



ARABIAN AEROSPACE

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

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2020 VISION

**SAUDIA ROLLS OUT PLAN TO BE
A SUSTAINABLE, PROFITABLE,
COMPETITIVE AIRLINE
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Tel: +971 (2) 5057777, Fax: +971 (2) 5757263, Email: sales@tssaero.ae
www.ts-s.ae

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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: Marcelle Nethersole
ella@aeoeromm.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, Marcelle Nethersole

MRO & Propulsion: Geoff Thomas

Business: Ian Sheppard

Airports: Keith Mwanalushi

Editorial Assistant: Samantha Wellard

Picture Editor: Ian Billinghurst

Photographers: Paul Merritt,
Tom Gordon, Mark Wagner

Design: Chris Murray, Allsortz Ltd

Production Editor: Rick Haden

Sub-Editor: Steve Knight

Regional Editors: Barbara Saunders (UAE)

David Calderwood (France), James Wynbrandt (USA)

Contributors: Mohammed Ali Ahli, Martin Ferguson,
Kelly Clark, Ian Goold, Claire Apthorp, Alan Warnes, Terry
Spruce, Jamie Hunter

Editorial head office:

AeroComm Ltd, The Tower, Guardian Avenue,
North Stifford, Essex RM16 5US UK.
Tel: +44 137 537 1434

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Business warms up as the weather cools down

Winter is always a busy time for the Middle East as cooler days open the doors for shows and activities.

The season kicked off with a very successful Dubai Airshow, praised by exhibitors and delegates – not for the number of orders, but instead for the high calibre networking. People were clearly doing business and whole spate of ground-breaking celebrations is an indication of just how well the emirate has done in reinventing itself as the industry hub as well as a passenger hub.

Bahrain has been following suit. In January the fourth edition of the Bahrain International Airshow took place.

Although the focus was on Bahrain as Gulf Air announced orders and the expanded Bahrain Airport contracts were finally signed, the underlying theme was about Bahrain's cooperation with other GCC states. "Our show is your show," Transport Minister Kamal Mohammed said.

A highlight of the event for me was to meet up with the Arabian section of the female pilots association, The Ninety Nines. They continue to break down some cultural barriers to encourage more women to train as pilots. Credit to the Arab airlines such as Royal Jordanian and Gulf Air who have fielded all female crews recently.

Across the Gulf, the lifting of US-led international sanctions against Iran has seen a flurry of activities with Airbus being an early winner with orders for 114 aircraft.



With the Ninety-Nines; from left, Royal Jordanian first officer Alia Twal, Gulf Air Capt. Vanessa Umba, and first officer Waad Aldoseri from the Ninety-Nines flank *Arabian Aerospace's* Alan Peaford at the Bahrain show.

Iran's transport minister sees this as just a drop in the ocean with more than 500 aircraft likely to be ordered as the country tries to rebuild its fleet.

The tragedy of conflict continues to take its toll and although a low oil price has thwarted some defence sales, as our pages show, it has still been busy.

The year 2016 heralds exciting times and it remains a good time to be in this business in this part of the world.

Alan Peaford
Editor-in-chief

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COVER: Saudia CEO Abdul Mohsen Junaid (Picture: Ian Billinghurst). See page 19.

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Iran Airbus delivery just months away

Airbus' first deliveries to flag-carrier Iran Air are due as early as July, *Arabian Aerospace* has learned.

The announcement that the national carrier was to buy 114 jets from the European manufacturer coincided with January's official lifting of sanctions, putting an end to decades of economic embargo, including sales of aircraft and their parts to Iran.

There was industry speculation that the deliveries could be years away but it is understood that the Iran Air purchase will include a number of A340 aircraft.

The four-engine wide-body aircraft has lost popularity with many airlines but, with a \$28-per-barrel oil price, the aircraft could fill an immediate gap for Iran Air's domestic operations.

Saudia and SPA to bring new VIP offer

Saudia has announced a new VIP super shuttle service, "Al Bayraq", which will operate 12 flights a day between Jeddah and Riyadh in cooperation with Saudi Private Aviation.

Al Bayraq is designed to serve VIPs, businessmen and corporate and banking leaders, who frequently travel between Jeddah and Riyadh. It will provide travellers with luxury



Jetpacks blaze a trail straight into the fire line

Dubai Civil Defence signed a multi-million dollar contract at the Dubai Airshow with the small New Zealand-based Martin Aircraft Company for a delivery of 20 of its jetpacks.

They will be used as a potential solution to help first responders battle high-rise blazes – a threat that became reality on New Year's Eve when a towering inferno broke out

close to the Burj Khalifa in downtown Dubai. Martin Aircraft describes the jetpacks as "highly responsive tactical air assets" that will be used for surveillance, and high-rise rescue. It also boasts that their size and mobility allow the jetpacks to "operate in confined spaces, such as close to or between buildings" at heights of up to 3,000 feet.

lounges and the ability to arrive at the terminal with the minimum wait before their flight.

Etihad research deal with Masdar

Etihad Airways and the Masdar Institute of Science and Technology have signed a research agreement to develop a fog prediction and monitoring system, which will create accurate fog formation and dispersion forecasts around Abu Dhabi International Airport, in

addition to satellite-based tools for fog detection and tracking, contributing to the airline's objective of enhancing its air traffic management system.

Bombardier ends 40-year TAG deal

Bombardier has ended its 40-year relationship with TAG Aviation for sales in the Middle East and Africa, the Canadian manufacturer has said.

In a statement announcing the split, Bombardier said the move

was as a result of a change in its strategic approach to aircraft sales.

Dassault Aviation has FANS

Dassault Aviation has completed FANS 1/A+ certification for its Falcon 900 A/B and 900C/EX aircraft.

The certification will allow operators to meet worldwide mandates for routing in the North Atlantic, improving communications over oceanic and remote routes.

Iraq makes bid for Hellfire missiles

Iraq has requested a potential purchase from the US of 5,000 AGM-114K/N/R Hellfire missiles; 10 114K M36E9 captive air-training missiles; associated equipment; and defence services at a value of around \$800 million.

Arab Wings joins CRJ family

Amman-based Arab Wings and its Iraqi partner, Iraq Gate, have added two additional CRJ200 aircraft to the first of the type bought last year to operate the domestic routes from Baghdad.

"The excellent economics of the CRJ200 regional jet are ideal to meet the growing demand for transport to the Iraqi oil and gas industry, which is very active," said Ahmad Abu Ghazaleh, CEO of Arab Wings.

Emirates Flight Training Academy joins the jet set



Emirates Flight Training Academy has signed a firm order for five Embraer Phenom 100E business jets with options for five more aircraft.

"The academy will offer training programmes using the latest available technology and advanced aircraft. Our decision to purchase these new aircraft for training underscores our commitment to equip the academy, as well as the aviation industry, with the infrastructure needed to produce a highly skilled pilot workforce," said Adel Al Redha, Emirates' executive vice president and chief operations officer.

Delta to discontinue services to Dubai

US carrier Delta Air Lines is to end its service to Dubai. The airline will stop flights between Atlanta and Dubai on February 11 2016.

A Delta spokeswoman said: "The B777 aircraft used to operate ATL-DXB will be redeployed to other transatlantic markets, where it can compete on a level playing field that's not distorted by subsidised state-owned airlines."

United will now be the only US airline serving the Gulf.

Flydubai's boost to business boarding

Flydubai has launched its business boarding gate at Terminal 2, Dubai International.

The airline said its latest service would ensure a more comfortable and quicker transition for business-class passengers from check-in to boarding.

Combined with priority check-in, a shorter time through security on departure and access to the business lounge, the business boarding gate



Bombardier delivers two Global 5000 aircraft

Two new Bombardier Global 5000 aircraft have been delivered to ExecuJet Middle East, which will manage the aircraft on behalf of two customers in the region.

"The business jet fleet in the Middle East

has more than doubled in the past 10 years, and our entry long-range Global 5000 jet is the most delivered large aircraft in the Middle East region," said Khader Mattar, vice president of sales for the MENA region.

provides a more convenient passenger experience.

Thales aids Iraqi modernisation

Thales has been awarded the contract to supply one instrument landing system/distance measuring equipment (ILS/DME) and

all related services for Najaf Al-Ashraf International Airport in Najaf.

The contract is part of Iraq's continuing efforts to modernise current navigation and surveillance capabilities, ensuring a significant improvement in safety and efficiency.

Rolls-Royce joins Turkish project

Rolls-Royce has become the first industrial lead and founder member of Turkey's Advanced Manufacturing Technology Centre (AMTC). The project is being led by Turkey's Ministry of Science, Industry & Technology with endorsements from the Ministries of Defence, Transportation and Energy.

The AMTC is designed to help develop advanced core industrial capabilities and act as a public-private partnership focusing on manufacturing capability development and technology application development in aerospace.

Flydubai operations start at DWC

Flydubai has now begun operating flights from Al Maktoum International-Dubai World Central (DWC). These new operations will help to deliver Flydubai's planned growth as it takes delivery of more than 100 new Boeing aircraft over the next eight years to support the growing demand for travel to and from Dubai.

A400 completes grass runway tests

Airbus Defence and Space has completed certification testing of the A400 airlifter on a grass runway.

The tests used the development aircraft, MSN2, and took place over a period of three weeks at the Écureuil-Coole airfield to examine the aircraft's behaviour on grass and soil runways.

Previous tests on a gravel surface were successfully completed in 2015, with more tests on sand surfaces to take place this year.

Oman wants to fill Empty space

Oman Air wants the Rub' Al Khali (empty quarter) airspace to be opened for regional flights, which will help save fuel and also reduce the duration of flights for passengers. CEO Paul Gregorowitsch said: "This will lead to reduction in fuel and time savings for Oman Air flights going to GCC cities, especially Jeddah and Medina."

GAL and Airbus renew services partnership



Global Aerospace Logistics (GAL) and Airbus Helicopters have announced the renewal of their customer support services distribution agreement.

Abdulla Murad Al Balooshi, GAL's chief executive officer, said the extended relationship ensures GAL and Airbus Helicopters will be well-positioned to continue to meet the daily operational needs of the UAE Joint Aviation Command, ensuring efficient and effective fleet maintenance of the Ecureuil, Fenec, Dauphin, Panther and Super Puma helicopters operated across the UAE Armed Forces.

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Liebherr-Aerospace & Transportation SAS
408 avenue des Etats-Unis
31016 Toulouse Cedex 2, France
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LIEBHERR

Russian Helicopters offer services to operators in Egypt



Russian Helicopters is preparing to provide after-sales service and maintenance for Russian-made helicopters operated in Egypt.

The repair base in Heluane, Egypt, will be retooled in order to provide technical support for repairs to Mi-8T and Mi-17-1V helicopters operated by the Egyptian Air Force.

Under an agreement, Russian Helicopters will authorise the Heluane plant as an aircraft repair plant able to carry out comprehensive repairs to Mi-8T and Mi-17-1V helicopters. The Egyptian Air Force's fleet of 41 Mi-8Ts and 3 Mi-17-1V helicopters will all undergo comprehensive repair work at this facility.

Abu Dhabi expands baggage system

Abu Dhabi Airports has announced several key capacity expansion initiatives at Abu Dhabi International Airport that will improve overall operational efficiency.

These projects are being delivered in cooperation with Siemens and are part of the upgrade of the baggage-handling system at the capital's airport, aimed at increasing its capacity and ensuring it is equipped with the right infrastructure needed to cope with the expected passenger growth.

Flydubai extends Joramco partnership

Flydubai has signed a long-term contract with Joramco, which will provide the carrier with airframe maintenance solutions for its 50 Next-Generation Boeing 737-800 aircraft.

The contract lasts until December 2017, extending a partnership initiated in 2013, and will include C checks, entry into service checks (EIS), and lease hand backs for the entire fleet.

Air Partner and ACI freight deal

Air Partner's freight division has signed a memorandum of understanding (MoU) with Air Cargo Integrators (ACI) of the UAE, allowing

the two companies to work together strategically to develop both their freight charter and global air freight products.

Turkish Airlines orders 20 A321neos

Turkish Airlines has firmed-up a commitment for the purchase of 20 additional A321neo aircraft.

The airline already has 72 A321neos on order and is now again renewing its confidence in the aircraft to

boost its expansion.

"Our ambitious growth strategy needs to be fully supported by the most efficient, reliable and profitable aircraft," said Dr Temel Kotil, CEO of Turkish Airlines

Arab Wings expands ECFT training

Arab Wings and Emirates-CAE Flight Training have signed a five-year business aviation training agreement for Arab Wings to expand

from three to 11 aircraft types.

"We have had a very productive relationship with Emirates-CAE Flight Training for the last four years," said Ahmad Abu Ghazaleh, CEO of Arab Wings. "Based on the strength of our training experience we were very comfortable expanding the relationship to the rest of our fleet and consolidating our entire training under one provider."

UAE signs MoU with ROSCOSMOS

The UAE Space Agency has signed a memorandum of understanding (MoU) with the Russian Federal Space Agency ROSCOSMOS to create a strategic space partnership between the two entities.

Signed by Khalifa Mohammed Al Rumaithi, chairman of the UAE Space Agency, and Igor Komarov, general director of ROSCOSMOS, the MoU allows for extensive cooperation in space policy, human capital development and training, as well as in future development, ground station operations support, and general awareness.

Jotron gets the call from Turkey

Jotron AS is to supply the Turkish State Airports Administration (DHMI) with 1,130 air traffic control (ATC) radios, additional equipment and spare parts.

EgyptAir fined over lease embargo

EgyptAir has been fined \$140,000 by the US Bureau of Industry and Security (BIS) for violating a US trade embargo against Sudan between 2010 and 2011. The BIS said in a statement that EgyptAir had leased two B737-500s to Sudan Airways over the period.



STTS launches paint hangar at Dubai South

STTS, the French specialist for painting and sealing airline, military and VIP aircraft, has launched a purpose-built paint hangar at Dubai South.

STTS is investing \$34 million in the project that will accommodate a wide-body painting bay at the new international airport.

The site will also accommodate an aircraft interior back shop.

Emirates' 2016 fleet retirement schedule

Emirates has announced its fleet plans for 2016, retiring a total of 26 aircraft, including 12 A330-300s, four A340-300s, one A340-500, six Boeing 777-200ERs, two Boeing 777-300s and one Boeing 777-300ER.

The average age of the Emirates aircraft slated for retirement in 2016 will be 15.7 years, well below the average industry retirement age of 25.

In addition, 13 more aircraft will be retired in 2017 and another 13 will go in 2018.

L3 links up with UAE firm Spatial

L-3 Link UK and Ras Al Khaimah-based Spatial Composite Solutions have signed a five-year agreement for the UAE manufacturer to supply the full flight pilot simulator sub modules for L-3 Link's Reality Seven simulator manufacturing project.

Qatar Cargo third largest in the world

Qatar Airways Cargo is now the third largest international cargo airline in the world, according to the latest International Air Transport Association (IATA) international freight tonne kilometres (FTK) figures.

"Being in the top three international cargo carriers



Jet Aviation's approval for testing shop

Jet Aviation Dubai has added a non-destructive testing (NDT) shop, for which it has received Federal Aviation Authority (FAA) approval. The company will extend its maintenance services to include non-destructive testing with immediate effect.

Hardy Butschi, vice president and general

manager of Jet Aviation Dubai said: "The decision to expand our capabilities to offer a seamless end-to-end NDT service was made in direct response to customer feedback. We believe our on-site NDT shop will also help us to improve efficiencies in our wheel shop service."

in the world reflects the hard work and commitment of the Qatar Airways Cargo team over the past five years," said Akbar Al Baker, group CEO. "Our cargo capability is a major component in driving our group success and growth, and it will remain a focus of our expansion in the coming years."

Inmarsat and Turksat sign MoU

Inmarsat and Turksat have signed a memorandum of

understanding (MoU) to explore opportunities through the formation of a strategic partnership, initially focused on the defence and aviation sectors.

Ensar GÜL, CEO, Turksat said: "We hope that Turksat and Inmarsat's partnership programme will develop a long-term fruitful cooperation. The main objective of this partnership is to broaden the product and service portfolio of both companies."

AMAC goes fourth to multiply

AMAC Aerospace has opened its fourth hangar at its facilities at EuroAirport in Basel after only 11 months construction time. The additional hangar area of 7,280sqm and the additional apron area of 6,038sqm allow AMAC Aerospace to further expand its capacity for wide-body maintenance work. The company is a major completions provider for Middle East and African VIP aircraft.

Cairo orders six new aircraft

Cairo Aviation has ordered six MC-21 aircraft, with an option for four more airframes. The order comes as part of an agreement between the carrier's parent, KATO Investment, and Irkut Corporation.

KATO is also planning on setting up a maintenance, repair and overhaul (MRO) facility in Dabaa to specialise in MC-21 aircraft. The first aircraft is expected in 2017.

EgyptAir signs contract with SITA

EgyptAir has signed a five-year contract with SITA for the implementation, management and modernisation of the airline's communications network.

SITA is providing the carrier with a network that will provide secure and reliable connectivity to EgyptAir's headquarters and across 190 sites.

SITA's ServiceNet will also allow access to more than 20 third-party services from EgyptAir's existing IP VPN connections.

Qatar initiates Rafale contract

The contract for the purchase of 24 Rafale aircraft by Qatar from Dassault Aviation went into force in December.

"In a demanding geopolitical context, Qatar wants to benefit from the Rafale's qualities in the same way as it was able to do previously with those of the Mirage F1, Alpha Jet and Mirage 2000," said Eric Trappier, CEO of Dassault Aviation.

"Dassault Aviation and the 500 French companies associated with the Rafale programme are honoured by this demonstration of trust."



From left: Ahmad Alansari, deputy COO, Dubai South; HE Michel Miraillet, French ambassador to the UAE; HE Kahlifa Suhail Al Zaffin, executive chairman, Dubai South; Olivier Zarrouati, COO, Zodiac Aerospace.

Zodiac stars in Dubai South boost

French aerospace giant, Zodiac Aerospace, has inaugurated a new facility for Zodiac Aerospace Services Middle East.

