. This was balanced with the opening of a low-cost facility in Malta and another in Malaysia.

The company, which is based in Switzerland, is seeking to get involved in MRO work for the new generation of airliners. Having won a contract with Aeromexico to handle its Boeing 787s, it now wants to obtain work on the Airbus A350. News on developments at SR Technics is also expected at this year's Dubai Airshow.

Meanwhile, Mubadala believes that a major opportunity could be about to open up at another of its operations – Italy-based executive aircraft manufacturer Piaggio.

Last year saw the launch of the latest EVO iteration of the P180 Avanti executive turboprop, which has attracted considerable market interest, according to Skinner.

However, at least as interesting is the P.1HH Hammerhead unmanned variant, which is being pitched for the UAV and maritime patrol roles. With the UAV having an endurance of more than 16 hours, Mubadala and Piaggio believe it could form the new European standard for a medium-altitude, long endurance (MALE) class UAV. "There is no obvious platform widely available in Europe," said Skinner. "That's a really quite exciting future, with growth opportunities."

In late February, Piaggio announced that the Italian Air Force would become the first operator of the type by acquiring six Hammerheads and three ground control stations by 2016.

"Piaggio is in a very exciting place right now. Mubadala took full control of the company last year and redirected its business plan and put in place a new CEO, who has brought in additional people," said Skinner. "They've moved from two sites in Italy into a new, state-of-the-art facility at Villanova. There's an energy about the facility; people are working much closer than they ever could while they were working apart."

**Major goal**

As with most UAE companies, Emiratisation is a major goal at Mubadala. Targets vary according to individual companies within the group, but overall there is a goal of around 50% over the next few years.

With Abu Dhabi's young population, it is important for Mubadala Aerospace to be able to find the right type of recruits and it has been actively putting promising pupils and students through educational and practical courses for some years, said Skinner.

"We have interns and industrial placements for students...we've had interns at Airbus."

The UAE University now also offers aerospace as a minor in its degree courses.

However, the impetus to attract the new generations into the aerospace industry goes considerably further. As part of an outreach programme for schools, the company promotes the 'Little Engineers' programme and encourages pupils to take up science, technology, engineering and mathematics (STEM) subjects that will give them a head-start in finding jobs in the aerospace sector.

In the past, if people were interested in going into aerospace, it was likely they would have to go to study abroad and may have had to work overseas. Now, there are educational and employment opportunities on their doorstep.

Taken overall, it's a healthy picture. "One of the things we've been reasonably successful in is maintaining an intensity of focus on our core strategy – MRO, engines, aerostructures and pilot training," noted Skinner. "For the first time we're introducing a new strategic stream, engine component manufacturing. We're working with Rolls-Royce and GE to start [this] to build an engine component manufacturing facility. We're working on detailed planning with our OEM partners, which is taking up a lot of time.

"The next five years are going to be very busy."



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*After more than 15 years working in the Arabian Gulf, MSI sees strong prospects for its MRO activities. Alan Dron reports.*

# MSI set to get ahead in the Gulf

**M**RO specialist MSI Aircraft Maintenance Services International aims to expand its operation in Dubai as it keeps pace with the booming aviation sector in the Gulf.

The company, based in Germany since 1986, handles repair and overhaul activities for commercial aircraft operators, airlines and government customers.

Since opening a sales office in Dubai in 1998 to be closer to customers in the Middle East, Africa and Asia, MSI has gradually increased its workforce at its Jebel Ali Free Zone premises. That office expanded into MRO workshops in late 2005, when MSI added a European Aviation Safety Agency (EASA) Part 145 repair and maintenance facility for electronic and avionics components. A warehouse was added and in 2008, the facility received Federal Aviation Administration (FAA) approval.

While the main workshops in Germany handle engine and component overhaul – notably for the ATR 42/72 and Fokker 50 regional airliners – Dubai focuses on electronics, handling items such as ballast units, galley equipment, cargo loading systems and, more recently, Sennheiser headsets.

## Increased numbers

The company as a whole – it also has an office in Moscow – has around 60 personnel, with the Dubai office having gradually increased its numbers to around 14. New personnel are initially trained at the Ruesselsheim HQ in Germany before being sent out to the Gulf.

In the 17 years since it opened for business in the Gulf, says general manager Juergen Hinkel, MSI has gradually built up a customer portfolio that includes most of the region's major carriers – including Etihad, Qatar Airways and Gulf Air – together with smaller airlines from the Gulf and the surrounding regions.

One such example of customers from outside the immediate Middle East region is the Maldives, with equipment from several airlines from the Indian Ocean archipelago being serviced at MSI's Dubai facility.

The company's presence in Dubai since 1998 has led to some long partnerships with airline customers. Those relationships, together with MSI's single point of contact policy, short reaction times when work has to be done quickly



**Juergen Hinkel: MSI has gradually built up a customer portfolio that includes most of the region's major carriers.**

and flexible approach, have all helped to maintain the flow of work to the Dubai outpost, said Hinkel.

As the fleets of the Gulf airlines have grown, the buoyant market in airliners has provided increasing amounts of work for MSI. Having spotted the trend in fleet growth some years ago, MSI geared up and is now able to meet the increased demand that has resulted.

The repair of Sennheiser headsets is a good example. With airlines in the region providing better-quality headphones for pilots as part of their strategy to differentiate themselves in airline service from European and US competitors, MSI saw there was a market developing.

By having its Dubai office gear up to handle the headsets, it was able to approach airlines and persuade them to have them repaired and maintained locally, rather than shipping them to Europe, saving both time and money.

## Expansion focus

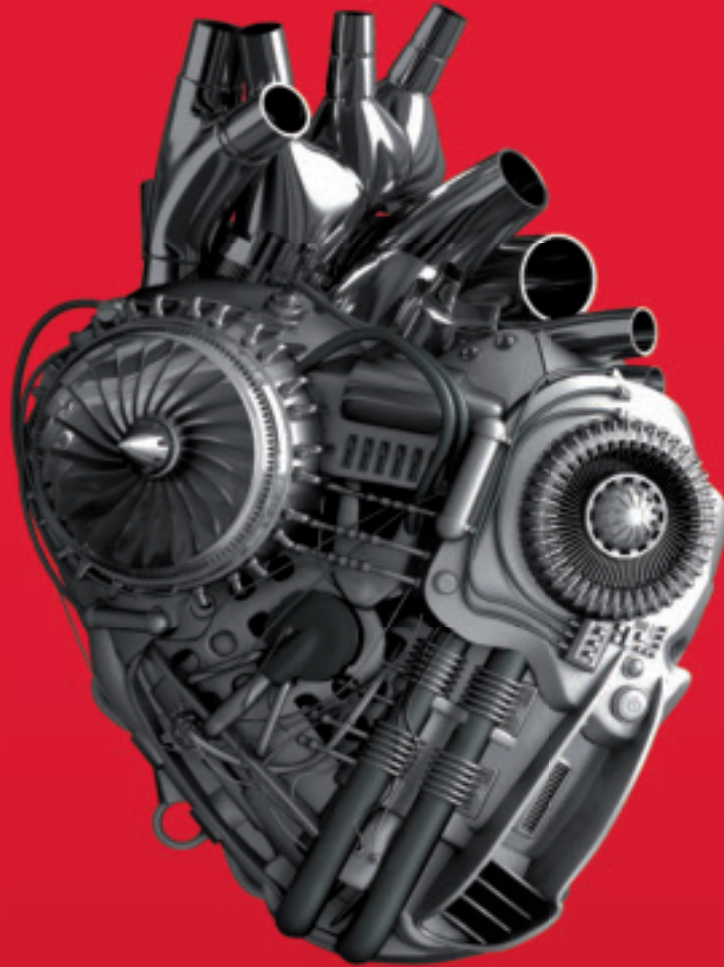
MSI foresees the Dubai operation continuing to grow in the next few years, but believes expansion will be focused on the existing facility, rather than on any new offices in the region. "At the moment we are increasing our repair management team and we shall increase our sales team," said Hinkel.