"The new 4,500sqm site in Dubai South will allow the company to better serve its customers in the area by reinforcing repair and logistics capabilities and shortening its lead times," said Christophe Bernardini, CEO of Zodiac Services.

The Middle East business will mainly focus on servicing the group's products, including seats, oxygen equipment, avionics and electronics, fuel systems, evacuation slides and galley inserts.

The company will employ more than 100 people and contribute to develop the aeronautics sector in the region.



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Showtime for Kuwait

The Kuwait Aviation Show organising committee has announced the first show of its kind in Kuwait from January 23-26, 2017, at Kuwait International Airport. The Show plans to host a high level of participation by both local and international companies in both civil and military markets.

AJA's Lineage shows off its long legs

Abu Dhabi's Al Jaber Aviation (AJA) has completed a new flying time achievement. A6-AJ1, an Embraer Lineage 1000, flew from Beijing to Al Bateen executive airport Abu Dhabi, in a block hour flight of 10hrs and 4minutes. This is the longest flight ever for AJA and the longest commercial flight for a Lineage 1000.

Emirates signs with Teledyne Controls

Emirates has signed an agreement with Teledyne Controls to equip its Boeing 777-300ER aircraft, pending delivery of Teledyne's GroundLink system.

GroundLink is a multi-application communication system that automates and accelerates the downloading of essential flight data after each flight and supports the latest flight data monitoring and maintenance applications.



King's donation aids air ambulance

King Abdullah of Jordan has donated two Royal Squadron VIP AW139s to a new air ambulance centre (AAC).

Both helicopters are modified to carry intensive care units and state-of-the-art medical equipment.

The AAC will not only supply emergency medical service

within Jordan but also perform transfer of injured people from remote locations to medical centres within Jordan and abroad.

The AW139s are registered as EMS-1 and EMS-2 and are based at Amman-Marka Air Base as part of this cooperation between the Royal Jordanian Air Force and civil health authorities.

Strata unveils new R&D unit

Abu Dhabi aerospace manufacturer, Strata, has set up a new research and development (R&D) unit.

It will be developing manufacturing technologies for current and future work packages.

The R&D initiatives will be run in collaboration with Strata's international partners and local research facilities that are set up within leading academic institutions.

Air Arabia dives back in with Lido

Air Arabia has extended its flight-planning software

contract with Lufthansa Systems for a further five years. The airline has used the German IT specialist's Lido/Flight system for a number of years to support the efficient routing of aircraft.

Kuwait stalls on Typhoon

The contract for Eurofighter Typhoons from the Kuwait Air Force has still not been signed revealed the commander of the KAF at the Manama Air Power Symposium (MAPS) which took place in Bahrain in January.

The Kuwait Air Force (KAF) commander, Staff Major General (Pilot)

Abdullah Al Foudary, (pictured right) said that the \$12.2 billion deal for 28 Typhoons, announced in September 2015, had not yet been signed, among suggestions that Boeing will still be pushing its Super Hornet.

Iran summit postponed

The Aviation Iran summit that was due to take place in March has been postponed until September 19-20. Although sanctions have been lifted there have been some rising diplomatic and other tensions that led us to make the decision, organisers Times Aerospace said.

Gulf Air eliminates paper flight materials

Gulf Air has achieved paperless flight operations, using Jeppesen FliteDeck Pro as its electronic flight bag (EFB) solution.

Jeppesen, a part of Boeing Commercial Aviation Services, provides digital navigation and flight information for Gulf Air, delivered through iPad.

Lounge winner

Royal Jordanian's Crown Lounge, at Queen Alia International Airport, was named the winner of the Africa & Middle East Lounge of the Year Award 2015, by Priority Pass, part of the Collinson Group.



DC Aviation Al Futtaim trebles space for growth

DC Aviation Al-Futtaim (DCAF) has announced the expansion of its operations at its home base at Al Maktoum International Airport (AMIA).

This follows the recent announcement at the Dubai Airshow from its joint venture partner – Al-Futtaim, to lease an additional 10,000sqm of land from Dubai South.

The new plot will drastically increase the operational potential of DCAF – the first and only integrated private and business aviation operator at AMIA – enabling the company to expand its existing VIP lounge and hangar facility in order to keep up with growing demand for its services.

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“Flight 2020 is the stepping stone towards privatisation of the [mainline passenger] airline. That’s the first crucial step. Saudia has to be a sustainable, profitable, competitive airline.”

ABDUL MOHSEN JUNAID

PRIVATE PROGRESS

When the Kingdom of Saudi Arabia began the privatisation of its flag-carrier in 2006, everyone understood that the mainline airline would be the last of the group’s six business units to be sold off.

One decade on, the passenger division remains firmly under the wing of its well-endowed government owner.

That is no surprise given the company’s on-going financial troubles: chief executive Abdul Mohsen Junaid freely admits that Saudia is “nowhere close to break-even on domestic routes” – a segment that accounts for two-thirds of its seating capacity.

But while Saudia-the-airline is not yet ready to leave the nest, Saudia-the-group has made impressive strides towards privatisation. Two of its spun-off units – catering and ground-handling – have undergone partial initial public offerings

Saudia’s new chief executive, Abdul Mohsen Junaid, tells Martin Rivers how the introverted and conservative flag-carrier is embracing change – one step at a time.

(IPOs), while three – catering, cargo and maintenance – have sold equity stakes to strategic investors.

Describing the drawn-out process as a “classical textbook approach to privatisation”, Junaid said the ultimate goal is developing Saudia into a fully self-sufficient, private-sector entity.

The vehicle for transformation is its newly unveiled five-year plan, Flight 2020.

“The standing mandate is to privatise all units but when and how is the issue,” Junaid affirmed. “Flight 2020 is the stepping stone towards privatisation of the [mainline passenger] airline.

That’s the first crucial step. Saudia has to be a sustainable, profitable, competitive airline.”

As the flag-carrier of one of the world’s most conservative Muslim nations, Saudia has always shied away from grandstanding and publicity stunts. The company rarely issues press releases and almost never organises trips for foreign media – in stark contrast to its PR-schmoozing neighbours in the UAE and Qatar.

This modesty made it all the more remarkable when Saleh bin Nasser Al Jasser, Saudia’s new director general, launched Flight 2020 in May.

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Promising to reach a fleet of 200 aircraft by the end of the decade, Al Jasser committed to dramatically scaling up passenger numbers while enhancing services at home and abroad. Quite how many aircraft will be ordered is still hazy – Saudia’s existing fleet ranges in size from 120 to 170 depending on whether you include wet-leases and subsidiaries – but the message was clear: no longer will Saudia stand in the shadows while Emirates, Etihad and Qatar Airways dominate Gulf aviation.

For Junaid, delivering this “big promise to the country” means confronting some uncomfortable truths about air travel in the kingdom. Saudia’s reputation with customers can hardly be described as unblemished; its service quality and efficiency lagging well behind global standards.

Far from being a new beginning, however, Flight 2020 culminates years of painful restructuring at the flag-carrier. The new roadmap also comes alongside liberalisation of the competitive landscape, with two new market entrants hoping to stimulate demand in the sector.

“For a number of years now we have been working very hard to position Saudia in a safe, central location on the map, to get ready for this day when other national carriers emerge,” Junaid said, referring to the decision by GACA, the kingdom’s civil aviation authority, to grant domestic licences to start-ups SaudiGulf Airlines and Al Maha Airways. Until now, privately-owned Flynas, launched during an earlier wave of liberalisation in 2007, provided the only competition for Saudia.

“We’re dying to see competition. We’re being judged all the time on the basis that [people say], ‘We have no choice but to fly with Saudia’,” Junaid insisted.

“Now, with Flynas in the market, we feel this is a healthy sign. With the other entrants coming in, it’s all good for the economy. At the end of the day we are all thinking [about] gross domestic product (GDP). We have been well-positioned to face the competition and I think it will be a very healthy thing, extremely good for the kingdom.”

Market share

For a subsidised, state-owned flag-carrier to welcome competition with open arms may seem curious. Saudia’s 79% market share of domestic flights will almost certainly shrink after SaudiGulf and Al Maha launch services, mirroring the decline of flag-carriers in other deregulated markets. But the duopoly that Saudia shares with Flynas is no bed of roses and Junaid believes free-market competition could be a positive catalyst for change.

He cited the kingdom’s domestic fare cap as one of the obstacles to profitability that liberalisation will help to erode.

GACA presently imposes a ceiling price on airfares up to 10 days before departure, limiting the ability of operators to react to shifting supply and demand. This regulatory mechanism is designed to shield passengers from so-called



Abdul Mohsen Junaid: “There have been inefficiencies in the airline – using the B747 for short haul domestic duties was one.”

“We’re dying to see competition... Now, with Flynas in the market, we feel this is a healthy sign. With the other entrants coming in, it’s all good for the economy. We have been well-positioned to face the competition and I think it will be a very healthy thing, extremely good for the kingdom.”

ABDUL MOHSEN JUNAID

predatory pricing, but in reality it just saps profits and creates ticket shortages during peak periods.

“Part of the dissatisfaction of the domestic public with Saudia is due to the fact that they can’t find a seat whenever they want,” Junaid noted. “To do this you have to maintain a load factor that is not beyond 75-80%. We fly at an average of 90% load factor. We even have routes running at 93% sold year round.

“We need to keep that space available for the public to enjoy the basic ability to move around the kingdom.”

By hiking capacity in both the public and private sectors, GACA hopes that it can gradually introduce free-market pricing without unleashing a surge in airfares. More flights will also propel growth at Saudi Arabia’s bustling airports, which have doubled footfall over the past decade to reach 74 million per year. Demand comes from a mixture of religious traffic by Hajj and Umrah pilgrims, business traffic by expatriates, and outbound leisure traffic by Saudi citizens.

With the International Air Transport Association (IATA) forecasting sustained annual growth of 4.6% in Saudi Arabia over the coming two decades, the kingdom is investing heavily in airport infrastructure to ease the looming capacity crunch.

Jeddah’s new King Abdulaziz International Airport, due to open in 2017, will be the jewel in the crown. Its initial annual capacity of 30 million should grow to 80 million by 2035, boosting Saudia’s ability to handle sixth-freedom flows as well as origin-and-destination traffic.

Riyadh’s King Khalid International Airport will

also soon benefit from upgraded facilities, including a new terminal, while the first phase of expansion at Medinah’s Prince Mohammad bin Abdulaziz Airport was successfully completed last year.

GACA has committed to developing all 27 airports under its authority, spreading the investment between major hubs and regional gateways such as Taif and Abha. Construction work will go hand-in-hand with various privatisation initiatives.

For Saudia, though, limited capacity is just part of the problem. Mismanagement has also been an issue at the airline – a taboo subject that Junaid is willing to tackle head-on.

“In the old days we flew [Boeing] 747s between Jeddah and Abha. [Flights lasting] 50 minutes! Imagine the cost,” he said incredulously, bemoaning the inefficiency of deploying four-engine, wide-bodied aircraft on short domestic sectors. “Of course, each era has its own circumstances and I don’t pre-judge who was taking the decisions. But we understand our circumstances now.”

Serious measures

Junaid emphasised that “a lot of serious measures” have been taken in recent years to iron out inefficiency and prepare the flag-carrier for expansion.

Realigning traffic through the main gateways of Jeddah and Riyadh was the first all-important step. By strengthening the hub-and-spoke networks of each airport, Saudia has, in turn, been able to abandon its historic policy of connecting overseas routes to both cities.

“We used to fly everything Jeddah-Riyadh-Europe [or] Riyadh-Jeddah-Far East because of lack of basic load factor,” the chief executive recalled. “After the latest restructuring we basically detached the two hubs.”

Another key reform came in 2008, when management decided to “throw away our IT platform completely”. Saudia subsequently became the first airline in the world to deploy Amadeus’s passenger revenue accounting solution, as well as rolling out parallel upgrades to its network planning systems.

Behind-the-scenes IT work rarely generates headlines, but the overhaul had a profound impact on

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A DIFFERENT SCALE ALTOGETHER.

CONTINUED FROM PAGE 20

the flag-carrier's sales capabilities. Net revenue from its internet booking engine (IBE) is now 15 times higher than under the old platform. "Today our IBE is considered – just like any other airline – the most critical distribution channel within Saudia," Junaid noted.

"In a nutshell, we used to lack a lot of the basics that give us the ability to compete," he added. "We're improving everything around us. We're creating the success factor."

Perhaps the biggest development for Saudia took place in May 2012, when the company became a member of the SkyTeam airline alliance. Junaid could hardly contain his excitement when talking about the ascension, stressing the "limitless possibilities" that membership unlocks. Pitching the alliance as a "private club" and "think tank" for network development, he said it would be a crucial driver of non-organic growth as Saudia plays catch-up with its Gulf rivals.

As well as pursuing new codeshare agreements with SkyTeam partners such as Garuda Indonesia, Saudia has now begun exploring the potential for deep-rooted joint ventures (JVs).

Proper hub structure

"Imagine if some carriers from the East started to really join hands and work [with Saudia] at the time when we have our proper hub structure," the chief executive said. "Currently there is no serious cooperation in that direction, and I think serious cooperation could lead to a JV. It's a step-by-step approach. After codeshares, then you can only grow to a joint venture."

Organic growth is also on the agenda for Flight 2020. At least four new destinations will join the network this year: Malé in the Maldives, Munich in Germany, Ankara in Turkey, and Algiers in Algeria.

Expanding routes with its own metal means continued investment in the fleet. And, on this front too, Junaid stressed an efficiency-based approach.

He cited the decision to order 20 Airbus A330 Regionals as proof of the airline's reformed ways. The new type aims to cut fuel and maintenance costs on short sectors by up to 26% when compared with baseline A330s, benefiting from modifications to reduce its weight and range.



Joining the Sky Team alliance is an exciting development for Saudia.

Junaid believes the variant could "change the dynamic of fleeting" for launch customer Saudia, which needs to deploy twin-aisle aircraft on its domestic trunk routes.

"If Airbus stands behind this product and delivers their promise, we believe this is a game-changer. This is the next 737 or the next A320 aircraft," he said. "You have a wide-body aircraft that is suited for short missions. I really hope that they can deliver."

The high cost of deploying narrow-bodies within the kingdom is apparent when you compare Saudia's domestic and regional network. For the airline's long-range A320s with extended tanks – used to serve thin routes in Europe – engine replacements are required after approximately 30,000 hours of flight. On baseline types deployed domestically, meanwhile, the powerhouses last just 5,000 hours.

"Three things are the basic drivers of maintenance and overhaul costs – landing gear, engine take-off power, and pressurisation," Junaid explained. "Every time you take off that's one cycle – whether it's Jeddah-Medina or Jeddah-New York."

He upheld this "very harsh [cost] environment" as a reason for GACA to reform its fare cap, noting that Saudis pay less to travel from Jeddah to Abha by plane than by bus.

Pushed for more details on the fleet programme, the chief executive confirmed that three 787-9 Dreamliners will have arrived in Jeddah by February. Deliveries will then cease for several months, before a tranche of 26 aircraft comes on-stream in October. Those latter units

will be drawn from the various orders disclosed by Boeing and Airbus: 20 A330 Regionals, 30 A320s, five more 787-9s and one 777-300ER.

Junaid further revealed that "significant" numbers of additional 777-300ERs have been signed for, enabling the flag-carrier to phase out its 16 747-400s and potentially also its 23 777-200ERs.

The 777-300ER fleet will be designed in three configurations to optimise capacity across the long-haul network. The first is a 10-abreast, two-class layout targeted at religious and labour traffic from the East. The second is a nine-abreast, two-class layout with fully flat-bed business seats catering for high-yield European markets. Finally, there will be a premium, three-class layout that features about 12 brand new first-class suites. "The third configuration is the last 10 aircraft that we will be receiving," Junaid said.

With Saudia also planning to retire its 15 Embraer E-170s, further commitments will be needed if the mainline airline is to reach 200 aircraft by 2020. The chief executive would not be drawn on other orders, however, insisting that "everything is on the table".

Look for the best fit

"Issues related to the fleet are continuously being discussed," he said. "We look for the best deals. We look for the best fit. We do our best to make sure that we have the right aircraft for the right mission. There are plenty of choices available!"

Reform does not come naturally to public institutions in Saudi Arabia and the kingdom's 70-year-old flag-carrier is no exception. Privatisation, modernisation and true managerial accountability are still novel concepts to the parastatal.

But, with denationalisation being promoted at the very highest levels of government, Saudia's fate is clear.

Business jet subsidiary Saudia Private Aviation became the latest unit to sell equity in September, while the cargo division is now gearing up for a flotation.

With management evaluating a low-cost subsidiary and two private-sector rivals waiting to launch, the mainline airline will soon have no choice but to take the plunge. Junaid's task is to make sure it jumps before it is pushed.



Saudia has committed to the Airbus A330-300 for regional expansion.



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AACO works to ease the pressure on regional aviation

AACO held its annual meeting in Jeddah, Saudi Arabia in November. Alan Peaford was there to review the outcomes.

The Arab Air Carriers Organization (AACO) celebrated its 50th birthday in style at Jeddah in November as it pledged to continue to drive co-operation and partnership across the major issues affecting the airline industry across the Arab world.

Under the chairmanship of H.E eng. Saleh N. Al Jasser, director general of Saudia, CEOs and senior management from airlines across the region joined some 300 industry partners, suppliers, and aviation experts to focus on the big issues and to take common steps to push the regional industry further.

At a special gala dinner there was cake-cutting and speech-making to commemorate the half century of AACO's existence. But the real issues revolved around pressures facing the region's aviation community.

Secretary general, Abdulwahab Teffaha, said the Arab air transport market had grown by 9.7% in 2014 reaching 172 million passengers.

Open skies policies

Discussions over liberalisation continued to dominate discussion in the main conference room as well in the breakouts. Teffaha said that open skies policies have benefited the consumer with lower travel prices, more travel options and a better service. "Such policies have also brought benefits to the economy by enhancing trade and creating job opportunities. Airlines also became more competitive and improved their services as a result of open skies. Going back to protectionism will be counterproductive and would definitely not benefit the consumer or the airlines or the development of the economy," he said.