Finding the right people to staff the Dubai office can mean looking far and wide: a few years ago, the 11 staff at the facility came from no fewer than seven countries.

A further increase in staff is expected as the company's operations continue to expand – likely to come through organic growth and by expanding its portfolio of capabilities rather than through acquisitions of other companies.

MSI takes the Middle East region seriously when searching for business, said Hinkel, and it uses the region's main aerospace shows as opportunities to network and to find new clients. "We attended the Middle East Business Aviation (MEBA) show last December and we always attend the Dubai Airshow. We will absolutely be there again this year and we have already booked our space for MRO 2016. We see the region expanding for the foreseeable future."

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*The growing importance of the MENA region to the maintenance, repair and overhaul industry was clearly demonstrated at the MRO Middle East event in Dubai in February.*

## Lufthansa Technik steals headlines at MRO Middle East

New partnerships, new facilities and new products brought a new sense of urgency and vitality to the MRO Middle East, which was run by F&E Aerospace and *Aviation Week*.

Lufthansa Technik captured the main headlines when it announced plans to develop a new operational facility at Dubai World Central (DWC) by the fourth quarter of this year.

Under an agreement signed at the show, Lufthansa Technik becomes the anchor tenant of the aerospace supply chain facilities that DWC is shaping within its aviation district.

Ziad Al Hazmi, CEO, Lufthansa Technik Middle East Services, said: "We have assessed DWC to be the ideal venue to host our new facility, which is being designed to strengthen and grow our local presence and capabilities in the region. It will put us in prime position as a leader in the aerospace supply chain sphere, and help us enhance value for our growing list of customers through offering optimised technical services, such as our airframe-related component (ARC) portfolio, which includes aircraft MRO services – literally from nose to tail."

### Wide spectrum

The MRO sector associated with the aviation industry offers a wide spectrum of support services related, but not limited to, the maintenance of the landing gear, avionics, hydraulics and braking systems, as well as specialised functions such as aircraft painting, plumbing, seat and upholstery, non-destructive testing and plastics repair.

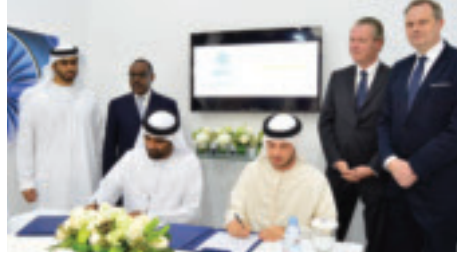
Aerospace supply chain facilities are being developed by the DWC Aviation District including three developments spread across 45,000sqm.

Estimated to cost AED120 million (\$32.7m), the project will feature a multi-purpose building for aerospace supply chain tenants in a 6.7sqkm district adjacent to Al Maktoum International Airport.

In another event alongside the show, Liebherr-Aerospace officially opened its new logistics centre in the Jebel Ali free zone. The facility has 1,000sqm of floor space and houses a storage area, state-of-the-art equipment for receiving and shipping, as well as offices for the management of piece parts and line-replaceable units.

Liebherr-Aerospace's original equipment inventory is also available for sale and exchange there.

Storage and logistics processes are managed by OEM Services – the component support business that was founded in 2005 by Diehl



**Lufthansa Technik and DWC sign the deal for a new MRO facility at the Al Maktoum Airport.**

Aerospace, Liebherr-Aerospace, Thales Avionics and Zodiac Aerospace.

"We are continuously developing our capabilities in order to further support our customers in the Middle East that operate Airbus, Bombardier and Embraer aircraft, as well as other aircraft depending on market needs," said Charles Thoyer-Rozat, EVP customer services aerospace.

Another exhibitor was celebrating at the show. Parker Aerospace signed a long-term agreement with Emirates Airline to provide a comprehensive maintenance package for its fleet of Boeing 777 and Airbus A330/A340 aircraft and engines.

Parker will provide maintenance support to the Dubai airline, covering its hub and various outstations through its worldwide network of repair facilities.

Ben van Sleeuwen, director of EMEA for Parker Aerospace's customer support operations said: "This agreement provides cost predictability to our customer, while offering enhanced services and product performance for its fleet of Boeing and Airbus aircraft."

Meanwhile, Dubai-based Satair signed a five-year exclusive distribution contract to represent Eaton replaceable unit engine fuel pump parts across the Middle East. It will also distribute the Eaton parts in Africa.

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Christopher Mondragon: "The IFE system can be controlled by the user's eye movements or hand gestures, or alternatively via a track pad."



# You know it makes sense...

*In an ever-changing world of technology, it seems nothing can surprise us. **Marcella Nethersole** talks to three in-flight entertainment (IFE) companies about their quest to provide the most advanced technology to aviation.*

**H**ow many times have you lost the remote control for the TV and discovered it down the side of the sofa some frustrating minutes later?

Can you imagine doing away with the remote and, instead, controlling the TV with your eye movements or hand gestures?

According to Thales, this is the future for both the home consumer and airlines, as it introduced its immersive business class seat to the Middle East region for the first time at February's Aircraft Interiors Middle East (AIME) show.

Christopher Mondragon, director, product design and brand development innovation, was at the company stand showing potential customers an overview of the futuristic seat concept.

"The system makes use of near field communication (NFC) technology to interface with the passenger's personal electronic device (PED), while the IFE system can be controlled by the user's eye movements or hand gestures, or alternatively via a track pad. It's all about using your senses," explained Mondragon.

"Due to the interface between the passenger's PED and the system, as soon as the two devices interact, the cabin lighting and seat position adjust to suit their preferences, and if you had been watching a film on a previous flight but missed the end of it, the system can even bring the same film back on to the screen at the very point that the passenger stopped watching it on their last flight, which will be especially popular with transfer passengers."

This applies if you doze off on your flight and wish to resume watching – just look away and the film will pause.

Another aspect is getting rid of headsets, with the use of spacial sound in the seats that only the user can hear – so

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## INTERIORS

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there is no need to worry about bothering other passengers with noise close by.

The innovations cleverly work in concert with products already on offer by Thales and third parties. These include the Thales SmartPIMs, which allow passengers to interface their PEDs with the IFE system, and smart device ignition wireless charging.

The immersive business seat has been developed in conjunction with BE Aerospace and BMW Design Works and, while it is yet to fly, Mondragon believes the concept will be especially attractive to Middle East carriers.

He said: "We want to change the field of view in business class and take away the use of remotes – this really is the future. The seat is an innovation, which represents a breakthrough, which incorporates an aesthetically-pleasing industrial design, visionary IFE concepts and viable products, ultimately blending the physical and virtual user interfaces into a seamless passenger experience.