Keynote speaker professor Geoffrey Lipman, the former head of the world travel industry went further, citing America's big three airlines' pressure on their Government to review the open skies agreement in the face of competition from the Gulf carriers, and said the move was an action of "stupidity"

The AACO members also determined that they would work with the Arab Civil Aviation Commission (ACAC)



Abdulwahab Teffaha: "Going back to protectionism will be counterproductive."

with regard to reducing aviation's impact on the environment, as well as confirming its position on passenger rights.

The AGM called upon ICAO to further work on the principles adopted by the ICAO Council to include material on avoiding extraterritoriality and ensuring compatibility between passenger rights regimes. The AGM also called upon Arab states to look into the Consumer Protection Safety Nets and Caveats template when developing passenger rights regimes.

After a presentation by Ahmed Al Jallaf, assistant director general of air navigation services, from the UAE's GCAA, the AGM called upon all concerned states to join the Middle East ATM Enhancement Programme, - of which Al Jallaf is chairman – and reiterated the importance of coordination between Arab governments with regards to airspace infrastructure developments. The AGM also directed AACO to coordinate with states, airlines and with international and regional associations on the technical level to identify the priorities of the region with regards to ATM and airspace capacity, and to work with heads of CAAs, airlines and associations to raise those priorities to governments especially in areas that require coordination between civil and military aviation authorities.

AACO also called upon the European Union to place the highest possible priority to the development of infrastructure in Europe and the unification of the European aerospace.

■ A special book celebrating the 50 years of AACO was produced for the annual meeting by Times Aerospace, the owner of *Arabian Aerospace*. Copies can be viewed free of charge by visiting the publication website www.arabianaerospace.aero

Online intelligence system for travel industry



IATA's Tony Tyler signs with Saudia Director General Saleh Bin Nasser Al-Jasser.

Saudi Arabia's national carrier Saudia has signed a direct data solutions (DDS) agreement with IATA to add to an online intelligence system for the travel industry.

Speaking at the Arab Air Carriers (AACO) annual assembly in Jeddah, IATA's CEO Tony Tyler talked about the importance of data and developing smart distribution systems to meet the changing needs of the airlines.

With DDS, for the first time ever, the airline industry has a direct connection to comprehensive market intelligence data for strategic decision-making. Established in partnership with IATA and ARC, DDS is a game-changing industry-sponsored program that provides the travel industry with timely, accurate and cost-effective access to global airline market data.

EgyptAir braced for

The bombing of a Russian charter flight over the Sinai Peninsula has thrown Egypt's tourism sector into yet another existential crisis. Sherif Fathy, EgyptAir's chairman, tells Martin Rivers how the flag-carrier is responding.

Egypt's all-important tourism sector has been dealt successive blows since the 2011 Arab Spring uprisings, with repeated waves of political unrest warding off foreign visitors.

The country's tourism revenue is expected to have fallen below \$7 billion in 2015 – a far cry from the \$12.5 billion raked in during the year before the revolution.

Flag-carrier EgyptAir has been front and centre of the downturn, sinking about \$1.5 billion into the red since 2011 as holidaymakers turned to perceived safe-havens elsewhere in the region. The airline's fortunes had seemed to be rising in 2014/15 but were derailed again in October when a charter flight operated by Russia's Metrojet crashed in the Sinai Peninsula.

Intelligence agencies from Russia and the west have concluded that a bomb planted by the Daesh terror group brought down the Airbus A321, killing all 224 passengers and crew.

Daesh itself has also claimed responsibility for the atrocity, boasting of its ability to penetrate security at departure point Sharm el-Sheikh International Airport.

Visitor numbers collapsed

Although Cairo continues to deny evidence of terrorist involvement, few would-be tourists are listening. Visitor numbers to Sharm el-Sheikh collapsed by about 85% in the aftermath of the disaster, with European operators heeding travel advisories and pulling out of the resort en masse. Russia went a step further, banning all EgyptAir flights from its airspace.

Navigating the crisis has become priority number one for Sherif Fathy, the flag-carrier's chairman and chief executive, who was appointed just two months before the crash with a mandate to restore profitability at the ailing company.

"We don't know yet whether there is going to be a strong impact from this unfortunate incident on our scheduled business out of Cairo," he said during an interview at the African Airlines Association Annual General Assembly in November. "We don't know. We hope not."

Government officials have, in the past, premised EgyptAir's turnaround efforts on a wider resurgence of the domestic economy. That was certainly the case in 2013, when the then-civil aviation minister Abdel Aziz Fadel predicted an upturn in demand following the events that

brought president Abdel Fattah El Sisi to power. Speaking to our sister publication, *African Aerospace*, at the time, Fadel vowed to grow EgyptAir's 81-strong fleet to 127 aircraft by 2025 – banking on a surge in tourism as democracy was gradually restored to the country.

"The plan has changed slightly," Fathy shrugged, when reminded about the ministry's earlier forecast. "This time, it's not based on macroeconomics. It's based on detailed network planning."

Emphasising a stand-alone focus on profitability, he said management would prioritise higher frequencies on well-performing routes while adding a "maximum [of] two more points in the Far East".

Fadel's efforts to grow sixth-freedom traffic as a hedge against origin-and-destination flows are "still viable" he added, but only in the context of a wider, profit-driven strategy.

"The revenue plan will have to dictate how much sixth-freedom traffic we will target," Fathy insisted, betraying scepticism about the value of connecting flows. "You target profitability and profitability is a mix between third, fourth and sixth freedom."

Detaching EgyptAir's roadmap from the rose-tinted projections of its Government owner is a prudent move given the volatile situation in Sinai, where Daesh continues to strike military and economic targets with relative impunity.

But Fathy is, nonetheless, focused on exploring "growth scenarios", arguing that EgyptAir needs to recover ground lost to regional rivals since the Arab Spring.

"We need to grow. We need to gain back certain market shares that we have lost to competition during the last few years," he said, bemoaning the flag-carrier's withdrawal from Japan and its reduced frequencies to Bangkok. European traffic has also been affected, with Lisbon, Dusseldorf and Catania all axed in 2011.

Insisting that the network contraction could have been even deeper without defensive measures by management, the chairman recalled: "There were some propositions that came by our consultants, and also by some of our team members, to close certain [other] routes in order to achieve profitability quickly.

"We looked at the strategic impact of the closure of these points, and we decided not to close them."

Prior to taking on the top job at EgyptAir

Holding Company, Fathy spent a year-and-a-half at the helm of charter subsidiary Air Cairo.

He spearheaded efforts to diversify the company with low-cost services, launching scheduled no-frills flights from Alexandria as a complement to the Sinai-based charter operation. The strategy gave EgyptAir exposure to the fast-expanding low-cost market – described by Fathy as a "cashflow maker" – while retaining its still-profitable focus on "high-yielding" charter flights.

That feather in his cap, however, is now foremost among the group's worries. Both of the segments that Air Cairo specialises in are heavily dependent on tourism, throwing into doubt its plans to grow from six to 20 A320s by the end of the decade.

Further afield, EgyptAir's wider fleet modernisation programme is also now shrouded in uncertainty.

Speaking to *Gulf News* just days before the Metrojet disaster, Fathy had declared that the flag-carrier would order up to 70 aircraft in 2016 – including 15-20 wide-bodies. He quickly came to regret the announcement. "The statement was made before the shock we had tourism-wise," he sighed. "What they have published was an estimate [for deliveries] over 10 years."

Finalising new proposals

Asked for an updated fleet plan, the chairman said management were finalising new proposals for the Government. He declined to give further details, pledging not to "repeat the mistake of [announcing] the 70 aircraft".

Civil aviation minister, Hossam Kamal, followed up his remarks by unveiling an order for eight narrow-body Boeing 737-800s in December. At the time of writing no wide-body commitments had been announced, though EgyptAir still has an outstanding order for one A350. "We will be opening this subject with Airbus very soon," Fathy said of that unit, indicating that future orders will likely replace the stalled delivery.

EgyptAir presently deploys 74 aircraft across the group: 12 Embraer E-170s operated by regional subsidiary EgyptAir Express; six A320s operated by Air Cairo; and 56 mixed types in the mainline fleet (11 A330s, seven 777s, 22 737s, 13 A320-family jets and three freighters). Its average aircraft age is just under 12 years.

While it seems hard to envisage large-scale

terror bomb impact



“We don’t know yet whether there is going to be a strong impact from this unfortunate incident on our scheduled business out of Cairo. We hope not.”
SHERIF FATHY

orders in the current climate, Fathy maintained that the fleet will “definitely grow” in the near future.

He claimed that the flag-carrier is “short of aircraft” after several years of downsizing and capacity cuts, adding: “You may see that we are going to go for leasing some aircraft in order to be able to cope with next summer’s traffic.”

The chairman also had an upbeat assessment of airport security in the country, accusing media outlets of sensationalist reporting in the aftermath of the Metrojet crash. “There might be some individuals [working at Sharm el-Sheikh Airport] who are maybe not performing well, but that doesn’t mean that the whole security system is asking everybody for bribes,” he said, referring to claims that the gateway’s staff are inattentive and corrupt.

“I cannot say the people who reported this are liars, or they are not saying the truth. There might be some abuses. There might be some misbehaviour. But I fly there very often and I think it [the security] is good enough.”


Review airport security

Eager to win back the confidence of foreign governments and travellers, Cairo has now hired London-based consultancy, Control Risks, to review airport security across the country.

Egypt already undergoes audits by the International Civil Aviation Organisation (ICAO), America’s Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA). Just a fortnight after the bombing, ICAO gave the Egyptian Civil Aviation Authority and Cairo International Airport the green light under its pre-scheduled USOAP-CMA checks.


But, while that came as welcome news, it did little to mend the reputational damage already caused by the terrorists.

Along with several other African countries – notably Tunisia and Kenya – Egypt has found its tourism sector firmly in the crosshairs of a new wave of global jihadist violence. With Cairo’s efforts to downplay the threat falling on deaf ears, EgyptAir has no choice but to hunker down and brace for impact.



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THE YOUNG

Kuwait Airways may have slammed the brakes on its privatisation programme but new chief executive, Abdullah Al Sharhan, still sees major changes ahead for the flag-carrier.

Martin Rivers reports.

In 2014, the average age of an aircraft in the Kuwait Airways fleet was a whopping 20 years. Today that figure has nearly halved thanks to the induction of a dozen new Airbus jets. Next year it will plummet close to zero as the last ageing units are replaced, completing the flag-carrier's re-birth after decades of political indecision and commercial stagnation.

"By mid-2017 we will go to a completely new fleet and we will be the youngest in the region," beamed new chief executive Abdullah Al Sharhan. "That is after being almost the oldest!"

It is, perhaps, difficult to imagine Kuwait Airways as the Gulf's youngest, most fuel-efficient airline when one recalls its less-than-glamorous track record. Parliamentary bickering has derailed successive attempts to modernise the fleet in recent times, forcing travellers in one of the world's richest countries to accept dated cabin interiors and recurrent delays due to maintenance issues.

The high cost of servicing its obsolete fleet has also accelerated two decades of near-uninterrupted losses at the state-owned carrier, heaping further pressure on its bloated, inefficient workforce.

Yet, since new chairwoman Rasha Al Roumi took to the helm in late 2013, Kuwait Airways has evolved almost beyond recognition.

Seven new A320s and five new A330s joined

the fleet over a 12-month period up to November 2015, allowing the airline to retire its five A300s and three A310s. Three older A320s and four A340s are still being operated – securing net growth in the fleet for the first time this century – but they too will be withdrawn around the end of the year.

That leaves just two ageing Boeing 777-200ERs to be replaced. Their retirement will coincide with the delivery of 10 brand new 777-300ERs, due to commence later this year.

Under-performance

For Al Sharhan, who became chief executive in early 2015, the long-overdue fleet renewal gives Kuwait Airways an opportunity to right the wrongs of its historic under-performance.

"The size of the fleet has stood still since 1998. From then, until the end of 2014, the size of the airline was 17 aircraft," he said, excluding the 747-400 used by Kuwait's ruling family from his tally. "Imagine 16 years of being in a steady state, while there is market growth all around you. In effect, you are shrinking, because it's all relative."

"We were static for a very long time and, because of this, our market share dropped from about 45% in Kuwait Airport down to around 20%. Today we are talking about regaining the market share – that's all."



ONES

Having grown its operational fleet from 17 to 21 units last year, Kuwait Airways has now begun the difficult task of identifying new growth markets.

Flight movements in January 2016 were up 13% compared with the same month in 2015, according to Flightglobal Innovata. That reflected the addition or resumption of several points, including Istanbul (Turkey), Sharm el-Sheikh (Egypt), Vienna (Austria), and Ahmedabad and Bengaluru (India).

The new Sharm el-Sheikh route was briefly suspended for security reasons following the crash of Metrojet Flight 9268 in October, before being reinstated after “an instruction by His Highness the Emir of Kuwait”. Kuwait’s ruler, Sabah Al Ahmad Al Jaber Al Sabah, is known to be a strong ally of Egypt’s president, Abdel Fattah Al Sisi.

As of January 2016, Kuwait Airways served 17 destinations in the Middle East and North Africa; 15 in Asia; six in Europe; and one, New York, in North America.

Al Sharhan said the current network is well suited to the existing 21-strong fleet but that further changes can be expected as more aircraft come on stream this year.

“When the 777s start delivering,



“By mid-2017 we will go to a completely new fleet and we will be youngest in the region.”

ABDULLAH AL SHARHAN

CONTINUED FROM PAGE 29

then we'll launch the next [wave of growth]," he confirmed, noting that the 5-10 year business plan has just been updated by McKinsey & Company. "We have almost a full year to study this and when the next winter schedule is implemented we will submit our requests for slots that are viable, according to the business plan.

"The plan consists of depth and then breadth. So we are going to properly serve our existing destinations today – we still have destinations that are underserved – and then we will expand to new destinations."

Five points have already been earmarked for frequency hikes this year: London, New York, Ahmedabad, Bengaluru, and Manila (the Philippines). In time, the aim is offer either daily or double-daily services across the network.

But, alongside expansion, there will also be selective contraction of "poorly performing routes". Kuwait Airways confirmed in December that flights to Kuala Lumpur (Malaysia), Jakarta (Indonesia), and Alexandria and Sohag (Egypt) would be axed this summer.

A connecting service between London and New York was also suspended in December due to a legal dispute over the non-issuance of tickets to Israeli passport-holders.

Kuwait Airways is one of several Arab flag-carriers that do not permit Israelis to travel on their planes due to the Arab League boycott of Israel. US authorities have long turned a blind eye to the practice, accepting the argument that industry regulations oblige airlines to ensure passengers are properly documented for their journey.

Immigration authorities

As Kuwait does not recognise Israel, its immigration authorities are unable to process Israeli passports and so the flag-carrier cannot transport citizens of that country to its home base.

However, the US Department of Transportation (DoT) sided with Israeli passenger Eldad Gatt last year after he complained about being denied a booking for the New York-London leg specifically. Concluding that Kuwait Airways had "unreasonably discriminated" against Gatt, the DoT ordered the flag-carrier to either permit Israelis on its fifth-freedom service or stop flying to America.

Kuwait Airways ultimately chose to abandon the route rather than comply.

Al Sharhan declined to comment on the matter but dropped a hint about why the flag-carrier may have backed down.

"We are looking to expand into the US market, into the European market, and beyond our south-east Asian destinations. Probably also Africa," he affirmed. "All those destinations that we are not flying to today, we will be looking for partnerships to expand in those markets."

Efforts to find a US partner would have been severely hampered by the political furor, with western media outlets voicing clear support for

Israeli travellers. One headline in *The New York Post* dubbed Kuwait Airways a "Jew-hating airline".

Though chastened by the experience, the flag-carrier is by no means dependent on foreign partners for growth. Its wide-body fleet will have risen from 11 to 15 units once the 777-300ERs deliveries are completed in 2017, raising the spectre of North American route launches with its own metal. Los Angeles and Toronto have already been mooted by Al Roumi.

The fleet expansion will then continue into the next decade, with 15 A320neos and 10 A350-900s arriving between 2019 and 2022.

These next-generation Airbuses, combined with the upcoming Boeing wide-bodies, will give Kuwait Airways a fully owned fleet of 35 aircraft. It could be even higher. Referring to the newly inducted Airbuses, Al Sharhan said their eight-year leases might be extended as the plan matures. "Then the total count will be 47 aircraft," he noted.

While the long-overdue fleet renewal gives cause for optimism, the chief executive admitted that uncertainty still prevails in other aspects of the business.

The flag-carrier's on-again, off-again privatisation was all but abandoned last summer, when MPs turned against plans to divest 80% of its equity (35% to strategic investors; 40% in a stock-market flotation; and 5% to employees). A new motion in parliament now proposes selling just 25% of the company: 20% in a flotation; and 5% to employees.

Al Sharhan said there are "pros and cons for both scenarios", but that most MPs favour the watered-down proposal. He highlighted concerns that strategic investors would pursue "imminent" job-cuts at the airline, which is a major employer in Kuwait's public-sector-dominated economy.

"Some of the members of parliament saw previous examples in Kuwait of companies that were sold out to foreign investors," he explained. "These previous examples resulted in termination of services of Kuwaiti nationals, which created some social issues and problems in the country."

Even though the existing privatisation bill ring-fences benefits and salaries for five years, he said many employees consider this "insufficient as a career guarantee".

Parliament will face a clear dilemma when it votes on the motion.

On the one hand, MPs are eager to reduce financial losses at the flag-carrier and they see private-sector involvement as a good way of shaking out inefficiency.

On the other hand, they fear a backlash over disrupting the jobs-for-life culture in Kuwait, where about 90% of citizens are employed in the public sector. Memories of the Arab Spring only heighten these anxieties.