"While we introduced the seat at Long Beach last year, we are excited to showcase it in the Middle East for the first time as we believe it is a region that is extremely innovative when it comes to IFE. Airlines like Saudia, Emirates, Qatar and Etihad will be interested in this new technology and perhaps we can see how we can work together on not just the immersive business class seat, but all our IFE innovations."

### Integrate applications

Thales' other innovations on display were the AVANT IFEFC platform, a system based on Android OS, which provides an opportunity to integrate applications from the Google marketplace and build custom airline capabilities.

The TopSeries AVANT platform is a fourth generation product. While advancements in technology have changed the system and user experience, the design principles remain the same. The system is used on all major Boeing and Airbus platforms, with Qatar Airways being a customer.

Also being demonstrated was its wireless IFE, which is a solution for an airline not willing to invest in in-seat screens, making investment lighter.

"This allows passengers to use their own devices – iPhone or tablet – for in-flight entertainment.

US company Global Eagle Entertainment (GEE) won the award for 'best wireless IFE system' for its WISE product at the AIME awards.

Melissa Pauléat, director of marketing and communications, said the company was overjoyed at its recognition.

"We were a group of different companies specialising in content, connectivity and software that came together a couple of years ago and we are now grouped under the GEE banner providing content, connectivity and



Celeste embodies all the comforts of a wide-body business class seat.

digital media solutions for more than 150 airlines, including Emirates, Kuwait Airways, Iraqi Airways, Oman Air and Gulf Air," she explained. "We also provide Flydubai with its e-reader."

GEE's WISE portal offers software and content solutions with a range of functions, including thousands of magazines, newspapers and songs, as well as movies, all of which can be used on a passenger's own device via a web-based service.

### Digital media solutions

Pauléat said: "The Middle East is one of our most important markets as it has so much potential. We are presenting this year digital media solutions, such as advertising and sponsorship deals you can offer to airlines – specifically airlines that have connectivity and want to drive through ancillary revenue or have some code-branding opportunities with large brands.

"We've done that with Southwest Airlines in the US, for example, and we would like to bring that to the Middle East. It's all about education really."

She added that, while GEE has a lot of competitors, the company is partners with many of them.

"For example, OnAir do connectivity but it also is our partner for WISE, and the same goes with other content providers too," said Pauléat.

One company looking away from the

commercial market and heading towards business aviation in-flight connectivity is Gogo.

It announced that it would bring its next generation ATG-4 air-to-ground connectivity technology to business aviation.

ATG-4 will be available for business aircraft via a new equipment package called ATG 8000.

"This is particularly well-suited for large business aircraft in corporate shuttle configurations," explained John Wade, business aviation executive vice president and general manager.

"ATG 8000 will help passengers realise a significant increase in connectivity speed and capacity when compared to other Gogo Biz equipment packages, which currently include ATG 2000, ATG 4000 and ATG 5000," he added.

Currently flying on more than 650 commercial aircraft, Gogo's ATG-4 technology has been successfully meeting the connectivity needs of commercial airlines for nearly three years.

ATG-4 technology employs three industry-leading innovations: directional antennas on the aircraft, dual modems on the aircraft and evolution-data optimized (EV-DO) (Rev.B) technology on Gogo's airborne and ground networks.

"ATG-4 has been very well received in the commercial aviation market and we're pleased to make the same robust technology available to business aircraft," said Wade.





## Sogerma believes Celeste is a star seat of the future

It's the seat that Sogerma believes is right for the Middle East market and a 'game changer' for the single-aisle market. That's why the company displayed its Celeste product at AIME for the second year in a row.

"The seats that were developed in-house by the Sogerma design team are used for business class in a single-aisle aircraft, such as the A320 and B737, and premium economy for wide-body aircraft, such as A350 or B777," said Richard Gourmand, sales director Middle East and North Africa.

The Celeste 45 is a narrow-body business class seat pitched at a minimum of 40 inches, driven either by a single actuator or a 'G' mechanism to cradle a relaxed position up to 45 degrees.

"This seat embodies all the comforts of a wide-body business class seat, with fixed back shell, integrated IFE screen and design – innovation not seen before in narrow-body business class seating designs. Weight, although not yet finalised, is between 25kg and 32kg per pax, depending on which configuration is selected by the customer," said Gourmand.

The configuration of the Celeste 45 in the narrow-body business class seat variant is 2-2 with seat width ranging from 18 to 22 inches and the one piece meal table deployed from the centre console. The seat also features a privacy divider to enhance the passenger experience.

"Every effort has been made to complement the passenger experience. The IFE screen can be offered in sizes up to a maximum of 18 inches. Seat pitch is also variable, ranging from 40 to 45 inches to maximise comfort," added Gourmand.

The Celeste 38 is a wide-body premium economy seat pitched at a minimum of 38 inches with a relaxed position up to 35 degrees.

"The Celeste 38 embodies all the comforts of a premium economy class seat with fixed back shell, integrated IFE screen, comfort, style and design innovation not currently seen in wide-body premium economy seating designs," said Gourmand. "We believe Celeste is the perfect product for this region and, while its not flying yet, we have been having very positive talks with potential customers."

## Plastic's simply fantastic from Cabinair

UK-based Cabinair Services is best known for refurbishing aircraft interiors and supplies parts for cabins. However, last year it launched a new product that has proved a major breakthrough in preparing aircraft cabin plastics and the company is rolling it out to the Middle East market.

"SATTO plastic repair solution chemically and mechanically bonds to thermoset or ejection-moulded plastic parts, allowing customers to fix it on-wing or off-wing," explained its inventor, Gary Townley.

"Most people throw broken plastics away and they go back to the OEM and order another one. This can lead to a 90-day lead-time, so is very time consuming as well as being expensive. SATTO is very durable and saves time and money for the airlines. For example, we have just received Recaro parts, which are around £22.0 (\$32.6) apiece, and we repaired one in two minutes with around 20 pence worth of material."

SATTO has been specifically formulated to adhere to aircraft plastics and its use of both a chemical and mechanical bond allows it to be hard and rigid, as well as flexible and strong. Its 'micro doubler' system allows the parts to return to their original strength.

"SATTO can also be custom-coloured," added Townley. "It's supplied in base white, but we can re-process it again to pretty much any colour that you want to match. We guarantee at least a 95% match for the part to eliminate painting. We can also produce metallic, pearlescent and even make it glow in the dark."

The product is provided in 30gm clip bags, which can repair at least three plastic trays. It also supplies two types of doubler, moulding kits and pots. While the company says the product is easy to use, it does offer training to customers.

David Rice, Cabinair sales director, added: "The



Cabinair sitting pretty with its core refurbishment business but is now branching out into plastic technology.

other beauty is that customers can buy the product and we can send them to the MRO, or whoever, to fix, or you can send all of your broken plastic tables that are removed in the hangar and we will send them back fixed within ten days. This saves a third of the cost of buying a new table. This service is one we use a lot in Europe, with customers including British Airways, Thompsons and Air France, and we are rolling this out to customers in the Middle East."

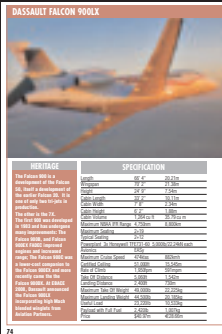
Already the company has been in talks with Emirates and Townley has also been out to Bahrain training technicians at Gulf Air on how to use the product.

"We are now on the hunt for a partner repair centre

in the Middle East so we can offer the service through a partner company. Obviously, being based in the UK there will be more lead time with customers sending parts to us and back again, as well as it being more expensive. So it's ideal to partner with a small 145 cabin station in the Middle East somewhere," said Rice.

"SATTO fully complies with European Aviation Safety Agency (EASA) flammability, smoke and toxicity requirements as well as the European registration, evaluation, authorisation and restriction of chemicals (REACH) regulations, and is supported by EASA 21J repair schemes for its application," he added.

# WANT TO KNOW MORE ABOUT BUSINESS AIRCRAFT?



- The **2015 Pocket Guide to Business Aircraft** has just been published.
- The book, described as “essential” at the AfBAA conference in Johannesburg, is available to African operators and readers of African Aerospace.
- For \$30 you can compare technical specifications of every business jet or corporate turboprop in production.
- Colour pictures show the interior and exterior look of each model and there’s a simple instruction to how to spot one plane from another.
- 420 pages
- Includes details of engines, avionics and NOW includes updates of VIP helicopters as well as piston aircraft used for business travellers.



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  - c. Enable operators to determine by location any additional cost, such as: war insurance, handling surcharge, etc....
2. Crew Management Module (Will launch shortly after the Charter Module)
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And More

*Florida-based Satcom Direct has reaffirmed its commitment to business aviation in the Middle East with a new appointment in the region, more opportunities for training and the release of its new GlobalVT product.*

**Steve Nichols** reports.

## Satcom set to make a world of difference to connectivity

**D**erek Donahue, the new regional director Eastern Europe, Middle East and Africa, has moved to Satcom Direct's Dubai office, with responsibility for the Middle East and Russia.

The company now has 14 staff in the UAE to service its growing in-flight connectivity customer base.

Chris Moore, Satcom Direct's chief commercial officer, said the Middle East is one of its biggest markets.

"We are all about support," he said. "Customers can sometimes live with the fact that there is a problem with their aircraft, but they won't live with a lack of internet connectivity. We now have a truly global reach, with new offices also opening in Jakarta and Melbourne. And the demand for aircraft e-enablement will only increase over the coming years."

The company has also added a range of training courses to its portfolio, which can be delivered at its, or a customer's, premises.

Sanaa Sadaani, Satcom Direct's head of training, said that it is now a certified training provider, with AeroIT, the world's first IT training and certification courses for aviation.

The courses include a two-day foundation course for satcom aviation, a one-day course on Satcom Direct's products and services, a two-day course on internet protocol (IP), voice and network troubleshooting, and a one-day course on Inmarsat aviation services, including SwiftBroadband, Classic, Swift64 and GX.

The session on Satcom Direct's products and services is

free, and the other courses range from \$900-\$1,800.

Training events have so far been run in Dubai, Jeddah and Riyadh, as well as Farnborough (UK), Geneva and Basle (Switzerland), and Istanbul (Turkey).

A course in China was also run for 100 delegates.

Sadaani said: "We want to train up our customers' own maintenance engineers so that they have a competitive edge. None of our competitors are doing this and we are now running courses worldwide."

"Everything on an aircraft is now becoming connected and engineers need to understand the complexities of IP addressing and networking. Even the fridge on a Gulfstream G650 can now tell the ground via a satcom connection that it is running out of certain products."

Satcom Direct has also launched its new GlobalVT service, which allows anyone to contact you while you are in flight via your own cell phone number. The service acts like a global system for mobile communications (GSM) roaming service, routing all calls and texts to your smartphone number via a satellite connection.

### Install an app

All passengers need to do is download and install an app to enable the service. They then switch their phone to in-flight mode and enable a Wi-Fi connection to the on-board Satcom Direct SDR router, which requires a software update for the new service to work.

Formerly known as AeroV+, the new brand better reflects the functionality of the system.

Calls to and from the ground are treated as voice over IP (VOIP) calls via the satcom connection. All outgoing calls will correctly show your number as the originator, which increases the chance of it being answered. Incoming calls also correctly display the number of the person calling you.

Moore said that the system would work with ViaSat Ku-band systems and Inmarsat SwiftBroadband (SBB). ViaSat can support up to two voice calls concurrently, while SBB can support up to four.

"The call quality is excellent," said Moore. "Before this you would have needed the phone number of the aircraft and know that the person you are calling is actually on board."

"And, with outgoing calls, there is no "+87" or other strange number displayed when you call, so your recipient is more likely to answer it."

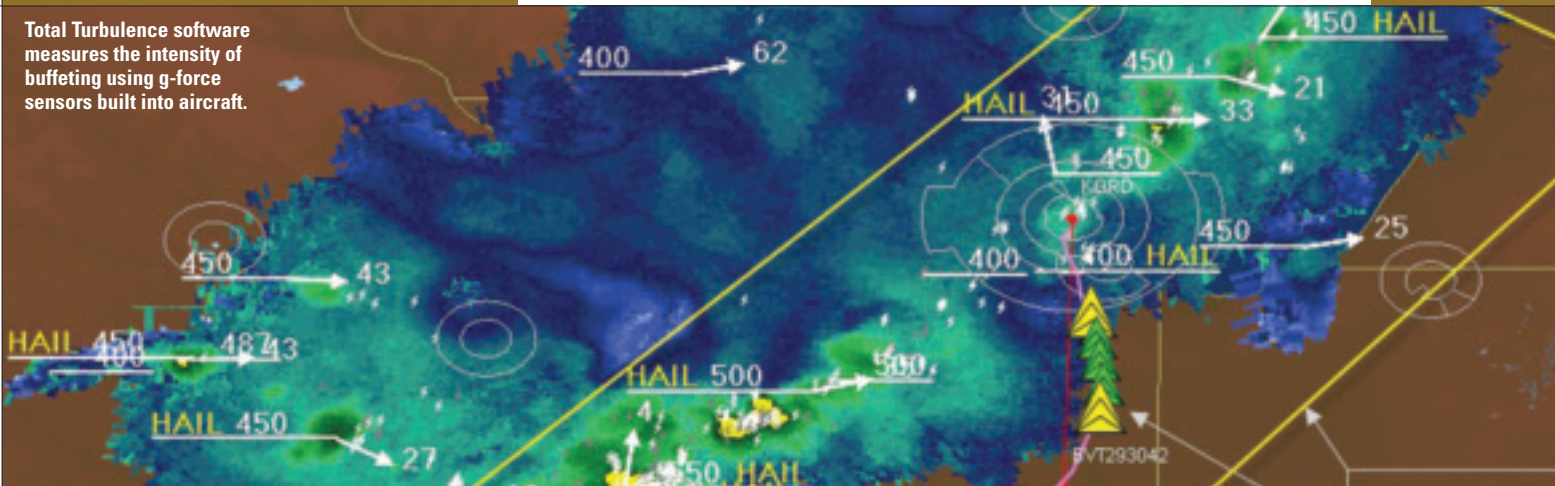
The Apple iOS app is ready and Android is coming soon. A Windows phone app is also in the pipeline and Blackberry compatibility is being looked at.

Users pay per minute or per text. Satcom Direct can also bill the aircraft owner, and give a full breakdown of all call costs if required. It says the service has been trialled around the world with more than 10 different customers.