"It's not the Government's intention to expand and inflate the company to beyond the economical size [that can be justified]," Al Sharhan insisted. "But they have to strike a

balance here between social care and running an airline efficiently.

"It's not an either/or choice... [Kuwait Airways can function] as a government-owned entity that is required to be operational in a lean way."

He emphasised the airline's improving financial performance, noting that annual losses have fallen by about 50% over the past three years to \$67 million.

One person unlikely to be convinced by such arguments is Marwan Boodai, chairman of Jazeera Airways, the privately-owned Kuwaiti airline that had hoped to become a shareholder in Kuwait Airways under privatisation.

Boodai was planning a cooperation model for the two carriers that would have seen Kuwait Airways specialise in long-haul operations while Jazeera provided short-haul feed.

Having got wind of parliament's change of heart, Donald Hubbard, Boodai's financial chief, stunned observers in October by announcing that Jazeera now wants to go head-to-head with the flag-carrier in the long-haul market. "If they're not going to be privatised, then we might jump in," he told *Gulf News*, predicting route launches to London and Paris.

Heightened competition

Asked about the prospect of heightened competition between the two local carriers, Al Sharhan struck a conciliatory tone.

"I hope they will be partners of Kuwait Airways, but it's Jazeera's decision what to do next," the chief executive said, before noting that MPs have not yet abandoned the original privatisation plan. "The government clearly stated that it would take time before the strategic portion is sold off."

Reiterating his preference for cooperation, Al Sharhan said that while codeshares are unlikely "at this stage" the two carriers already collaborate when requesting slots at their joint home base.

"Because we have open-skies agreements with many countries, Kuwait Airport is really congested and overloaded with [foreign] carriers," he observed. "We are cooperating to make sure that the interests of both national carriers are maintained."

Part of that cooperation will see Kuwait Airways move to a dedicated support terminal in the near future – a stop-gap solution until Terminal 2 doubles the gateway's capacity in 2022. "That should ease the load on Kuwait Airport," Al Sharhan predicted. "However, if we stay there, with our expansion rate, even the support terminal will be too small for Kuwait Airways."

With Jazeera also seeking to develop its own terminal, and with renewed uncertainty over the flag-carrier's privatisation, many questions linger about the future dynamics of Kuwait's aviation sector.

What is clear, however, is that both the public sector and the private sector are committed to a new era of growth in this long-dormant market.

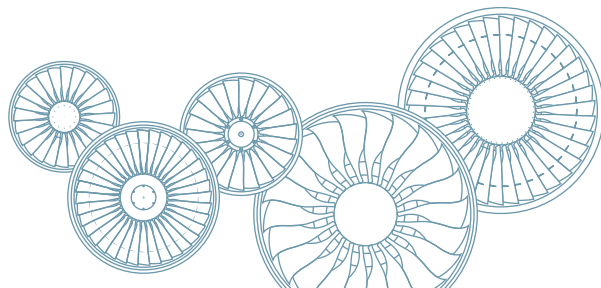


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Mauritania Airlines International is looking to expand its fleet and develop its network, after joining both the Arab Air Carriers Organisation (AACO) and the African Airlines Association (AFRAA) in 2015. Victoria Moores reports.

More and more from Mauritania

State-owned Mauritania Airlines International launched operations from its Nouakchott base on May 1, 2011, replacing Tunisair joint-venture carrier Mauritania Airways.

The latter airline had started operations in November 2007, itself succeeding national carrier Air Mauritanie, and had built up a small fleet of ATRs and Boeing 737s. But Mauritania Airways ultimately followed the same path as Air Mauritanie and ceased operations in December 2010.

Under the leadership of CEO, Mohamed Radhy Ould Bennahi, Mauritania Airlines International has grown to 240 staff and expanded its fleet to four aircraft, three Boeing 737s – one -700 and two -500s – and a single Embraer ERJ-145.

“We want to phase out the two -500s before the end of 2016,” Mauritania Airlines International financial director Mohamed Lemine Ould Mohamed Vall said. “We will bring in two -800s to replace the -500s.”

One of the two 737-800s will be added in 2016 and the second will arrive before 2020. Like its existing 737s, the new aircraft will be configured with two classes.

The carrier is also seeking an additional ERJ-145, which would be used to perform domestic flights and boost its regional fleet. Mauritania Airlines International is already in negotiations with Boeing and Embraer over the aircraft purchases.

Currently, the carrier serves Abidjan, Bamako, Banjul, Casablanca Conakry, Dakar, Las Palmas, Paris Charles de Gaulle and Tunis. The additional aircraft would be used to build up frequencies and to add a new service to Jeddah.

Its network has been further strengthened through special purchase agreements (SPAs) with Air France, Asky, Emirates, Ethiopian Airlines, Royal Air Maroc, Saudi Arabian Airlines, Senegal Airlines and Tunisair. Ould Mohamed Vall said the next step would be to establish codeshares with airline partners.

To help this process, Mauritania Airlines International has been working to secure International Air Transport Association (IATA) Operational Safety Audit (IOSA) certification and underwent the audit in June 2015. At the



“We want to phase out the two -500s before the end of 2016. We will bring in two -800s to replace the -500s.”

**MOHAMED LEMINE
OULD MOHAMED VALL**



time of writing, the airline was awaiting the final rubber stamp. Once this has been secured, it is hoping to become an IATA company and is seeking participation in the IATA clearing house.

Mauritania Airlines International secured an historic boost when the country became the first to be removed from the European Commission air safety list, more commonly known as the ‘EU blacklist’, in December 2012.

The European Commission originally banned the country’s former national carrier, Mauritania Airways, due to “persisting deficiencies regarding the operations and maintenance of the air carrier”. All other airlines certified in the country were also banned because of oversight deficiencies. However, following “exceptional progress” by the local authorities and safety advancements in the country, the ban was ultimately lifted.

In its latest EU air safety list update, issued in December 2015, the European Commission lists 230 airlines that are banned from operating into the European Union. One body, which has been very outspoken in its objections to the blacklist, is AFRAA.

As part of its development plans, Mauritania Airlines International joined the association on July 27, 2015, after being accepted as a member during a meeting of the body’s executive committee in Nairobi, Kenya.

This was followed by the carrier securing AACO membership, which was confirmed during the association’s annual meeting in autumn 2015.



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SaudiGulf's waiting

*Despite taking delivery of its first aircraft in November, SaudiGulf Airlines is still unable to commit to a firm launch date. President Samer Majali gives **Martin Rivers** a progress report.*

Anyone who has been following the liberalisation of Saudi Arabia's aviation sector will be aware of one thing above all else: it moves at a glacial pace.

The kingdom's civil aviation authority, GACA, awarded economic licences to two start-up carriers back in December 2012, promising to inject much-needed competition into the local market. Al Qahtani Group-owned SaudiGulf Airlines and Qatar Airways-owned Al Maha Airways were selected from a shortlist of seven bidders.

There followed a woefully predictable succession of missed deadlines, with 2015 marking the third year in a row that both SaudiGulf and Al Maha have failed to get off the ground.

Qatar Airways has now fallen conspicuously silent about its plans for Al Maha, despite taking delivery of the subsidiary's four Airbus A320s in April 2015. Chief executive Akbar Al Baker was always adamant that the venture will only launch if GACA reforms the kingdom's regulatory

landscape – specifically, by doing away with its domestic fare cap and levelling out subsidies for flag-carrier Saudia. To date, only modest changes have been made.

As for SaudiGulf, president Samer Majali now predicts that 2016 will be the year the full-service carrier finally takes to the skies. However, no doubt mindful of its earlier false starts, the former Gulf Air boss is unwilling to give firm dates.

"We expect that we will get the [operating] licence early in the new year and then we'll do some soft operations in the first quarter," he said during an interview at the Arab Air Carriers Organisation meeting in Jeddah in November. "Then, hopefully, the idea is to start our full schedule before the second quarter.

"This is the plan, but it's a plan because obviously it's subject to the authorities doing whatever is necessary for them to do."

When GACA announced the latest round of delays, it blamed unspecified "technical reasons" for the slow progress. Majali shed some light on that assertion, explaining that SaudiGulf is now



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game

in the “final stage” of getting its A320s approved for the kingdom’s exacting standards.

The company has already had its operating manuals green-lighted, he said, but now has to undergo a full audit of the fleet. That process – initiated after the delivery of SaudiGulf’s first A320 in November – will include route-proving flights, emergency evacuation exercises and other checks. “We don’t know how long that will take,” Majali admitted, seemingly resigned to the prospect of further delays. “Things might come up.”

Pushed further on why successive launch dates were abandoned, the airline boss was clearly unwilling to levy any blame on GACA. Ultimate responsibility lies with SaudiGulf, he said, citing the company’s selection of new-build Airbus jets.

“The reason it’s taken so long is because SaudiGulf took the decision to introduce brand new aeroplanes in a very, very high specification,” Majali insisted, noting that the process of gaining approval for interiors and other configurations “takes about 18 months”.

Owned outright

Once cleared to launch, the airline’s four A320s – the first of which is owned outright – will be put to work serving Jeddah and Riyadh from its home base of Dammam. Saudia currently accounts for three-quarters of seating capacity on Dammam-Jeddah and one-half on Dammam-Riyadh, with Flynas providing the remaining share.

SaudiGulf will look to add one regional link in the near-term, with Dubai currently considered the front-runner. Parallel assessments are also under way to find a “suitable partner that covers our long-range international operation” through codeshare agreements.

Asked whether Gulf Air, Bahrain’s flag-carrier, might fit the bill, Majali said that Dammam-Manama is a “bit of a short sector” but in theory it could work as a feeder route.

Gulf Air already has close ties with Al Qahtani Group, having helped the conglomerate on a consultancy basis during GACA’s bidding process. It operates at least four daily flights on the Manama-

Samer Majali: “We expect that we will get the [operating] licence early in the new year and then we’ll do some soft operations in the first quarter.”



Dammam leg and, during his time heading up the company in 2009-12, Majali described Dammam as Gulf Air’s “second hub”. Nonetheless, he cautioned against reading too much into the relationship with his previous employer.

“It could be anybody,” he said of the hunt for a long-haul partner. “We don’t have anything with Gulf Air at the moment on the commercial level. We will seek any partner who adds value to us [and for whom] we add value to them.”

Further domestic routes will be added as SaudiGulf begins receiving 16 Bombardier CS300s in its second year, with Medina, Qassim, Abha and Tabuk identified as possible targets. The current plan envisages rapidly scaling up operations to reach a fleet of 10 units in 2017 and 20 in 2018.

Turning to the kingdom’s domestic fare cap,

Majali said that expanded competition should improve the health of the local sector and, in turn, allow GACA to dismantle the controversial mechanism.

He conceded, however, that weaning travellers off a subsidy that guarantees cheap flights would be difficult. “It is what it is. They can’t remove it immediately because it would be such an unpopular move,” he shrugged. “When new airlines come in people expect two things: one is that service quality will improve, which is what we’re trying to do. And then they also expect lower fares. But the fares are already very, very low in Saudi Arabia.”

GACA began taking cautious steps towards reform in 2014, loosening the fare cap to allow price hikes within 10 days of departure. It is promising to roll out further changes as part of a gradual evolution towards free-market pricing.

As with so much else in Saudi Arabia, though, disrupting the status quo can be an extraordinarily long-winded and bureaucratic endeavour. The kingdom’s last attempt at liberalisation, in 2006, had mixed results, delivering one now-bankrupt airline (Sama) and another that has yet to secure its first annual profit (Flynas).

Both SaudiGulf and Al Maha will be mindful of these challenges as they become the latest hopefuls to capitalise on Saudi Arabia’s massive air transport market. Having failed to get off the ground for three years running, all signs point to a long, hard slog ahead.



SaudiGulf’s A320 made a regional debut at the Bahrain Air Show in January.

Over the past few years, Royal Jordanian (RJ) has stopped flying to no fewer than 16 destinations.

It's a remarkable total; made more so by the fact that no fewer than eight points disappeared from the airline's route map because of security concerns.

Some of the destinations affected by violence, such as Mosul in Iraq, were relatively small in terms of revenue. But the conflict that engulfed Libya was much more significant to RJ, which flew to three destinations in the North African nation – Tripoli, Misrata and Benghazi.

Similarly, the decision to stop flying to Sana'a and Aden was significant; a surprisingly high percentage of RJ's traffic across the North Atlantic was made up of travellers going to and from Yemen.

In addition to these problems, the on-going conflict with Daesh in Syria and Iraq saw a drop of around 13% in foreign visitors to Jordan, as tourists avoided the region. The biggest falls came from Europe and Asia, whereas reductions in travellers from the Arabian Gulf were much lower, an indication that people in the region were more aware that Jordan remained calm despite the violence raging in neighbouring states.

Tough time

The airline has had a tough time recently, said president & CEO, captain Suleiman Obeidat.

"The past three years have been difficult. RJ had to change its routes to avoid flying over Syria. An example of that was changing the Amman-Beirut route, which added time to the flight and increased its operating costs. Moreover, closing Aleppo and Damascus, two very significant stations that used to feed the RJ network, affected our financial results.

"Royal Jordanian shut down 16 destinations on its network; eight cities were halted for security reasons, including Damascus, Aleppo, Benghazi, Tripoli, Misrata, Mosul, Sana'a and Aden, while the other eight cities – Alexandria, Milan, Delhi, Mumbai, Colombo, Lagos, Accra and Al-Ain – were closed for commercial reasons.

"The airline incurred losses, particularly because the region's instability coincided with high fuel prices."

Those losses amounted to roughly JD40 million (\$60 million) in 2014. However, for the first nine months of 2015, pre-tax profits amounted to JD27 million (\$38 million) compared to a JD15.7 million net loss (\$22.1 million) for the same period in 2014. Operating margin improved by around 8%, from -5% to

Few Middle East airlines have suffered as much from the region's current political instability and civil wars as Royal Jordanian. Alan Dron talked to president and CEO, captain Suleiman Obeidat, and sources within the airline to build up a picture of how the carrier is clawing its way back to profit.

Not-so-sweet 16 for RJ...

+3%, a major turnaround at a time when the carrier has lost several key markets.

A key role in this turnaround was attributable to the drop in fuel prices but they were not the sole reason said Obeidat. A five-year strategic plan put in place at the beginning of 2015 that focused on restructuring, increasing revenues and reducing operating costs, while also improving the quality of services offered by the carrier, had also been vital.

"Cost-control policy resulted in a reduction of operating costs in the first nine months of this year of 22% compared to the same period last year. In addition, the efficient fuel consumption of the 787s has played a role in attaining positive figures."

Ancillary revenues

According to an RJ source, who asked not to be identified, the airline has also pursued ancillary revenues much more aggressively over the past year, in areas such as baggage charges and 'plus grade', by which economy passengers can bid for business cabin upgrades. "We've also become much more savvy in understanding that you can't make money in certain months and the way to deal with it is to take out capacity and absolutely maximise capacity in peak season."

Meanwhile, said Obeidat: "The dropping of several destinations due to their weak operating results also meant that the fleet could be reduced."

Independent online databases show that an Airbus A330 and three Embraer E-195s left the fleet in 2015, preceded in 2014 by two A321s.

At December 2015 the fleet consisted of 26 aircraft: five Boeing 787-8s, two Airbus A330-200s, two A321s, six A320s, four A319s, two Embraer 195s, three Embraer 175s and two A310 freighters.

A major boost came with the arrival of the Boeing 787-8 – five were on strength by the end of 2015. These replaced the fuel-thirsty Airbus A340s. Against the twin-engined A330 the difference was smaller, particularly during a period of low fuel costs, but break-even point for the 787s remained lower.

As well as considerably improved operating costs, the Seattle products also gained considerable popularity among travellers, said Obeidat.

"The comment cards distributed to passengers show that they are very satisfied about this aircraft and its amenities, whether in crown or economy-class."

Improved comfort on long-haul services included factors such as more legroom and lower noise levels, together with latest generation in-flight entertainment system, with 17-inch touchscreens in crown and 10.6-inch touchscreens in economy.

More 787s are due to arrive through 2016 and up to 2018, which should increasingly feed through to the bottom line.

It is also understood that here are also plans to modernise the short-haul fleet, with a decision on a new type to replace both the A320 and Embraers likely to be taken in the next two years.

Competition from the major Gulf carriers, in



Suleiman Obeidat: He says that tight cost controls, lower fuel prices and better fuel consumption have contributed to improved finances. Top right: 787 interior mid-galley: Royal Jordanian's 787s have significantly improved the carrier's performance on long-haul routes and received praise from customers. Above: Royal Jordanian A320-200: the airline's short-haul fleet is made up of Airbus A320s, as seen here, and Embraer regional jets; a decision on replacing them is likely in the next couple of years.

particular, is growing strongly and one reason that RJ dropped several destinations in the Indian sub-continent was that its short-haul aircraft were pitched against much larger Boeing 777s and Airbus A380s on certain routes. RJ's load factors were high, but yields were so low that break-even point was beyond 100%, said the internal source.

Obeidat accepted that RJ was facing stiff competition, particularly in its home region, but believed that the airline's on-board service, its strategic geographic position and high frequencies to many Arab destinations were factors in its favour.

Low-cost carriers (LCCs) were another factor in the competition facing RJ.

"We are a full-service network carrier, focusing on providing a wide range of pre-flight and on-board services," said Obeidat.

"So, the segmentation of the passengers who choose our services is different from that of low-cost carriers. Additionally, regionally speaking, most of the traffic of the low-cost airlines is formed by passengers who used to travel by land."

The company source added that competition from low-cost carriers "continues to grow and it's something we need to keep our eye on, but the number of city pairs for LCCs is limited. There aren't enough markets with enough volume for them at the moment."

Tough time

Obeidat said that challenges facing RJ included the possibility that continuing unrest in the region would lead to a further reduction in the number of inbound tourists, high taxes imposed on tickets and increasing competition from carriers that have "expanded their capacity

to/from Jordan, while the local market is relatively small".

As for opportunities, he pointed to King Abdullah's endeavours to boost investment and promote air services between Jordan and other countries, aided by Jordan's stability and geographical position. Additionally, the country benefited from several different types of tourism: religious, medical, ecotourism, plus sports and adventure.