**Chris Moore, chief commercial officer Satcom Direct International (left) and Derek Donahue, regional director Eastern Europe, Middle East and Africa, pose with the company's SDR router.**



Total Turbulence software measures the intensity of buffeting using g-force sensors built into aircraft.



## WSI shakes up the way to beat turbulence

*Airlines are turning towards a form of 'crowd-sourced' weather data to ensure that their forecasts are as accurate as possible.*

**Steve Nichols**  
*reports.*

**C**ollating weather data in real-time from a number of different sources gives a better indication of the turbulence pilots may encounter – and there are cost savings to be made, too.

WSI Corp, a division of the Weather Company, has developed software that automates turbulence data reporting, a process that typically has been done in a manual/sporadic fashion by pilots.

The software, known as Total Turbulence, measures the intensity of buffeting using g-force sensors built into aircraft.

The system's algorithm monitors changes in the vertical accelerometer to estimate the severity of turbulence an aircraft may be experiencing. Reports of any turbulence above a prearranged threshold are then sent via the aircraft communications addressing and reporting system (ACARS) to WSI, which, in turn, sends alerts to airline dispatchers, or directly to the flight decks of aircraft that may be traversing the same airspace.

It then automatically reports the data to other aircraft (Total Turbulence supports electronic flight bags) and flight controllers, providing a more detailed and consistent report about turbulence in the area. The company says that the result is a reduction in flight attendant, aircraft damage and passenger injuries, and smoother flights.

### Installing equipment

Mark Miller, WSI senior vice president and general manager of decision support, said that installing the Total Turbulence system does not require the overhead associated with certifying or re-certifying software or installing equipment.

"Most airlines set the system's reporting threshold at moderate, at a point where your coffee would be shaking and maybe spilling a little bit," Miller said.

"At that point it starts reporting every 30 seconds, so now you're getting very granular reports. Two of the airlines with Total Turbulence have reported a very real decrease in the number of turbulence-related problems."

The software has been installed on 650 aircraft on three carriers, including American Airlines, with a fourth coming online soon.

"We have one MENA-based carrier that is very keen to put it on its Boeing 777s too," Miller said.

Panasonic also has a weather aggregation offering as part of its FlightLink service. This uses a tropospheric airborne meteorological data-reporting (TAMDAR) sensor on aircraft that collects high-quality weather data during the flight.

Data is then streamed back in real time via Iridium satellites to Panasonic's weather operations centre. Iridium is useful as its low-Earth orbiting satellites cover the entire globe, including the polar areas where geostationary satellites cannot reach.

Panasonic said TAMDAR is installed across a network of hundreds of commercial aircraft that are operated by more than a dozen partner airlines throughout the northern hemisphere. It collects tens of thousands of highly detailed and accurate readings from the atmosphere each day.

### Weather balloons

Panasonic's Don DeBlasio, senior director, strategic innovations, said: "A lot of weather observation is still done with weather balloons. But we have installed our TAMDAR sensor on hundreds of aircraft and this data is available 24/7."

"This gives us far more accurate weather data than any system on the planet."

At the Aircraft eEnablement (Connectivity and IFE) Conference in London in October, DeBlasio showed how accurate the data was by displaying a diagram of a weather system passing through the US. The Panasonic data was actually more accurate than that provided by the US national weather service.

"FlightLink can provide wind data at all altitudes. This, for example, has enabled Southwest Airlines to optimise its descents into airports. The information is automatically loaded into the aircraft's flight management system (FMS) via ACARS and the descent profile is then automatically calculated.

"This is saving tonnes of fuel and CO<sub>2</sub>," DeBlasio said.

The FlightLink communication system has been provided free to airlines from its launch in 2004. It also offers cockpit voice, text and operational data, as well as real-time fleet monitoring, simultaneously tracking all Panasonic-equipped aircraft, 24/7 around the globe.

*The third edition of the World Aviation Safety summit was held in Dubai in March. Alan Peaford reports.*

## Profit “must not outweigh flight safety”

**A**viation players must not risk flight safety in pursuit of profits, delegates at the World Aviation Safety Summit in Dubai were told.

The importance of investing in aircraft and passenger safety emerged as a key area of discussion at the summit, which brought together regional and international aviation experts to share innovative techniques to improve safety in air travel and explore how global safety standards must be implemented.

Experts deliberated if aviation players were reluctant to invest more in safety, given that aviation remains the safest means of transportation.

“Aviation growth in the Middle East continues to regularly outpace growth in the global industry by an average of 5 to 10% per cent,” said Jeff Johnson, the then president of Boeing Middle East. “As air travel continues to expand, airlines and aircraft manufacturers must invest in modernising their aircraft fleet and technology to ensure greater safety for passengers and aircraft.”

His point was picked up by Hussein Dabbas, regional vice president Africa and Middle East at The International Air Transport Association (IATA). “Cost should not be a consideration for airlines when it comes to the safety and security of their passengers,” he said.

Captain Elias Sadek, vice president safety & quality at EgyptAir Holding Company, agreed, flagging up attention to the additional funds airlines later spend on handling the consequences of aviation safety failures, such as searching for lost aircraft.

“Regulators must make it mandatory for airlines to invest in improving safety technology and systems – we owe it to our passengers, consumers and families,” he added. “If there is no pressure, the funds will be spent elsewhere.”

Aviation experts also discussed the impact of carrying hazardous materials on cargo and passenger aircraft that increased flight risk.

Mohammed Ali Bin Yalwan Al-Falahi, investigation manager airport customs, passenger operations at Dubai Customs noted that many regional passengers ignore the

safety messages communicated by airlines, airports and other authorities.

“Passengers are still unaware about what they should or should not carry on board an aircraft,” he said. “Many still carry harmful items, such as pesticides, chemical powders and even bullets.”

Other speakers and delegates joined in the conversation, emphasising that the relationship between risk and cost was not as simple as it appeared. Maintaining the perception of low flying risk was also imperative for passenger growth.

“Demonstrating the return on investment for aviation safety is extremely difficult, as the relationship between an action and its impact on safety is not linear,” added Dr Ashley Nunes, an independent industry analyst from France. “There are multiple layers of defences, checklists and automation that have an impact on this causal relationship.”

“Despite all these issues, we must remember that aircraft are still the safest way to travel,” added Dabbas. “Last year, of the 3.3 billion passengers who flew across the world, there were only 12 fatal accidents from 38 million global flights. However, even one fatality is one too many.”

### More accurate methods

One of the key issues at the summit was the disappearance of Malaysian Airlines flight MH370. More accurate methods of tracking aircraft are needed to ensure the safety of passengers and crew, the summit was told, amid calls for new technologies to improve the process of tracking flights.

“We must continue to introduce technologies to bring higher levels of functionality to operations like satellite-based system navigation, GPS, instead of radar and digital-based data systems. We need to ensure an air transport system that can accommodate the market growth,” Johnson said.

But Dabbas warned against kneejerk reaction. “There should not be a specific rule because technology is evolving and it is required to keep an open mind on everything that’s happening. We encourage member states to use it in a more efficient manner to make sure the aircraft is continuously monitored throughout its flying period. The disappearance of a 777 is surprising when our every move is tracked.”

Mohammed Eturki, executive director of group safety and quality at FlyNas, said aircraft tracking was now being considered at a global level.