RJ's connections with prestigious airlines through the Oneworld alliance were also important, as were the passenger facilities of the new terminal of Queen Alia International Airport in Amman.

Meanwhile, new points have started to appear on the route network – the Turkish capital Ankara, Najaf in Iraq and Tabuk in Saudi Arabia.

RJ may not be able to control external crises, but it has no intention of being beaten by them.



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Artist's impression of the proposed equipment for Firas Airways depict a winglet-equipped Boeing 767; the Airbus A330 is also under consideration.

NICHE WORK IF YOU CAN GET IT...

A new UK-based start-up airline has plans for a 'halal-friendly' approach and services to under-served Middle East destinations. Alan Dron reports.

Firas Airways is the brainchild of UK entrepreneur Kazi Shafiqur Rahman. The founder and CEO of the planned carrier's aviation experience is limited to the airline catering sector.

To help get his new venture to the end of the runway, he has appointed the former CEO of Biman Bangladesh Airlines, Kevin Steele, as managing director. Steele has 30 years' experience in the airline sector.

Rahman, of Bangladeshi extraction, says the new airline will concentrate on a number of routes to Bangladesh and the Indian sub-continent, but he foresees a particular niche for religious tourism to the Middle East.

Most routes to the Middle East are already well served, he accepts. However, he believes that Jeddah/Medina are under-served, notably for the haj and umrah markets, and those destinations will feature on the initial route map.

Tehran is another target. Talks with airports in London, Birmingham and Manchester are under way, he says.

The airline will be 'halal-friendly' and family-orientated. This will mean no alcohol on board and passengers being offered halal food and Qibla indicators to indicate the direction of Mecca.

While Middle East airlines, such as Emirates, have obviously done extremely well by catering to all sectors of the market, he points out that the halal market is growing rapidly and other airlines do not always specifically cater for Islamic passengers.

Talks are under way with high-net-worth individuals to obtain funding for the new airline, says Rahman. Its management team is seeking \$50 million that will help buy or lease an initial three Boeing 767s or Airbus A330s. If all goes well, Firas Airways hopes to increase its fleet to 10 by 2020.

Other, more conventional, funding options would involve a lead bank and syndicating the total amount to be raised or "there could be an airline partner. We're in talks

with a number of Middle East airlines; it would be an equity partnership. They would buy the minority stake, to a maximum of 49%".

At a London press conference in early December, Steele said that targeting unserved or underserved destinations would merit a small yield premium.

"Not only do we anticipate high load factors with strong yields, but with a unique route structure we will be able to achieve extremely high aircraft utilisation of more than 15 hours a day, with spare aircraft available as a back-up," he said.

Innovative ways

"In addition, we will adopt innovative ways to interline with other carriers as soon as we commence operations, which is very important for new airlines."

According to Rahman, these could take the form of block space agreements.

The aircraft will be outfitted in a two-seat configuration for between 250-350 passengers and Rahman's team is looking at 'innovative' seating arrangements. These, he says, need not be in standard rows, but in a more scattered arrangement. "We've done the maths and have done a comparison with a normal 767."

Larger seats with better pitch than normal could be achieved "without losing revenue at all", he says, without going into details.

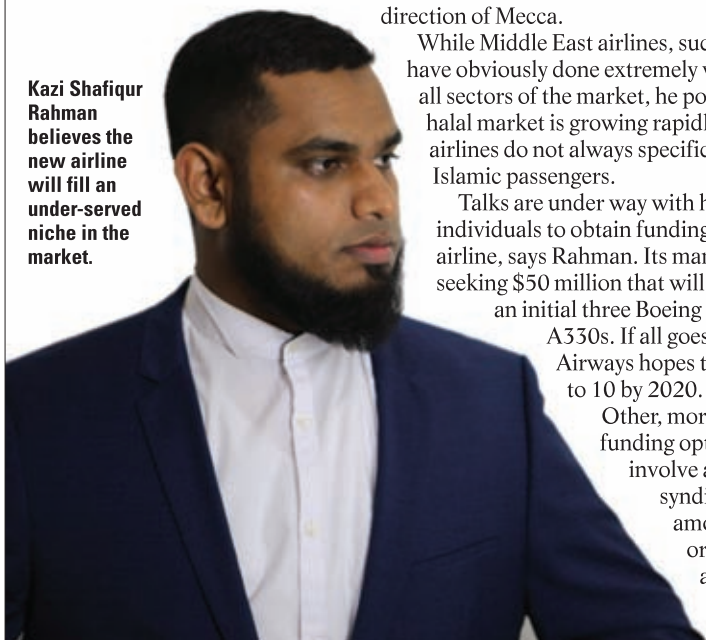
Rahman hopes to have Firas Airways operational by winter 2016, although any delays could see that slip to 2017.

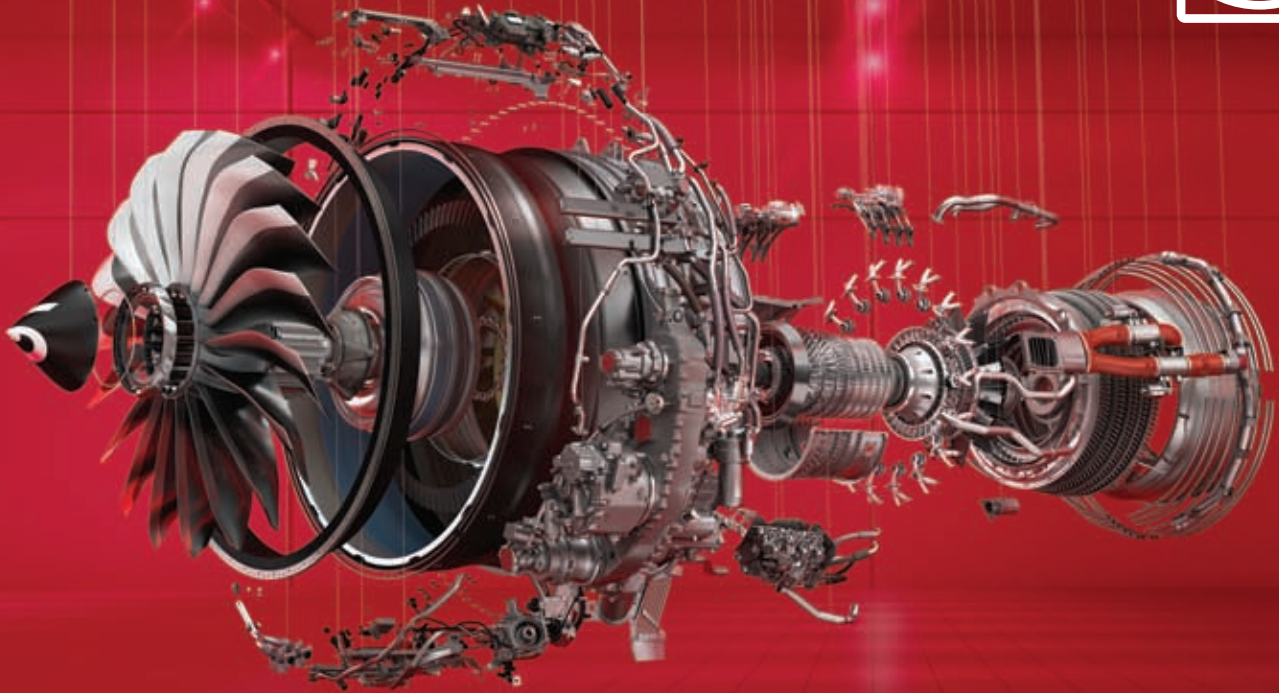
ABBAS IBN FIRNAS

Firas Airways is named after inventor, physician and engineer Abbas ibn Firnas, who took an interest in the phenomenon of flight and who, in the ninth century AD, was reported to have covered his body with feathers, strapped feather-covered wings to his back and launched himself off a hill in Andalusia in what is today Spain, but which was then part of the Arab world.

According to the Moroccan historian, Ahmed Mohammed al-Maqqari, writing some 700 years later, he performed his feat in front of several witnesses, who testified that he had flown 'a considerable distance'.

Kazi Shafiqur Rahman believes the new airline will fill an under-served niche in the market.





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ThalesRaytheonSystems

Alan Warnes meets Airbus Defence and Space's new head of military aircraft, Fernando Alonso Fernández, who is under tremendous pressure to sort out the A400M issues.

Tough test for Fernández



Airbus is hoping to export more than 300 A400Ms over 30 years. Right: Fernando Alonso Fernández.

ALL PHOTOS, ALAN WARNES

Airbus Defence and Space endured a tough time in 2015. Faced with 'financial consequences' owing to problems with the A400M, heads rolled – the most significant being Domingo Ureña-Raso, who had only taken over as head of military aircraft on January 1, 2014.

He was replaced by Fernando Alonso Fernández, previously the head of flight-test, who took up his new post on March 1, 2015.

The slow progress of the A400M, caused by technical hitches and production government, was said to be the main reason.

Bernhard Gerwert, CEO of Airbus Defence and Space, said at the time of Fernández's appointment that the new team would rapidly address existing problems in the most efficient way. The company believes the A400M can secure orders for several hundred aircraft, particularly with the Boeing C-17 ceasing production and only one of them remaining for sale.

There are contracts for 174 of the A400M

military airlifters – Belgium (7), France (50), Germany (53), Luxembourg (1), Spain (27), Turkey (10), the UK (22) and Malaysia (4), have all backed its development. Of these, five air forces are currently flying the aircraft, Germany (1), France (7), UK (5), Turkey (2) and Malaysia (1).

Several have cut their orders in the past, mainly due to delays with the programme, although in Spain's case it is due more to the tougher economic times the country is experiencing. It is now trying to sell the aircraft on.

If confronting all these issues was not enough, barely 10 weeks into Fernández's appointment, tragedy struck Airbus and the A400M. On May 9, the third aircraft for Turkey (MSN023) crashed shortly after take-off from the Seville-San Pablo facility. Four members of the flight-test team were killed and two seriously injured.

It was a major blow –

Continued
on Page 42



CONTINUED FROM PAGE 41

perhaps even a ‘baptism of fire’ for Fernández.

“A baptism of fire is a mild way of putting it,” he said. “It was a hell of a blow but I am very proud of the team’s reaction to determine the issues that caused it. No one was protective of their role; they were very open. Helping us to understand the problem was critical. Details will be revealed in the upcoming accident report.

“We have now re-started the flying programme, as have the nations operating the A400Ms. We were very concerned how the customers would handle it – but the Brits, French and Germans are now all flying them again. Deliveries have re-started too.”

To ensure the aircraft that had been delivered would continue to fly, the manufacturer issued an alert operator transmission (AOT) asking operators to carry out one-time specific checks on the electronic control units of each of the aircraft’s engines before their next flight. The AOT was based on internal analysis by Airbus, independent of the on-going official investigation.

“We have drawn a line under the accident now, internally and with our European customers,” said Fernández. “The AOT allowed the aircraft to fly and modifications to the full-authority digital engine control (FADEC) systems will be completed shortly, so it can be removed. We monitor all changes and continue to make improvements.”

Vast knowledge

Having joined the company in 1982, Fernández, a trained engineer, has vast knowledge of the A400M and other Airbus military programmes. He has been tasked with making the operation more efficient, pushing on with the industrialisation of the A400M and selling more aircraft. Quite an undertaking!

“Our focus is now mainly on the A400M – it is important for the company. We need to finish development of the capability in the next few months,” he said.

“The aircraft we are delivering today have a lot more functionality than the ones delivered earlier in 2015. They include air-to-air refuelling, tactical air drops and some degree of self-protection capabilities – not the full specification, but equivalent to other systems.”

When it comes to air-to-air refuelling and the subject of helicopters, Fernández bristles with indignation: “We keep hearing that it can’t refuel in the air. It can! It is an excellent tanker – it can act as a receiver from multi-role tanker transport (MRTT) and refuel fighters but right now it can’t refuel the helicopters.

“The only nation that needs to refuel helicopters is the French and, while the A400M cannot refuel them yet, we are working on it.”

Airbus might be working on it but, on November 12, the US Defense Security Cooperation Agency (DSCA) announced the State Department had approved a foreign military sale (FMS) to France of four C-130Js, including two KC-130J tanker/transports.

Undoubtedly the KC-130J order comes after

Visible on this Royal Air Force of Oman C295MPA are the two sideways-looking airborne radars and an electronic surveillance measure (ESM) unit. Airbus believes that integrating new specialised systems on the A330 and C295 could open up new markets.



slow progress with the A400M and its helicopter refuelling issues. With the French flying special forces EC 725 Caracal helicopters in North Africa, and possibly Middle East, it’s a priority.

“We are focusing a lot on issues and it looks like the aircraft has a lot of problems and it does have problems, but air-to-air refuelling is not one of them,” said Fernández.

“We have now cleared the aircraft for paratrooper jumping – free-fall from rear and side door – but we can’t yet do simultaneous jumps from both side doors because the aerodynamics could drag them around behind the aircraft and there is a risk of collision.

“On cargo drops, we can push out pallets and cargo containers but not the cargo pallets yet – we are working on this but expect it to be certified by end of the year.”

Hot weather trials

On possible exports, he said: “We are discussing the A400M with pretty much all the countries in the Middle East region – its been to Saudi Arabia and recently came to Al Ain in UAE for hot weather trials. We have many campaigns going on.”

Meanwhile, the A330MRTT has been a great success and 26 are now in service with four operators – the UK RAF has 11 plus one civil, the Royal Australian Air Force (RAAF) has five 5, the UEA Air Force and Air Defence (UAEAF&AD) has three and the Royal Saudi Air Force (RSAF) has six.

“All our A330MRTT customers are extremely happy with the aircraft,” said Fernández. “They are all working in the Middle East right now on combat operations. I expect there might be additional requirements from Saudi Arabia and the UAE, because they are using them so much in real ops. Both are delighted with the aircraft, just as Australia is, which is why they have ordered an additional two this year.

“The UAEAF&AD chief has been impressed with the aircraft’s reliability – ‘it just flies and flies’ he told us.

“It is a great aircraft – the fuel is in the wings and tail planes, leaving plenty of cargo space in the aircraft, making it ideal for a multi-role tanker transport.

“The RAAF is delighted and they have just carried out air-to-air refuelling clearances of the F-35 Joint Strike Fighter, with an impressive 460 contacts in the USA. It means the MRTT can refuel the F-35A, F-35B and F-35C now.”

Dominating the market

In the light/medium airlift market, Fernández was also bullish. “We are dominating the market with C295. It’s simple, not so sophisticated, robust, proven, cheap and easy to operate,” he said. “Plus we are now integrating special missions, like C295 Multirole Patrol Aircraft and opening up different markets.

“We are focusing on putting newer capabilities on the C295 and MRTT, like intelligence, surveillance and reconnaissance (ISR) equipment. If the MRTT is sitting there flying around, it might as well be used for something else, like listening.

“The world is changing quickly, as we are seeing in the Middle East, but we have to define how the products evolve and what products are needed. We have to sort out the A400M, but also have a strategy of evolving other aircraft, including the Eurofighter.

“Airbus is involved in military and space business, so we might be able to combine both effects and we all know how important it is to share information. Every aircraft should be involved in network-centric warfare and Airbus is ideally placed for this.

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*Beechcraft is targeting Iraq
as the potential launch
customer for its AT-6
Wolverine light attack and
ISR aircraft.*

Jon Lake reports.

Hungry like the Wolverine

A letter of offer and acceptance for six Beechcraft new light-attack turboprops was reportedly prepared for the Government of Iraq in November 2015, following US State Department approved a possible deal for up to 24 aircraft in May.

It is understood that the 24 AT-6s would be delivered in increments of six aircraft.

Securing a launch customer will allow Beechcraft to begin the process of military type certification for the Wolverine, which should make the aircraft more attractive to foreign buyers.

The company is believed to be exploring the possibility of using the new non-Department of Defense military aircraft airworthiness accreditation programme – a US Air Force (USAF) initiative that will allow companies to self-fund the certification process.

The Wolverine is a structurally strengthened derivative of the T-6 Texan trainer and was purpose-designed for a range of missions including training, manned intelligence, surveillance and reconnaissance (ISR), and light precision attack. As such, the aircraft is built on what Russ Bartlett, president of the Beechcraft Defense Company, calls “the good bones of the T-6 trainer”.

The basic T-6A Texan was developed to meet a requirement for a replacement for the USAF T-37B and the US Navy T-34C in the basic training role. Beechcraft has built, or has orders for, a total of 900 T-6 Texans for nine customer nations, in a number of sub variants.

The US Navy T-6B added a digital glass cockpit with six multi-function displays, hands on throttle and stick (HOTAS) controls and a head-up display (HUD), while the CT-156



Russ Bartlett: “The Wolverine cockpit “represents a very ‘F-16 like’ environment.”

Harvard II, used by Canada, also featured a glass cockpit.

Twenty Hellenic Air Force T-6A NTAs are capable of carrying external fuel tanks and a range of unguided weapons, while retaining the federated analogue cockpit of the USAF’s T-6A. Morocco’s T-6C has under-wing hardpoints and a glass cockpit, while the Mexican T-6C+ adds further weapons capabilities.

The AT-6 Wolverine is a strengthened and further improved version of the Texan, powered by a 1,600shp Pratt & Whitney Canada PT6A-68D engine. This gives it an unequalled power-

to-weight ratio among turboprop light attack aircraft, and translates into what Hawker Beechcraft claims to be a higher airspeed and Mach envelope for the carriage and employment of external stores than is available on any other aircraft in its class.

The Wolverine also offers proven US avionics systems, sensors and high-end data link equipment, which makes the aircraft fully compatible with US joint terminal attack controller (JTAC) voice/digital capabilities and confers interoperability in US and NATO command and control environments.

Furthermore, with its Federal Aviation Administration-certified CMC Esterline Cockpit 4000 avionics, and Lockheed Martin A-10C mission system, the Wolverine cockpit “represents a very ‘F-16 like’ environment, with a very similar pilot/vehicle interface, resulting in a cockpit that would be familiar to any F-16 pilot”, according to Bartlett.