“I think little has been done so far but the plan is to make sure we have this issue under control in the near future,” he said. “At the moment, there are systems in place – we use air traffic service awareness systems and they normally don’t have global coverage, which is a disadvantage.”

He said another issue was that transponders could be switched off. “So to do all these changes, there are design features that have to be considered,” he said.

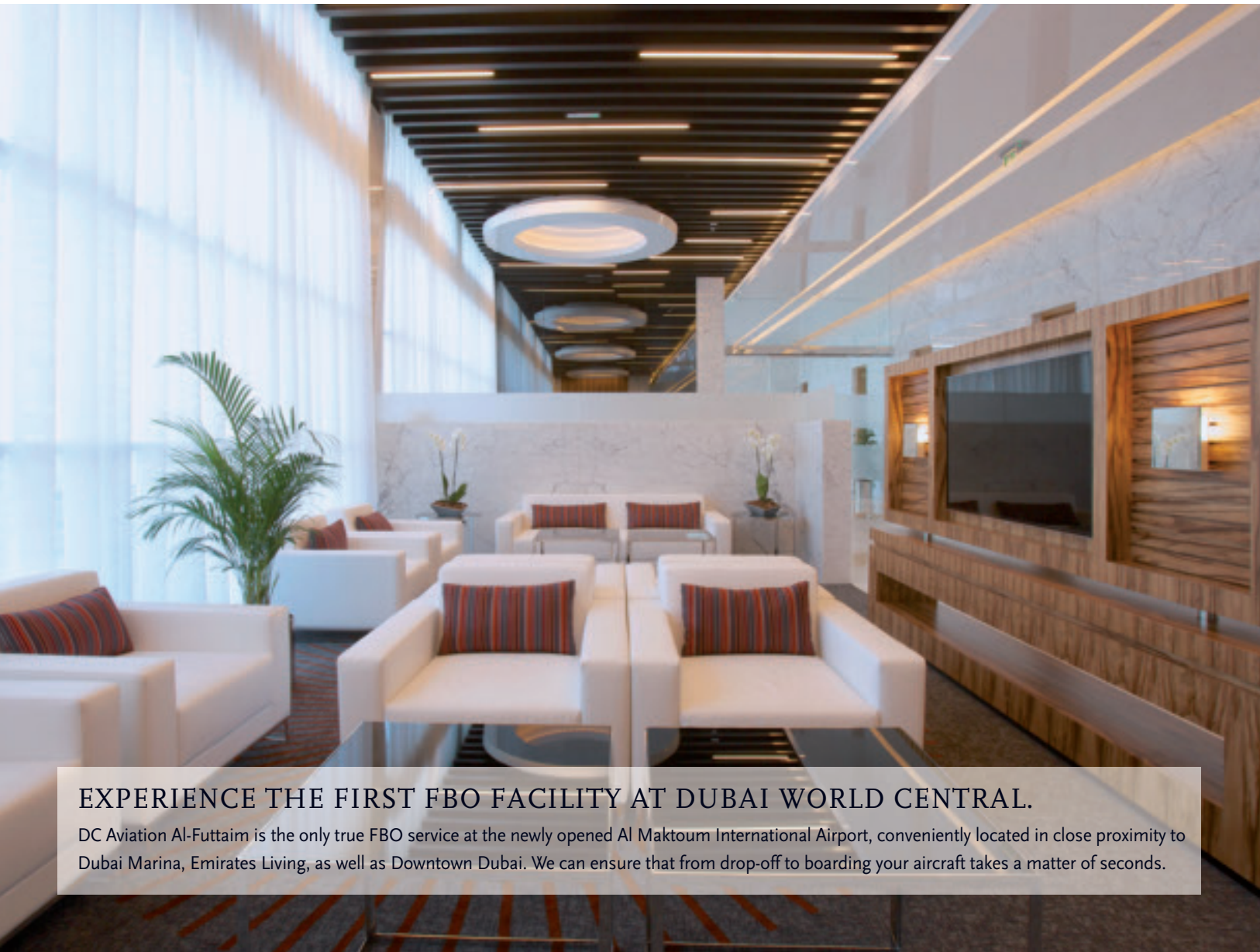
**Jeff Johnson: “Airlines and aircraft manufacturers must invest in modernising their aircraft fleet and technology to ensure greater safety for passengers and aircraft.”**





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*Aviation Africa 2015 has been launched to change the perception of aviation on the continent. Marcella Nethersole previews the event.*

# Conference set to change the view of aviation in Africa

**T**he UAE is becoming a gateway for aviation business in Africa and later in May, Dubai will host the first major African aviation summit featuring government ministers, airline CEOs, directors general from the civil aviation authorities and industry leaders.

Dubai was selected because of its Open Skies approach giving access from many African countries with an ease of visas.

And the summit will work in two ways giving African operators and nations the chance to share ideas together and to hear of some of the challenges that Middle Eastern countries faced when they embarked on the development of the aviation industry in the region over the last 25 years.

## Busiest international airport

Twenty years ago, Dubai International Airport was busy but hardly record-breaking – just about getting into the top 50 of world airports. Today it is the busiest international airport in the world with more than 70 million passengers using just two runways and every available square metre of space in its city centre location.

There are many similarities between Dubai's aspirations of two decades ago and those of many African countries today, who see the potential benefits that a strong aviation industry can bring to their country.

The event – held under the patronage of Sheikh Ahmed bin Saeed Al Maktoum will take place on May 10-11 at Le Meridien Hotel, close to the International Airport.

## Win a Breitling watch

**There could never be a better time to own a Breitling watch – each day of the Aviation Africa conference delegates will have the chance to win one of the luxury brand's aviation watches. The conference is aimed at anyone in the aviation industry with an interest in the African market, but having Breitling as a sponsor is giving that bit of extra excitement at the end of each day when the draw for a free watch will be made.**

Speakers confirmed from African and Middle East airlines already include Girma Wake, chairman, RwandAir (formerly CEO, Ethiopian Airlines); Fatima Beyina Moussa, CEO of ECAir and the chair of AfRAA; many other CEOs are also planning to attend including Africa's leading cargo operator Astral Aviation.

One airline currently based in Dubai and making an impact in Somalia is Dhaallo Airlines. The company is merging with Jubba and will be sharing ideas on consolidation.

Tanzania's low cost carrier Fastjet has been enjoying great success since its launch and CEO Ed Winter will be alongside Adel Ali, group chief executive of Air Arabia looking at the impact LCCs are making.

"We have been really pleased with the support we are getting from the industry across all levels of government, as well as airlines of all shapes and sizes," said Mark Brown, publisher of the Times Aerospace group, which is organising the event. Conference chairman Alan Peaford said: "This is going to be a great networking event and an intriguing conference. Of course there is a frisson between many African carriers and the local airlines in the Middle East but it wasn't that long ago that the likes of Emirates and Qatar Airways were in the same position as the African carriers are now and they have found many different ways around global and regional challenges."

## Multi-cultural workforces

Dr Nicklas Dahlstrom, human factors manager, Emirates Airline is one of the keynote speakers and will be discussing the challenges of multi-cultural workforces and the threat to safety of human performance.

There are also senior figures from aviation authorities and associations, who include Hussein Dabbas, VP Africa & Middle East, IATA; Dr Hamdi Chaouk, director general, civil aviation, Lebanon; Dr Paul Antoine Marie Ganemtoire, head of aviation, Economic Community of West African States (ECOWAS); and Mohamed Rahma, undersecretary at Egypt's aviation ministry.

"What really excites me is that we will be seeing some of the new or smaller carriers at the event as well," said Peaford. "There is a great hunger for the knowledge that will get this growth challenge right. Many of the big aviation companies, from manufacturers to financiers, are supporting the event; it is going to be a great step for aviation in Africa."

Aviation Africa 2015 has been launched to change the perception of aviation on the continent. The panel sessions will deal with the opportunities and issues challenging the growth of the African aviation market, tackling liberalisation, training, safety, human factors, finance and business aviation.

Ethiopian Airlines is the official carrier and will be offering discounted airfares for delegates.

**For more details go to [www.aviationafrica.aero](http://www.aviationafrica.aero)**



**Adel Ali, group chief executive of Air Arabia and (inset) Fastjet CEO Ed Winter will be looking at the impact LCCs are making.**



### Commercial role for Deane

Dnata has appointed Emma Deane as vice president commercial & business development.

In the role, Deane will support the growth of Dnata's UAE ground-handling and marhaba operations.

Previously part of Emirates Group's legal team supporting Dnata's UAE and international airport operations until 2011, Deane also worked with one of Dnata's joint ventures, Alpha/LSG in London, as legal and commercial support for the flight catering business.

She has recently completed a master's degree in aviation management from the University of New South Wales, Australia.

### Al Mazrouei is Abu Dhabi Airports CEO

Abu Dhabi Airports has named Mohamed Mubarak Al Mazrouei as its new CEO.

He currently serves as a board member of Abu Dhabi Airports as well as Abu Dhabi Ports Company and previously served his country in the armed forces.

Ali Majed Al Mansoori, chairman of Abu Dhabi Airports, said: "I am confident that, as chief executive, he will contribute to advancing our journey towards becoming the world's leading airports group.

"I personally look forward to working with Mohamed and to witnessing the exciting future that lies ahead for Abu Dhabi Airports, as well as the many accomplishments that we are striving for in our infrastructure, most notably the Midfield Terminal Building project."

Al Mazrouei, said: "I have been fortunate to have been closely involved with the various affairs and projects of Abu Dhabi Airports over the past three years and I look forward to

working with our management team and to exceeding all expectations in our delivery."

Al Mazrouei has a BSc in Civil Engineering, from the University of North Carolina, Charlotte, USA.

He succeeds Tony Douglas, who has taken a senior post with the UK's Ministry of Defence.

### Commercial post for Ostini

Abu Dhabi-based private jet operator, AJA, has appointed a new head of sales and commercial. The company has named former NAS Air and Arabasco executive Marco Ostini for the role.

Ostini had also held senior commercial positions with Crossair and Darwin Airlines of Switzerland.

### Double change for Jet Aviation

Jet Aviation Basel, well known in the Middle East for its completions expertise on VIP aircraft, has made two key leadership changes to its completions sales organisation.

Ruedi Kraft has been appointed as vice president

of completions business development, while Matthew Woollaston succeeds him as vice president of completions sales and marketing. Both roles became effective on April 1.

Kraft has worked for Jet Aviation for more than 25 years and joined the Basel centre in 2011.

Woollaston will oversee global sales activities for the completions business. He joined Jet Aviation Basel in March 2014 from a New Zealand-based firm, where he successfully led the company's VIP business for five years.

### Military switch for Boeing's Johnson

Boeing president for the Middle East, Jeff Johnson, has been named as the vice president, business development, Boeing Military Aircraft (BMA). He succeeds Tim Norgart, who recently retired.

Johnson will be based in St Louis, Missouri and will report to BMA president Shelley Lavender.

He has been president of Boeing Middle East since March 2011, based in the company's Dubai office. Before that, he was senior director of global strike business development for Boeing Defense, Space and Security (BDS) from November 2009. Over his Boeing career, Johnson has business development experience in more than 40 countries.

"Jeff has been an outstanding leader for Boeing in the Middle East Region," said Marc Allen, president of Boeing International. "During his tenure, Boeing has steadily and effectively expanded its business and presence across the region and has successfully implemented a strategy that positions the company for future growth. We will announce Jeff's successor shortly."

## McCONNACHIE STRENGTHENS DUBAI AIRSHOW TEAM



Dubai Airshow has strengthened its team with the appointment of Caryn McConnachie as the new aerospace director.

McConnachie has more than 16 years' experience of running events internationally across the Middle East, Europe, Russia, North America, Latin America and Asia, in a wide range of sectors including aerospace and defence.

She returns to F&E Aerospace, where she was previously director of operations, after five years with IDEX organisers ADNEC.

"I'm thrilled to be returning to F&E Aerospace in the lead up to the Dubai Airshow 2015," said McConnachie. "It's an exciting time for the industry in the region and I look forward to seeing the Dubai Airshow continue to be an integral part of this growth."



NEW SALES TEAM FOR ETIHAD



**Etihad Airways has announced new key appointments within its commercial division, which will support the airline's growth and expansion plans.**

**Amer Khan (left) has been appointed to the position of regional general manager for Middle East and North Africa, responsible for managing Etihad's commercial operations across 16 countries from the airline's base in Abu Dhabi.**

**Ronny de Lange, who has held numerous commercial roles in his four years with Etihad, has been named vice president global corporate account management. He will manage the airline's multinational accounts worldwide.**

**Al Naqbi stands down from role**

After 25 years of service, Ali Al Naqbi has announced his retirement from his government position as the vice president of finance and administration at Presidential Flight, Abu Dhabi.

His time will now be entirely dedicated to the Middle East & North Africa Business Aviation Association (MEBAA), for which he is the founding chairman.

During his time at the Presidential Flight, Al Naqbi has seen its transition from Private Flight, then to Amiri Flight and onwards to the present Presidential Flight. T Presidential Flight CEO, Nadir Ahmed Al

Hammadi said: "His successful career at Presidential Flight and his apparent contributions over the years will leave him with pride of achievement."

These achievements include the setting up of Royal Jet, where he was the founding managing director – a role he held for three years.

**Satair strengthens**

Parts distributor Satair is strengthening its Dubai team with key account manager Martin Couët being stationed in the Middle East headquarters.

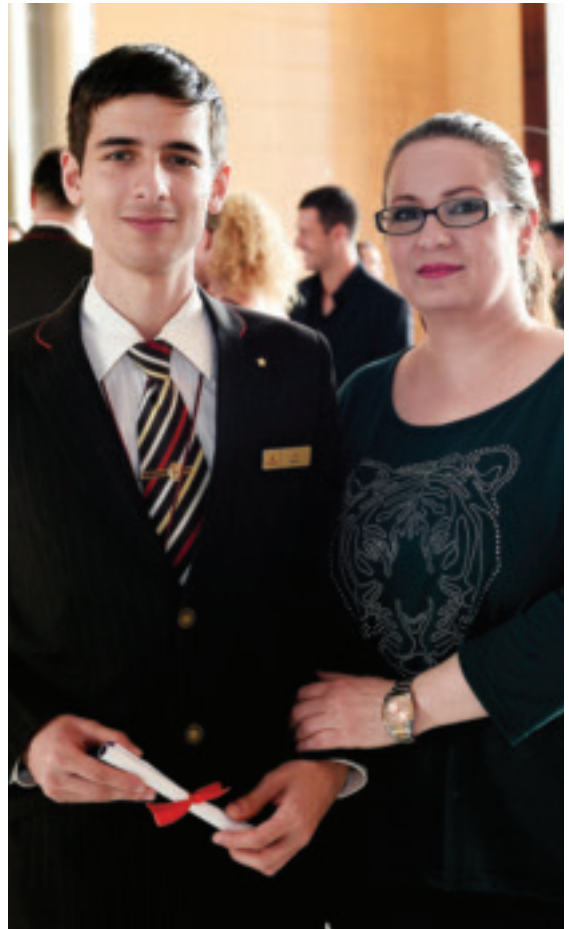
Couët has been responsible for the region's customers for more than four years and has, up until

now, been based at the group headquarters in Copenhagen.