The aircraft is equipped with an L3 Wescam MX-15Di turret, which gives it an organic capability to find and designate targets, which it can then engage using a wide range of precision-guided weapons.

Today’s Wolverine was originally developed to meet the USAF’s light attack and armed reconnaissance (LAAR) requirement of July 2009. This aimed to produce a dedicated light attack aircraft that would cost less than \$1,000 per hour to operate, as an alternative to using fast jets that cost tens of thousands of dollars per flying hour. The competition was originally expected to result in a \$2 billion order for up to 100 aircraft, some for the USAF itself and some for supply to those US allies who were conducting their own counter-insurgency



The Wolverine is a structurally strengthened derivative of the T-6 Texan trainer.

campaigns, but who had neither the budget nor the expertise to operate aircraft like the F-16.

Beechcraft flew the first of its company-funded AT-6 prototypes on September 10, 2009. The aircraft was powered by a 1,100shp engine and was heavily instrumented.

The second, production-representative, AT-6B prototype first flew on April 5, 2010. This was the first AT-6B to be powered by a 1,600shp engine, and the first with the new mission avionics suite.

In November 2011 it was announced that the Beechcraft AT-6B had been excluded from the LAAR competition and the USAF announced that the Embraer A-29 had been awarded the contract on December 30, 2011.

Selection of the Brazilian aircraft prompted a series of protests from Beechcraft, initially forcing work on the A-29 to stop.

The A-29 was re-awarded the contract on February 27, 2013 and, though Beechcraft again challenged the award, the United States Court of Federal Claims upheld the USAF's decision to proceed.

In its protests, Beechcraft pointed out that the USAF was spending more than \$125 million extra (over 40%) for what it labelled as a "less capable, foreign-manufactured airplane with weapons and systems unfamiliar to, and outside the control of, the United States military".

It charged that the requirement had been "written to favour the competition's aircraft" and questioned "whether the Embraer aircraft, with its foreign-made weapons, could be certified to US military standards in time to provide the mission-capable aircraft per the contract".

Beechcraft said that the AT-6 met all threshold

and five of seven objective requirements, while enjoying better take-off, climb and cruise performance, carrying more fuel, and carrying an electro optical/infrared (EO/IR) turret without sacrificing a weapons station. The manufacturer pointed out that rough field, grass and gravel runway capabilities had all been successfully demonstrated.

When the US Government Accountability Office (GAO) commented on the contract award, however, it claimed that, in order to meet its targets, the AT-6C would have had to experience a 40% increase in maximum gross take-off weight, noting that anything over 20% would impose a serious risk of certification delays.

Exceptional but high risk

The GAO revealed that the AT-6C was rated as exceptional, but 'high-risk', while the A-29 was rated as exceptional and 'low-risk'. When the decision was made in 2011, there were just three AT-6s flying – all prototypes, compared to 166 A-29s, which already had a long operational career.

The LAAR decision clearly still rankles with Bartlett, who said at the recent Dubai Airshow: "We had a superior aircraft that was 100% technically compliant and for 30% less money." He pointed out that it had been "a tough decision to protest a decision by our biggest customer".

Bartlett, an extremely experienced former Hornet pilot, said that Embraer's claimed advantages (internal cannon in the wings, a wider-track, longer wheelbase undercarriage with big, low pressure tyres, a quieter five-bladed prop, a bigger, taller, wider canopy and a forward-mounted AN/AAQ-22 Star SAFIRE II

surveillance and targeting turret) were "not a combat discriminator". He expressed the opinion that he would prefer to be delivering precision-guided weapons from height rather than trying to engage them with guns 'down in the weeds'.

In the end, losing the LAAR competition did not mean losing out on orders running into hundreds of aircraft. Instead, just 15 aircraft were to be ordered for stateside training of allied pilots under LAAR, while just 20 Embraer A-29 aircraft were ordered for supply to the Afghan Air Force under the light air support (LAS) programme, with six more for the Lebanese Air Force.

The USAF abandoned plans to stand up a dedicated counter-insurgency (COIN) air wing and the A-29 seems destined to remain a little-known rarity in USAF service. Without the boost in credibility that a large USAF order would have endowed, the A-29 and AT-6 seem destined to slug it out for what remains of the light attack and ISR market.

Beechcraft has continued to develop and promote its own light attack offering, and a third AT-6 prototype/demonstrator flew in August 2013.

It was this aircraft that was displayed at the Farnborough International Airshow in 2014, and at Paris, the Royal International Air Tattoo and the Dubai Airshow this year.

Beechcraft remains confident in the Wolverine, which, it says, offers its operators a robust and interoperable air power solution at a fraction of the cost of traditional (fast jet) tactical aircraft, with lower operating costs and greater versatility than unmanned aerial systems.

Iraqi pilots are now flying the Korea Aerospace Industries (KAI) T-50 advanced trainer aircraft, prior to first deliveries beginning in April 2016, while deliveries of Czech L-159 light attack and training aircraft began late in 2015. Jon Lake reports.

Iraqi pilots make a Korea change

The KAI T-50 was selected by Iraq after evaluation of the BAE Systems Hawk, the Yakovlev Yak-130 and the Aero L-159.

Iraq placed a \$1.1 billion order for 24 aircraft in 2013 and plans to use the Korean-made Golden Eagle, locally designated as the T-50IQ, as a lead-in fighter trainer (LIFT) for aircrew destined for the air force's new frontline Lockheed Martin F-16IQs.

KAI will provide follow-on support for the fleet for 20 years, which is expected to bring the eventual total value of the contract to more than \$2 billion.

Though designated as the T-50IQ, the aircraft for Iraq are not based on the advanced trainer T-50 version of the Golden Eagle used by South Korea, Thailand and Indonesia. Instead, they are based on the FA-50 all-weather light attack version, originally known as the A-50, which first flew in 2011. The FA-50 is used by the Philippines and South Korea.

The new variant offers more robust operational capabilities and has a built-in 20mm cannon and the ability to carry up to 4,500kg (9,910lb) of weapons, including air-to-air missiles and smart air-to-ground weapons like joint direct attack munition (JDAM).

Radar warning receiver

The FA-50 also has a more capable Elta EL/M-2032 mechanically-scanned array fighter radar, instead of the AN/APG-67 used by T-50 variants. It also features radar warning receiver (RWR) night vision imaging system (NVIS) and LINK-16 datalink equipment, as well as larger multi-function displays (MFDs) in the cockpit.

The first T-50 trainer aircraft for the Iraqi Air Force (IQAF5001) made its maiden flight at KAI's production facility in Sacheon on July 13 2015. The aircraft then began an intensive flight-test programme, which is intended to lead to production deliveries from April 2016.

All 24 T-50s are due to be transferred within 12 months of the first deliveries in April 2016.

The deal also covers training and, in September 2015, Iraqi fighter pilots started training at the Pakistan Air Force Academy (PAFA) at Raisalpur. They underwent training



on the CATIC K-8 Karokorum before heading to Korea to start working on the T-50.

Despite their expanded operational capabilities, the Iraqi FA-50s are expected to operate in the advanced and LIFT roles, and not in light attack or close air support.

It is believed that these tasks will be undertaken by the Czech L-159 advanced trainer and light attack aircraft that have also been purchased by the Iraqi Air Force – although the L-159 originally lost out to the Korean trainer when an offer to sell Iraq 28 L-159s fell through in 2013.

The current batch of L-159s has been ordered more recently, under what amounts to an urgent operational requirement in the face of the growing threat from Daesh terrorists.

Single large batch

It is believed that the L-159s will be delivered as a single large batch, spread over a matter of weeks, rather than months.

On November 5 2015, Khalid Al-Obeidi, the Iraqi defence minister, confirmed that the Iraqi Air Force has received the first of its Aero Vodochody L-159A light attack and training aircraft from the Czech Republic. The third and fourth aircraft (5903 and 5904) were photographed as they transited via Plovdiv in Bulgaria, and these arrived at Balad Air Base on November 5.

The Czech Ministry of Defence cleared the sale of 11 surplus and four active-duty L-159s to Iraq in April 2015. These will consist of 10 single-seat L-159A Advanced Light Combat Aircraft (ALCA) light attack aircraft, and two L-159T1 two-seat trainers, as well as three airframes destined for use for spare parts. The L-159T1s are modified single-seat L-159A airframes taken from storage.

These aircraft will give the Iraqi Air Force a fleet of more than 100 'training' aircraft, including 12 Cessna 172 elementary trainers/screening aircraft, 20 PAC Mushshak primary trainers, 20 Serbian UTVA Lasta 95N piston-engined aerobatic, tandem seat basic trainers, 15 Hawker Beechcraft T-6A turboprop tandem-seat basic trainers, as well as the 24 T-50IQs and 12 L-159T and L-159A aircraft.

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The UAE has signed a \$1.27 billion contract with Saab to expand and enhance its airborne surveillance capabilities. Jon Lake reports.

The Erieyes have it...

The deal, signed at the Dubai Airshow, covered the procurement of two new Bombardier Global 6000 aircraft equipped with Saab's Erieye multi-mission system, as well as the upgrade of the UAE Air Force and Air Defence's (UAEAF&AD) two existing Saab 340 Erieye airborne early-warning (AEW) aircraft.

The selection of the Global 6000 and Erieye follows a long and hard-fought three-way competition between Saab, Boeing (offering its Boeing 737 AEW&C) and Northrop Grumman (offering the E-2D Hawkeye), which began in 2006 when the air force issued a request for proposals.

In November 2009, the UAE ordered a pair of Saab 340 turboprops, equipped with Saab Erieye radar systems, to serve as interim AEW aircraft and to allow the UAE AF&AD to develop tactics, procedures and doctrine, while it continued to evaluate candidates to meet its long-standing "full" AEW requirement.

The two ex Swedish Air Force aircraft were delivered to the UAE in mid-2010 and April 2011 after receiving unspecified modifications.

Many expected that the longer-term AEW/surveillance requirement would be filled only after the UAE finalised its selection of a new fighter. But, after exhaustive evaluation and analysis of the competing proposals, the UAE unexpectedly announced its selection of the Erieye system on November 9.

The decision had been foreshadowed by a heavy hint dropped by brigadier general Staff Pilot Rashed Al-Shamsi, the commander of the Khalifa Bin Zayed Air College, who told delegates at the Dubai International Air Chiefs Conference on

November 7 that the UAE AF&AD's new C2 platforms would "provide more overhead surveillance and share early warning capabilities" and "allow for a rapid flow through of information for sensor to shooter".

The new Erieye-equipped aircraft will be designated by the UAE as swing-role surveillance systems (SRSSs), and should be delivered "within two years", according to Abdulla al Hashimi, executive director for UAE's military communications at the Dubai Airshow.

Although exact details of the new configuration have not yet been made public, the primary Erieye system gives air-to-air, air-to-ground and air-to-sea modes and the new aircraft are fitted with a secondary maritime/ground surveillance radar, carried in a fairing beneath the fuselage and a turreted electro-optical/infrared (EO/IR) sensor beneath the nose, as well as an electronic-warfare suite with electronic support, threat-warning and countermeasures dispensing subsystems, an identification friend or foe (IFF) subsystem, and comprehensive command-and-control (C2) capabilities.

Swing role

Together, these systems will combine to provide a true "swing-role" capability, according to Micael Johansson, head of Saab's electronic defence systems business unit.

The UAEAF&AD indicated that the existing Saab 340s would be upgraded to what it called "a comparable standard".

By comparison with the existing Saab 340s, the Global 6000s will provide increased endurance, greater capacity for more sensors and

crew, and (with a service ceiling in standard business configuration of 51,000ft) the aircraft will be able to fly higher and see further.

The aircraft will be equipped with a new evolution of the Erieye radar, using an active electronically scanned array (AESA) that is physically the same size as that on the existing Saab 340s, probably incorporating new Gallium nitride (GaN) semi-conductor technology, like Saab's recently launched Giraffe family of ground-based radars.

The Erieye has been continually expanded in capability since it was first developed as an AEW sensor.

"We have undertaken a spiral development from one generation of Erieye to the next," said Lars Tossman, Saab's head of airborne surveillance systems. "This has resulted in a top-notch multi-role platform for air, ground and sea surveillance, equipped with a suite of sensors, and capable of detecting even the smallest targets, such as jet skis."

Though it was originally designed to meet a uniquely Swedish Cold War requirement, the Ericsson Microwave Systems (Saab Microwave Systems since 2006) Erieye early warning radar has since been adopted as a modern solution to a broad range of international AEW and airborne warning and control system (AWACS) requirements, carried by a number of different aircraft platforms.

The Swedes adopted a minimally-manned operational concept, with mission systems operators being ground-based and receiving the radar's picture via datalink. "You don't need to have [airborne] operators," explained Saab's Sten Söderström, "but you can put them in if you go out-of-area."

Upgrades to the existing system on the Saab 340 was part of the deal,



Other operators have adopted a more traditional approach, with systems operators on board the aircraft.

The Erieye radar is a multi-mode AESA pulse Doppler radar, with fixed, back-to-back side-looking arrays covering a 150-degree broadside sector, on both sides of the aircraft. The Erieye has some ability to detect aircraft in the 30-degree fore and aft sectors, but cannot accurately track them in these narrow sectors.

As an AESA radar, it has simultaneous air-search and surface surveillance capabilities that conventional mechanically-scanned radars cannot match.

Upended plank antenna

The fixed, phased array, 'upended plank' antenna is much easier to integrate from a structural and aerodynamic point of view than a traditional rotating rotodome, though its weight of 1,985lb (900kg), and 29ft 6.3in (9m) long radome, does impose constraints on the size of aircraft that can carry it.

The prototype Erieye radar system first flew in 1987 on board a twin-engined Fairchild/Swearingen Metro aircraft. Production of the radar started in 1993 following an order for six for the Swedish Air Force, mounted on Saab 340s (ordinarily a 33-seat twin turboprop commuterliner/light regional airliner), which were given the Swedish military designation S 100B Argus. They entered service in 1996.

Export customers were quick to see the potential of the Erieye system, though different customers selected different aircraft platforms with greater interior volume and higher performance than the Saab 340.



The Erieye radar has also undergone a continuous evolution, gaining new features and capabilities and improved performance. Virtually all of its components have been changed since the Swedes deployed the first Argus in 1996, and all of the computer systems have been replaced by commercial-off-the-shelf-based items to allow for greater computing power (an estimated 100-fold increase) and for more cost-effective and rapid future upgrades.

Power output has also been increased, while power and cooling requirements have been reduced. The overall system weight is 53% less, while the floorspace footprint has been cut by an astonishing 78%.

At the same time, radar performance has been improved. Coverage has been increased to 150-degree sectors on each side (from 120 degrees on the original Swedish aircraft), still with a one-degree beam width, and the radar now offers a fully fused air/sea capability. Erieye can spot maritime targets as small as jet-skis, and has the ability to detect hovering helicopters.

Håkan Buskhe, president and CEO of Saab said: "The new version of Erieye is, without a doubt, the most capable AWAC on the market."

He added that the company's ability to develop high-technology, customer-focused solutions was founded on the emphasis it placed on research and development. "This is the right way to ensure continued competitiveness on the defence market," he said.

Company spokesman Robert Hewson observed that the UAE was the launch customer, the lead customer and also the reference customer, having looked long and very hard at the various options before deciding that Saab was the best option.

The company said that the UAE had been a strong partner in developing this new capability, which it now hopes to export more widely.

Leverage to move forward

Simon Carroll, president and general manager of Saab Middle East, expressed his hope that "the UAE's decision will resonate with other Gulf Cooperation Council states and will give us the leverage to move forward".

The Erieye system is now used by Sweden, Thailand, the UAE, Brazil, Greece, Mexico, Pakistan, and Saudi Arabia (though the latter is still coyly reported as 'Country X' on some Saab presentations!). It has also served as the inspiration for a similar system now being deployed in India.

This community of eight users (with a total of 31 aircraft delivered) makes Erieye one of the world's most widely used AEW/AWACS solutions, and further sales seem likely.

Work on the new SRSS systems will be carried out at Saab's facilities in Gothenburg, Linköping, Järfälla, Arboga and Luleå in Sweden and at Centurion in South Africa.

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Jon Lake takes a look at some of the major defence initiatives taking place in the Middle East North Africa region.



The Force Aérienne de la République de Tunisie (Tunisian Air Force) is upgrading its Northrop F-5E/F Tiger II fleet, rather than replacing these elderly fighters.

Tunisia getting Hawkish with the militants

Tunisia is making real efforts to combat militant extremism, strengthening its borders and providing a 35% increase in funding for the army and police forces.

The USA and Germany have also provided training, grants and equipment to the Tunisian armed forces.

With the main emphasis being on counter-terrorism and counter-insurgency, the Tunisian Air Force's most important acquisition has been that of 12 UH-60M Black Hawk helicopters, eight of which are being delivered ahead of schedule in an effort to bolster the nation's ability to combat terrorist groups, including militant groups that have 'spilled' across the border from neighbouring Libya.

The most important threat is posed by Ansar Al Sharia, an offshoot of Al Qaeda in the Islamic Maghreb, which has recently switched its allegiance to the so-called Islamic State, effectively establishing a North African arm of Daesh.

The priority given to counter-terrorism and counter insurgency has prevented any meaningful improvement in Tunisia's fast jet capability, which has always been primarily tasked with air defence, and whose air-to-ground capabilities are modest.

As a consequence, the Force Aérienne de la République de Tunisie (Tunisian Air Force) is upgrading its Northrop F-5E/F Tiger II fleet, rather than replacing these elderly fighters.

Tunisia received eight F-5E and four F-5F aircraft between 1984 and 1985 and these were augmented by five ex-US Air Force F-5Es in 1989. Several have been lost in accidents, including at least two F-5Es and one F-5F. Twelve survivors are understood to remain active with 15 Squadron at Bizerte-Sidi Ahmed Air Base.

The F-5 is Tunisia's primary air defence aircraft. Other combat-capable Tunisian Air Force fixed-wing aircraft include 10 MB-326K/L armed trainer/light attack aircraft, nine L-59T advanced trainers (which also have a rudimentary combat capability), together



The Tunisian Air Force's most important acquisition has been that of 12 UH-60M Black Hawk helicopters.

with 15 propeller-driven, piston-engined basic trainers, including 12 weapons-capable SF-260WTs and six unarmed SF-260Cs.

On September 16 2015, the US Department of Defense announced the placing of a \$32,458 million foreign military sales contract with the Northrop Grumman Systems Corporation in Florida for an upgrade to 12 surviving Tunisian F-5s, with new

avionics and maintenance repairs. The so-called Block 1 avionics upgrade will include the installation of Northrop Grumman's LN-260 navigation system.

Work will be contracted via the US Air Force Life Cycle Management Center at Hill Air Force Base, Utah, and work will be performed at St Augustine, Florida, and in Tunisia. The programme is expected to be completed by December 30 2018.



Egypt snaps up 50 Alligators from Russians

Egypt has awarded Russian arms export agency Rosoboronexport a contract for 50 Kamov Ka-52 Alligator combat helicopters, for delivery between 2016 and 2018.

The Ka-52 (code-named 'Hokum' by NATO) is an all-weather attack helicopter derived from the Ka-50 'Black Shark' that was developed in the late 1980s.

Use of Kamov's coaxial contra-rotating rotor system means that the aircraft does not need a traditional anti-torque tail rotor (which typically uses up to 30% of engine power), and allows a more compact airframe than would be expected for a helicopter in the same weight and capability class.

The configuration also has other advantages – allowing a smaller rotor with slower-moving rotor tips, which means higher maximum speed can be reached.

Unlike the original single-seat Ka-50, the Ka-52

features two crew side-by-side, the second crewmember having been added to manage the expanded sensor suite, which includes nose- and mast-mounted radar systems, as well as electro optical/infrared (EO/IR) sighting systems.

Unusually for a helicopter, the crew sit on NPP Zvezda K-37-800 ejection seats.

The Egyptian Ka-52s will be to the latest standards, with a Research and Production Corporation Precision Instrumentation Systems (JSC SPC CPR) ECO-52 EO turret-mounted sensor system in place of the existing GOES-451 sensor turret. This is compatible with Vikhr and Ataka laser-guided missiles.

Egypt has also bought the two 21,300 tonne Mistral class landing ships (the Vladivostok and the Sevastopol), which were originally built by DCNS/STX France for Russia but were then embargoed following Russia's annexation of Crimea. France and Russia

subsequently agreed that the ships would be sold to Egypt, after the removal of certain equipment.

It is expected that Egypt will want to base Kamov Ka-52K Katran helicopters (the shipboard/maritime version of the Ka-52) on board the ships, which could each carry 16 helicopters. It is not clear whether these would be additional to the 50 Ka-52s on order, or whether some or all of the batch would be delivered to Ka-52K standards.

The Ka-52K was developed especially for use on board the Mistral class ships by the Russian Navy, which ordered 40, with options on 28 more. The first Ka-52K flew on March 7 2015.

The Ka-52K featured special anti-corrosion treatment, folding rotor blades, folding wings and life-support systems for the crew. The aircraft was also fitted with a new fire-control radar with maritime modes, capable of supporting advanced anti-ship missiles.

Adcom to expand in UK, India, and Saudi

Abu Dhabi's Adcom Systems used the Dubai Airshow to announce that it plans to start manufacturing and flying its aircraft in the UK and that subsidiaries in other countries will follow – with India and Saudi Arabia targeted.

Adcom has partnered with the British company DO Systems (DOS) to construct and test-fly unmanned aerial vehicles (UAVs) in the UK. DOS CEO Ian Griffiths has been appointed as Adcom UK's manager.

DOS offers a range of airborne surveillance solutions based around the DA42 Diamond manned aircraft from its base at Bournemouth's Hurn Airport, which is where Adcom's UK operation is headquartered.

Adcom expects its signature aircraft, the S-shaped, tandem-winged United 40, to make its first UK flight as early as February 2016, initially operating from the QinetiQ airfield at Llanbedr, north Wales, in one of the Welsh blocks of airspace that have been created to permit UAV flights.

Adcom's founder and chief designer, Dr Ali Al Dhaheer, said that he was: "very impressed" with the Welsh Government and the people there.

"They're eager to have the technologies of

unmanned aircraft. It's progressing very well," he said.

Griffiths explained that Adcom UK has been watching the Watchkeeper team "pave the way" with airspace allocation, usage and acceptance by general aviation, but pointed out that the United 40 would be "the largest unmanned aircraft to be seen in those skies".

Adcom will equip the aircraft with a sense-and-avoid capability, using a system that has undergone trials on a Diamond platform undertaken in another unspecified country. A final manufacturing location has yet to be decided, but an initial facility is under construction in Wales.

A Welsh flag on the rear fuselage of Adcom Systems' new Yabhon Flash-20 UAV may offer a clue as to which of the company's products might be produced and flown in Wales. The Yabhon Flash 20 is the smallest of Adcom's UAVs, at about 1.5 tonnes maximum take-off weight. But the aircraft's small size is not reflected in its performance figures. "I call that aircraft a whale tracker – it flies for 60 or 70 hours, which would be nice for whale tracking," Dhaheer said.





Airbus displays medium utility helicopter mock-up

Airbus Helicopters displayed the mock-up of its innovative new 12-passenger H160 medium utility helicopter (formerly known as the X4) at the Dubai Airshow.

The new type is intended as the replacement for the Dauphin family of helicopters, which have sold particularly well in the Gulf Cooperation Council and wider Middle East North Africa region, and will sit between the H145 (formerly EC145) and the H175 (formerly EC175) in the company's product line.

Airbus Helicopters is initially promoting the H160 primarily to the offshore oil and gas support market, with VIP, emergency medical services, search and rescue, and military variants planned to follow.

Guillaume Faury, Airbus Helicopters chief executive, has described the H160 as "the AW139 killer", claiming that the all-composite aircraft will deliver the same basic performance as the rival AgustaWestland AW139 while being a tonne lighter, and offering 15-20% lower direct operating costs.

The H160 was formally launched at Heli-Expo in

Orlando, Florida on March 3 2015 and the first prototype made its maiden flight on June 13 2015.

This aircraft is powered by Pratt & Whitney Canada PW210 engines, while the second prototype is using Turbomeca's new Arrano 1A engine, which will now be the sole source engine for the aircraft.

Features of the H160 include Blue Edge active tracking rotor blades, with an innovative double-swept shape that reduces the noise by 3-4dB and which increase the aircraft's effective payload by 100kg (220lb), as well as reducing vibration to "near jet" levels of smoothness.

The aircraft is also fitted with a biplane stabiliser, which promises greater low-speed stability, while the canted fenestron anti-torque tail rotor reduces noise and produces an extra 80kg of lift. Plans for a fly-by-wire control system were eliminated on cost and weight grounds.

Certification and entry into service of the H160 are today scheduled for 2018, with the military-orientated H160M following in 2022.



Sikorsky celebrates historic 2015

Last year was a big one for Sikorsky Aircraft, which changed owners and celebrated the first flights of two new helicopter models.

Lockheed Martin completed its acquisition of Sikorsky Aircraft on November 6 2015. The former United Technologies company is now aligned under the Lockheed Martin Mission Systems and Training (MST) business segment, and officially known as Sikorsky, a Lockheed Martin company.

During the official welcoming ceremony, Marillyn Hewson, Lockheed Martin's chairman, president and CEO, said: "Lockheed Martin and Sikorsky share a legacy of innovation and performance that has shaped the history of aviation for more than a century. Together, we are even better positioned to provide the best value for our customers, employees and shareholders."



Marillyn Hewson.

Sikorsky also completed the maiden flights of two new aircraft in 2015. Making two first flights in one calendar year is very unusual in the rotorcraft industry and the last time Sikorsky achieved this in a single year was in 1974.

The debutantes were the S-97 Raider next-generation experimental compound helicopter, which took to the air on May 22, and the CH-53K new generation heavy lift helicopter, which made its first flight on October 27.

Back in 1974, the aircraft making their debuts were the YCH-53E Super Stallion, which flew on March 1, and the YUH-60A Black Hawk, which made its maiden flight on October 17.

Today, 41 years later, the Sea Stallion is still in service and the Black Hawk is still in production. Interestingly, examples of each were on show at the Dubai Airshow, with a US Navy MH-53E and a UAE Joint Aviation Command UH-60M in the aircraft static park.

The UH-60 Black Hawk remains a strong earner for Sikorsky, contributing to the \$3.88 billion that the company earned from defence sector sales in 2014, although this figure was not quite enough to stop Sikorsky from slipping into second place among defence helicopter manufacturers, according to figures in a recent report by the Stockholm International Peace Research Institute (SIPRI), which credited Russian Helicopters as having raised \$3.89 billion from defence sales during the same period.

After 44 years as an independent nation, the UAE's Union Defence Force has reached full maturity, having progressively gained new competences, capabilities and credibility over the years. Jon Lake reports.

UAE force shows its strength in Yemen



Originally established as a linked band of self-defence and parapublic police forces in the seven individual Emirates, the UAE's armed forces have developed into full-spectrum military fighting units that are widely admired for their professionalism and ethos, with real expeditionary and out-of-area capabilities.

In recent years, those armed forces have been tested in battle in Iraq and Libya, and in peacekeeping operations in Afghanistan and Kosovo.

The UAE Air Force and Air Defence (UAE AF&AD) has been especially active in these operations and, more recently, in the US-led airstrikes against Daesh (Islamic State of Iraq and the Levant) targets inside Syria (known to some of its participants as 'operation shader').

Since March 2015, the UAE AF&AD has played a major role in the Saudi-led air campaign to restore state authority after Houthi fighters deposed president Abd Rabbuh Mansur Hadi and effectively took control of much of Yemen. This was initially known as 'operation decisive storm', and later as 'operation restoring hope'.

The UAE AF&AD deployed Lockheed Martin F-16E/F Desert Falcons and Dassault Mirage 2000-9s to Khamis Mushayt in Saudi Arabia for airstrikes against Houthi targets, while the air force's new A330 MRTT tankers

were used to support fast jets from all of the coalition partners.

The C-17 and C-130J transport fleet has also been heavily committed to the operation, and it is believed that the new Saab 340 Erieye airborne early warning (AEW) aircraft have also been involved.

The UAE AF&AD also deployed at least six of its Iomax-converted AT-802 Border Patrol Aircraft (BPA) to Jizan Regional Airport in the Saudi border town of Jazan (close to the Yemen border, about 200 miles north-east of Sana'a), probably to support UAE special forces operating inside Yemen.

Final swansong

The Yemen operation may be a final swansong for the UAE's Block 1 and Block 2 BPAs, which are in the process of being replaced by 24 new Iomax Archangels. Though only three Archangels have been delivered so far, the UAE has already transferred six Block 1 BPAs to Jordan and is understood to have donated more to forces in Libya.

These aircraft were equipped with Iomax's proprietary centreline pod, which contains a FLIR/EO/laser designator turret, a datalink, and probably missile-warning and countermeasure systems. They were armed with Roketsan Cirit laser-guided rocket pods and

GBU-12 or GBU-58 Paveway II 500lb laser-guided bombs.

The campaign in Yemen has been characterised by the extensive use of unmanned systems and the UAE deployed two of its 6-8 Boeing Insitu RQ-21 Integrator systems to Yemen, making the type's combat debut. The Integrator is a larger, twin-boom derivative of Boeing Insitu's earlier Scan Eagle UAV.

The UAE Army also deployed its Schiebel S100 Camcopter and Denel Seeker UAVs to Jizan, from where all three types flew intensive missions. The Integrators flew 360 hours in 30 days – roughly three or four times their normal flying rate.

The UAVs were used for artillery spotting, bomb damage assessment and for 'pattern of life' observation, maintaining round-the-clock overwatch of villages suspected of harbouring enemy fighters, using electro-optical sensors. Though the Integrator has a central bay capable of accommodating synthetic aperture radar, signals intelligence payloads, or extra fuel, the UAE aircraft are believed not to exploit this – or at least not to carry any US-supplied equipment.

The UAE's Integrators operated alongside US CIA-operated Scan Eagles, and the performance of the two types helped drum up further interest in Boeing Insitu's range of UAVs in the region. The UAE Navy is hoping to



At the Dubai Airshow the Archangel border patrol aircraft was shown bearing Roketsan's Cirit laser-guided rocket.

Far left: The UAE Air Force's F-16Es and F-16EFs Block 60s are the most capable in the world. They are fitted with an agile beam radar, which the UAE developed with Northrop Grumman.

PICTURE: ALAN WARNES

Centre: The UAE deployed two of its Boeing Insitu RQ-21 Integrator systems to Yemen, making the type's combat debut.

acquire six Scan Eagle systems for use on its Abu Dhabi Class frigates.

Abu Dhabi Autonomous Systems Investments (Adasi), a Tawazun subsidiary, has signed a deal to operate and support the Scan Eagle and Integrator for the UAE military, and for neighbouring allied nations.

It is understood that one Scan Eagle system has been delivered to Saudi Arabia and that between 8 and 10 systems have been purchased for use by the ministry of the interior.

The sale progressed very quickly, with the delivery of systems that had been built and earmarked for US Forces in Afghanistan. These have been used over the Yemen, like the UAE Integrators.

The UAE deployed an armoured brigade to assist pro-Government forces fighting in Yemen and this arrived at Aden on Monday August 3. The Emirati battle group reportedly included a number of Colombian soldiers drawn from the 1,800 Latin American soldiers based at Zayed Military City as part of the UAE Union Defence Force.

The UN reported that some 400 Eritrean troops might be embedded with the Emirati soldiers in Yemen in apparent violation of its own resolution restricting Eritrean military activities.

The brigade was accompanied by Saudi

special operations, intelligence and logistics personnel and mounted an assault on al-Anad, Yemen's largest air base, the following day.

The UAE was the only country that acknowledged having troops on the ground in Yemen, though Yemeni security officials revealed that Emirati, Saudi, Egyptian and Jordanian military advisers were all training Yemeni fighters at a military base in Aden.

A rebel missile struck an ammunition depot on September 5 2015 killing 45 UAE troops. Ten Saudi and five Bahraini soldiers died in the same incident. This was the costliest incident for the Emirati force in Yemen, but UAE soldiers were killed on a number of other occasions.

Combat operations

As well as engaging in combat operations against Houthi forces, the UAE mounted a major training operation. UAE AF&AD pilots deployed to al-Anad where, from October 2015, they trained a number of Yemeni pilots to fly Iomax AT-802 Block 1 and 2 BPAs transferred from the UAE.

Yemen had been due to receive AT-802s under a US foreign military sales contract signed in September 2014, before the overthrow of the government, but the changed political situation led to the contract being abandoned. Four of the AT-802s initially earmarked for Yemen will now

be delivered to Jordan instead. It would seem likely that some UAE AF&AD AT-802s will be transferred to Yemen after their replacement by Block 3 Archangels.

The newly trained Yemeni pilots conducted an initial series of attacks against weapons storage facilities and vehicles in Taiz and Al Baydah, soon becoming fully operational.

They operated alongside the UAE's newly delivered Northstar Bell 407MRH light attack helicopters.

The 407MRH is based on the improved Bell 407GX, which already features the Garmin G1000HTM flight deck, with dual VHF and GPS, and Garmin's synthetic vision system.

Northstar has added an armoured cockpit and cabin, as well as a formidable suite of weapons, avionics systems and sensors, turning the aircraft into a low-cost, lightweight multi-role military helicopter that is capable of undertaking light attack, close air support (CAS), intelligence, surveillance and reconnaissance (ISR) and light assault missions

At the Dubai International Air Chiefs Conference in November 2015, major general Ibrahim Naser Al Alawi, the UAE AF&A commander, revealed that UAEAF aircraft had flown some 40,000 flight hours in support of the on-going operations in Yemen, operating from six locations in Saudi Arabia and Yemen.

SAR hub tilts the odds to survival

The AW609 operates as both a fixed wing and a rotor craft and so is ideal for both search and rescue on land or sea.



The UAE's National Search and Rescue Centre (NSRC) made a determined effort to grab the headlines at the Dubai Airshow, as Jon Lake reports.

A high-profile official launch by his highness sheikh Mohammed bin Rashid Al Maktoum, vice president and prime minister of the UAE and Ruler of Dubai, combined with the announcement of a ground-breaking, world-first military order for a newly announced search and rescue (SAR) variant of the innovative AgustaWestland AW609 tiltrotor, certainly got the Dubai Airshow crowds talking.

The NSRC was actually a year old by the time its formation was announced.

It has settled into operations with 11 AgustaWestland AW139 helicopters, notionally under the control of the UAE Armed Forces' Joint Aviation Command (JAC) and reporting directly to the Supreme National Security Council.

The NSRC is based in Abu Dhabi alongside Abu Dhabi Aviation, a commercial operator that flies the helicopters on its behalf. The new organisation is in charge of all SAR operations across the Emirates and was formed in response to a 2013 federal decree.

Abu Dhabi Aviation initially used a fleet of seven SAR-equipped, state-of-the-art AW139s, operating from what were coyly described as "four strategic bases within the UAE", and with a team of 24 critical care paramedics.

Each helicopter usually operates with a crew of four, consisting of two pilots, a winch operator and a rescue crewman/paramedic.

The SAR-configured AW139s are kept on standby around the clock and are available for immediate callout 24/7, operating over land and sea. Operational readiness and speed of response are emphasised by the NSRC, which aims to provide an international role model for search and rescue.

The primary task of the centre is to provide SAR for the UAE armed forces. But the AW139s are also available to assist the wider civil community when required, and when not otherwise engaged, including providing helicopter emergency medical services (HEMS) and inter-hospital patient transfers.

The helicopters cooperate with various other agencies – military, parapublic and civilian, including the SAR teams of the Critical Infrastructure and Coastal Protection Authority.