Morten Olsen, VP sales and product management said: "Dubai is a leading global aviation centre and proximity to customers is key to a successful business partnership – notably in the Middle East region."

**Etihad new SA GM**

Etihad Airways has appointed John Friel as its new general manager for South Africa. Based at the airline's offices in Johannesburg, he will be responsible for leading Etihad's commercial operations in South Africa as it continues to grow its presence and operations across the region.



**Sue and Karim keep it in the family**

**They say the apple doesn't fall far from the tree and that expression could not ring truer for mother and son, Sue Abdul and Karim Hollosi, who have both served as Emirates cabin crew, two decades apart.**

**Recruited in Dubai, after walking into the operations centre while on holiday, Sue reminisces about her time as cabin crew: "In 1994, we were about 500 cabin crew with this new airline, Emirates. And now Karim's experience is such a contrast to mine – he travels to exotic destinations, with colleagues from around the world, and lives in a Dubai that is very different from the city that I knew."**

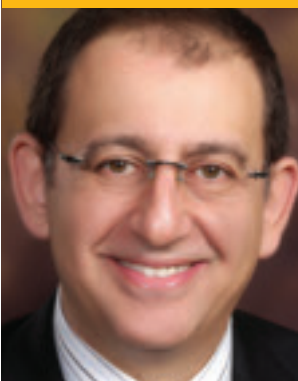
**Karim joined the Emirates' cabin crew team in June 2014. "Both my parents are passionate about flying so it is unsurprising that I find it in my destiny as well. From the stories I heard growing up, Emirates grew to be a natural choice for me," he said.**

**Sue says it was evident from a young age that he just might follow in her footsteps: "I was recently cleaning up and I found all of Karim's old notebooks from when he was a kid. Each one of them had something about Emirates and little aircraft drawn on them."**

**In a surprise visit to Dubai to attend Karim's cabin crew graduation ceremony, Sue says it was an emotional moment that left her feeling proud. "After 20 years, I look back on those days with affection and nostalgia, and I am happy and feel reassured to know that Karim is going to have a great future here."**

**Recruited from more than 135 countries and speaking over 55 languages, Emirates employs more than 19,500 cabin crew members today, who have all trained at the Emirates Aviation College.**

MISTO MOVE MADE PERMANENT



**Captain Haitham Misto has been confirmed as Royal Jordanian's president/CEO.**

**He has been acting president/CEO since October but now the RJ board – chaired by Suleiman Al Hafez – has made the appointment permanent.**

**At the board meeting, Hafez conveyed the board's trust in Misto's capability to lead the airline in the coming period, in addition to his competency to implement the company's strategic plan.**

**Misto has 33 years' experience at Royal Jordanian. During his career, he held several managerial and technical responsibilities. He was head of the flight operations department before being appointed acting president.**

**He holds an MBA in aviation management from Maastricht University, Netherlands.**

# Joao Menezes de Aguiar

**Marcella Nethersole**  
*speaks to Gate Gourmet Catering Arabia LLC's general manager and projects manager operations Middle East.*



# 1

■ Tell me a little about Gate Gourmet?

Gate Gourmet was founded in 1992 from Swissair catering. Today, it is the core business behind Gategroup, whose 10 associated companies offer customers a comprehensive scope of products and services for virtually any on-board need – from innovative menu design to stylish packaging and sophisticated supply chain solutions.

Gategroup is headquartered in Zurich, Switzerland, and has operations across more than 160 facilities within 128 locations in 32 countries on six continents. While the majority of our kitchens, offices and other facilities are based in Europe and the United States, we are rapidly growing our presence in Latin America, the Middle East, India and South East Asia. Working with our customers and business partners, we create innovative offerings that delight the senses and make for a memorable dining experience. In the air and on the ground, we are currently serving approximately 250 million meals per year around the world.

# 2

■ Abu Dhabi is increasing in events; is that making a difference?

Yes. There are so many events in the area and in the region. Not only sports like the grand prix but also on the cultural side with the Louvre Museum and the Guggenheim.

Abu Dhabi is becoming more and more a tourist destination along with Dubai.

That translates the area into a new global and worldwide tourist destination, opening tremendous opportunities for private aviation and, of course, for us.

# 3

■ Does the requirement in the Middle East differ from your activities worldwide?

Our existing operation in Abu Dhabi was designed to be exclusively dedicated to private and VVIP aviation and, therefore, is a different operation altogether. We are more like a top Michelin 'kitchen' producing the food and then delivering it to the 'five-star' restaurants that are the private jets and aircraft of our customers.

# 4

■ Where do you see the future for Al Bateen Executive Airport and business aviation in the region?

With the Expo 2020 and more events, Al Bateen, being the only exclusive business aviation airport in the region, will play a bigger role as there are not the normal restrictions one faces in an international airport.

At Al Bateen you have your own private airport, with your private services waiting for you, and that makes the difference.

You also have your own catering services, your own kitchen really, providing whatever food the customer wants. The same applies with the ground services organised by the DhabiJet FBO.

# 5

■ Are you doing commercial air transport service as well? If not, do you see yourselves being able to?

Not immediately from the present facility but we are very much interested in expanding our services offer to commercial aviation in the region.

The services offered by the local regional airlines are more and more sophisticated and getting higher in standards all the time, so I believe there is a need for a top quality catering services company and we may have a word to say there.

# 6

■ What does a typical day involve for you?

My day usually starts early, taking my youngest daughter Charlotte to college; then I head to Al Bateen, go through the latest e-mails, read the morning papers and tour the unit.

There is then a morning briefing with my senior staff, where we analyse the operation and discuss the day and days ahead.

Then I go to our town office and meet our local partners and shareholders, or to any outside meetings with customers, and potential customers, and get back to more office work. At least once a week I normally go to Dubai and DWC.

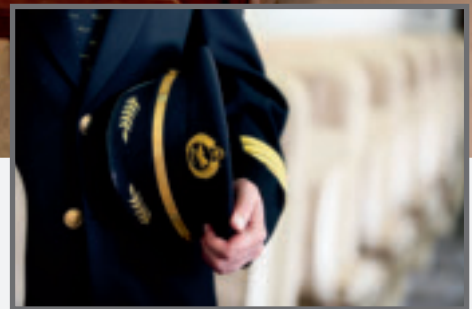
If I can, I try and finish the day by playing tennis with friends or family before dinner.

“We are more like a top Michelin 'kitchen' producing the food and then delivering it to the 'five-star' restaurants.”



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