The unit aims to be able to respond to a rescue mission call, anywhere in the UAE, within less than 60 minutes. It has been described as the primary rescue service within the Emirates.

The exact relationship between the NSRC, JAC, the UAE Air Force and Air Defence (UAEAF&AD) and the Ministry of Defence is unclear – perhaps because the SAR system is in a state of transition.

On November 10, during the Dubai Airshow, the UAEAF&AD JAC signed a memorandum of understanding (MoU) with AgustaWestland, a division of Italy's Finmeccanica, covering the supply of three AW609 tiltrotor aircraft, plus options on three more, for use in peacetime SAR missions. No contract value was disclosed, since detailed negotiations were still under way, according to the JAC's brigadier pilot Saeed Al-Ali.

Deliveries are expected to begin in about 2019 and the aircraft will be operated by the NSRC.

Launch customer

Whereas Abu Dhabi Aviation operates the NSRC's existing AW139s, the new AW609s are expected to be operated by the JAC itself, making the UAEAF&AD the launch military customer for the type, and the launch customer for the SAR version of the aircraft.

The AW609 will provide a dramatic expansion in the UAE's SAR capability, thanks to its maximum speed of 275kt and its range of 750nm. This is roughly twice as fast as a typical helicopter and the aircraft can fly about twice as far.

Staff major general Abdullah Al Sayed Al Hashemi, executive director of strategic analysis for the UAE Ministry of Defence, said: "We bought the aircraft as it gives better endurance and can pick up casualties in the desert. It gives us great flexibility and improves the capabilities of the whole UAE armed forces."

For the UAE, the AW609 promises to double the radius in which a SAR helicopter and paramedics can get to a location, stabilise a patient and get him or her to a hospital within the so-called 'golden hour' – the time in which survival and recovery chances are significantly higher.

Al Hashemi said the AW609 would only fly peacetime SAR missions, explaining that it was not at present suitable for combat SAR (CSAR) duties.

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Bombardier's Challenger 605 is the business jet of choice for the region's wealthiest.



Wealth check reveals why jet set have the X factor

The world's richest people are the lifeblood of business aviation. New research has looked at how the Middle East's wealthiest residents spend their cash.

Samantha Wellard
reports.

Global wealth intelligence authority, Wealth-X, and international business aviation consultancy, WINGX Advance, have released a white paper outlining details about ultra-high-net-worth (UHNW) Middle Eastern private jet owners.

The report, released just ahead of the Dubai Airshow, revealed that there are 5,975 UHNW individuals in the Middle East, with a combined net worth of \$995 billion.

The data also showed that the UHNW private jet owners in the region made up around 2% of the world's total.

The average Middle Eastern aircraft owner is 59.1 years old, making UHNW owners in the region younger than the global average of around 63.6 years.

The white paper also showed that Middle Eastern owners buy more expensive aircraft, with the average value of \$48.8 million, almost three times the global average of \$16.4 million.

"Middle Eastern jet owners also spend a greater percentage of their net worth – 4.5% – on private aircraft, compared to the world average of 1.0%," according to the report.

In terms of how owners have acquired their wealth, the report says the majority (59.1%) of jet owners in the region have a mix of self-made (31%) and inherited wealth (9.9%).

Owners generally work within five industry sectors: industrial conglomerates; non-profit and social organisations; finance, banking and investment; manufacturing; and real estate.

The report lists the locations where owners travel, with a large preference for visiting mainland Europe. During September 2015, there were 1,329 business aviation flights from the Middle East to Europe, a year-on-year increase of 21%. "This is for many reasons, including family ties, education, medical treatment, homes, investments, and escaping the summer heat in the region," said the report.

Turkey is proving to be a popular destination for Middle Eastern UHNW jet owners, receiving 15.9% of the flights out of the Middle East. "This could be at the expense of

Beirut and Cairo, two cities that were originally popular business and leisure destinations before the geopolitical uncertainty in recent years. Turkey's unique position at the gateway of both Europe and Asia works well for aircraft owners, since business and leisure can be combined in an environment suited to their cultural tastes," explained the report.

The study also detailed the other top European locations for Middle East owners, listing them as the UK (1,513 flights in 2015 YTD), France (1,272), Greece (883) and Italy (628). The five locations represented 58% of all flights out of the Middle East to Europe, with locations such as Greece increasing in popularity – 14% more flights travelled to Greece in comparison to 2014.

Wide body interior

The Bombardier Challenger 600 series was shown to be the aircraft of choice for many UHNW jet owners, with 174 aircraft making 1,159 journeys from the region in 2015 – a 5.4% year-on-year increase.

The report explained the popularity of the aircraft as being down to "the 600's wide body interior and competitively priced charter rates".

The Gulfstream IV/G400 came second, with 146 aircraft making 828 departures in 2015, showing a 1.3% year-on-year increase. The Bombardier Global Express ranked third, with a 24.4% increase year-on-year and 713 departures on 160 aircraft.

Mid-size and larger jets seem preferable to UHNW owners, as "personalised VIP commercial airline interiors serve the families' hierarchal traditions well, matching closely the rituals of daily life," the report said.

In general, the report showed little difference between Middle Eastern jet owners and those from around the world, although it did add: "Owners in the region tend to be diplomatic, with direct complaints and confrontation being rare. Superior levels of service are a must, since flying private is less about utility, but more about savouring moments of space away from their usual busy lives."

SKY PRIMED FOR

In just six years, Riyadh-based Alpha Star Aviation Services grew from being a new start-up in private aviation to becoming the largest charter operator in Saudi Arabia. It has now launched a dedicated VVIP operator called Sky Prime to take it to a new level.

Dave Calderwood has been charting the company's progress.

Not only does Prime Aviation have a current fleet of 54 aircraft – expanding to 70 within the next two years – including 20 helicopters, but it also offers a full range of services, including aircraft management, engineering and technical support, ground-handling and airport management.

Prime Aviation also has one of the world's most impressive fleets of medevac aircraft, which has led to a special relationship with Spectrum Aeromed, the US world leader in design and manufacture of air ambulance equipment for both rotary and fixed-wing aircraft.

In January the company launched a dedicated VVIP operator in response to market demand and with the goal of raising the bar for private aviation in the region.

Based in Riyadh, Sky Prime will initially operate with seven luxury aircraft including two Airbus A340s, An Airbus A320, a Gulfstream 550, a Gulfstream 450, and an Embraer Legacy 500.

Alpha Star, meanwhile, will continue to focus on serving the government and other services in the kingdom, its CEO Salim Al Muzaini said.

It started with Prime Aviation introducing medevac aircraft to its fleet. Then, in 2013, the company became the sole distributor of Spectrum Aeromed's products in the Kingdom of Saudi Arabia, Sultanate of Oman, United Arab Emirates, State of Qatar, Kuwait and Kingdom of Bahrain.

Medevac flights have become so important to Prime Aviation that its stand at the recent Dubai Airshow concentrated on promoting the Spectrum Aeromed products to other operators in the region.

Multiple intensive care units

Prime Aviation, itself, operates several medevac air ambulances configured with multiple intensive care units (ICU) including a Gulfstream, Airbus, ATR and Sikorsky helicopter. Originally, the company intended to use the aircraft in multiple roles but the demand for medevac flights is so high that they're now kept permanently configured.

Prime Aviation has as many airborne intensive care units as many land-based hospitals. To make sure they get used effectively, the company has its own medical staff – doctors, nurses, and paramedics – so it can provide a complete service.



“We want to reduce the cost of providing medevac services so that more people can take advantage of it.”

SALIM BIN OBAID AL-MUZAINI

“We want to reduce the cost of providing medevac services so that more people can take advantage of it,” said Al-Muzaini. The medevac fleet flew more than 800 flight hours last year and works with insurance companies all over the world.

Al-Muzaini's approach to providing the best medevac services epitomises his approach to the whole aviation business. Everything, from aircraft to services and premises, is immaculate and beautifully prepared. Nothing is fudged or ‘make do’.

“Best practice always,” said Al-Muzaini. “There's no need to start from scratch. Just use best practice.”

Perhaps one reason for that attitude is Al-Muzaini's background. Rather than coming up

the aircraft operator route, he has been involved in investment banking. That's given him two distinct advantages. First, he knows how to raise and manage the huge capital expenditure required in an aviation business. Second, he's well versed in Saudi protocols, which undoubtedly helps win business with government, corporations and private individuals alike.

Al-Muzaini's principle of “being the best” extends throughout the aircraft and service. He's just signed with Satcom 1 for the fastest airborne internet possible with dual systems, one for the aircraft passengers and another for the VIP. This year, he's ordered the first Airbus ACJ319neo in VVIP trim. It has new, more efficient, engines, wingtip-mounted sharklets, improved cabin-comfort and upgraded fuel and baggage capacity.

“Middle East customers already recognise and appreciate the greater comfort, capacity and capability of Airbus corporate jets, so new and improved versions are a natural next step when it comes to investing for the future,” said Al-Muzaini. “Being first in the region with the Airbus ACJneo family will also help us to maintain our lead in VVIP charters.”

Enthusiastic operator

Prime Aviation has been an enthusiastic operator of Airbus corporate jets from the beginning and now has a fleet comprising ACJ318s, ACJ319s, ACJ320s, an ACJ330, an ACJ340, and other aircraft types. Another two – an ACJ319 and ACJ330-200 – are about to be delivered after both aircraft received interiors designed by the Basel Design Studio and installed by Jet Aviation Basel.

And, while Al-Muzaini is used to spending millions on new aircraft, he's not averse to saving money either.

He's the first Airbus ACJ320 owner to opt for an in-service retrofit of sharklets, the upswept fins attached to the wingtips that save about 4% in fuel consumption. The retrofit requires structural reinforcement of the outer wing, a software upgrade to flight control computers, and replacement of the existing wingtips.

However, there's more to Prime Aviation's fleet than just Airbus.

The company's motto is ‘We aim at stars’. It looks like it's bang on target.

STARRING ROLE



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Dubai South FBO marks the spot for XJet

Private aviation service provider, XJet, has moved its global HQ from the US to Dubai and says its long-planned, luxury 8,600 sq ft executive terminal at Dubai South will now open in April as construction nears completion.
Barbara Saunders reports.

XJet is currently operating out of offices at Dubai Marina and will relocate its HQ operations to Dubai South in March.

The luxury terminal was first announced on the signing of a 10-year lease agreement with Dubai World Central (now Dubai South) in May 2013.

Meanwhile, the company says it has now completed the first renovation phase of its London hub and has contracted construction managers Faithful + Gould to oversee its global expansion in Dammam, Dubai, and Denver.

“The developments will allow us to deliver our seven star service worldwide and redefine guest experiences for the private aviation industry,” said XJet CEO and founder, Josh Stewart.

XJet, launched eight years ago, has retained award-winning interior designer Katharine Pooley for its projects. “When this current phase of expansion is complete, XJet will have hubs in Europe at London’s Stansted Airport; Colorado’s Centennial Airport in the United States, Dubai South and King Fahd International Airport in Saudi Arabia,” said Stewart.

“Over the past year we have established footholds in the world’s most sought-after markets. Our London hub has now been operational for 12 months, offering clients first-class amenities and services that were previously not available in the world of private aviation.”

XJet London includes more than 90,000sqft of dedicated hangar space that can accommodate two 747 aircraft simultaneously, as well as a 17,000sqft clubhouse that features a newly designed reception area, bar and private lounge.

“Using precision-engineered metals, mirror and glass with soft velvet accents, linens and ivory silks, the space

provides discerning guests with a luxurious yet relaxing atmosphere. The London facility is now undergoing its next renovation phase by adding VIP ‘majlis’ lounges and dedicated conference facilities, that will cater to heads-of-state and VVIPs travelling from the Middle East and around the globe,” explained Stewart.

Programming is also now under way for XJet’s executive terminal, private clubhouse and hangarage at Dammam’s King Fahd International Airport, which will be the first regional location to house private aircraft.

“Dammam offers huge potential for XJet, as this market is currently underserved,” said Stewart. “This is a key strategic location that will link and drive our global network.”

“This first stage of expansion is only the beginning for XJet but is a key milestone in the progression of delivering our XJet 2020 vision; to be the world’s most exclusive private jet club with a true global network.”

XJet’s Denver hub, which the company says is operating to capacity, was recently certified with the international standard for business aircraft handling, a

rigorous new accreditation developed by the International Business Aviation Council in conjunction with the National Air Transportation Association, to ensure ground-handling safety.

XJet is one of less than a dozen operators to earn the certification, which is based on current industry best practices for ensuring quality and managing risk. To receive the accreditation, an operator or handler must undergo a comprehensive audit of its safety management systems, emergency procedures, organisational structure, administrative elements, security procedures, training protocols and operating procedures.



Josh Stewart: “Over the past year we have established footholds in the world’s most sought-after markets.”



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SIZING UP THE MID MARKET

Liz Moscrop *explores the regional market potential for the latest entrants to the mid-size and larger business jet fleet.*

Although the 6,000-plus nautical mile range covered by a BBJ or an ACJ319 is excessive for most intra-regional trips in the Middle East, it is an area of the world that still opts for converted airliner types as its preferred method of travel.

Depending on whose specifications you take, mid-size jets can fly anything from around 2,000nm, to 5,000nm. Given one of the longest such trips you could make in the Middle East is around the 4,000km (2,200nm) mark between Muscat and Ankara, that puts them squarely in the spotlight to be a hugely valuable business tool, once users in the Gulf accept smaller sized models as a mode of transport.

For those planning to travel further – eg the 7,500km (4,050nm) from Muscat to London, there is a wide variety of super-mid-size jets that could comfortably make the journey carrying several passengers.

Looking ahead, manufacturers are banking on a shift to these smaller jets, with a slew of new upgraded products either hitting the market over the next few years, or having been recently introduced.

New engines, coupled with

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The Legacy 500 (top) and the Citation X interior (above)

CONTINUED FROM PAGE 65

sophisticated avionics and cabin upgrades, mean that customers have a wider variety of jets to choose from than ever before. These new products feature wide-body cabin space, high-altitude capability, speed, and long range. Aircraft of this class include: the Bombardier Challenger 300/350, Cessna Citation Sovereign, X and Latitude and Longitude types, Embraer's Legacy 650 and 450, plus Gulfstream's G280.

It's worth taking a look at what's on offer to see exactly why this mid-size segment could prove to be a slice that grows in the mid term.

Bombardier's workhorse Challenger 300 dominated the segment for many years. The bestseller debuted in late 2003, toppling the Gulfstream II off its perch. With its transcontinental US range, flat floor and room for eight in a double club cabin, the airframer sold and delivered more than 450 Challenger 300s through mid-2014. However, its successor, the second-generation Challenger 350, offers more range, improved fuel efficiency and lower emissions engines.

The 300 was such a great aircraft that, rather than start from scratch, Bombardier opted to add customer-requested improvements, such as better avionics, powerful engines, winglets and an upgraded cabin. There are also new cabin windows that are two inches longer, allowing in 19% more ambient light. Passengers can access the aft baggage compartment through a door in the aft lavatory. Standard configuration is double-club seats, or an optional three-place divan in place of the left rear-facing club chairs.

Espresso machine

Other equipment includes a coffeemaker or espresso machine, microwave oven, ice drawer and trash bin, plus storage. There is also a Lufthansa Technik cabin entertainment system with front and rear bulkhead-mounted 22in. monitors, active noise attenuation passenger headsets, and sidewall-mounted audio speakers. The standard configuration accommodates nine passengers, or an optional three-place divan that increases capacity to 10.

In 2013, Dassault Falcon Jet's new super-mid-size offering set the bar for next generation products extremely high. The French airframer threw down the gauntlet with the announcement of the clean sheet Falcon 5X.

The latest addition to its portfolio comes with a range of 5,200nm (9,630km) and, crucially, a 78in stand-up cabin that's 38.7ft long and 102.0inches wide. Although it is categorised as a mid-size jet, it could go head-to-head with the Gulfstream G450 and Bombardier's Global 5000.

It joins its sibling, the exceptionally powerful Dassault Falcon 900LX, which can climb to an initial cruising altitude of 39,000 feet in just 21 minutes, and it cruises comfortably at about 555mph, yet it burns 30 to 40% less fuel than other jets in this category. It comes with a 33-foot-long cabin that typically accommodates 12 passengers in three seating areas. The jet's new

Middle East buyers are more conservative than previously, likely reflecting the political tensions and conflict in the region, coupled with low oil prices.

HONEYWELL

avionics suite includes synthetic vision and an updated flight-management system.

Embraer's mid-size offerings comprise the Legacy 500, 600 and 650. When it announced the midlight 450 and 500 jets simultaneously, it signalled its commitment to fly-by-wire (FBW) flight control technology that was then not available in other jets in the same class.

The aircraft also comes with the latest Pro Line Fusion avionics from Rockwell Collins, Honeywell's Ovation Select cabin management system and Honeywell HTF7500E engines.

A derivative of Embraer's reliable workhorse, the ERJ 145 regional jet, the Legacy 650 offers three separate cabins, two lavatories, seats up to 14 and a 240 cubic feet main in-flight accessible baggage compartment. It also offers a 100% digital, Ethernet-based, expandable entertainment system, featuring surround-sound audio with full high-definition video.

In the three years since it entered service, the Gulfstream G280 has established itself as a strong contender in terms of performance and economy. A newly designed long, sleek wing and high-thrust engines increase range and speed, while delivering strong fuel economy. It also comes with Gulfstream's PlaneView280 cockpit that incorporates state-of-the-art flight and navigation systems, while auto throttle and auto braking offer incredibly accurate aircraft control and handling.

Textron Aviation, meanwhile, has upgraded its existing Cessna models with new avionics and interiors, as well as developing new models, such as the Latitude, the Longitude and the Hemisphere.

Garmin G3000 and G5000 integrated avionics systems are steadily replacing Honeywell and Rockwell Collins equipment in the Cessna Citation line-up, offering more features, lighter installed weights and ease-of-use features wanted by pilots. The upcoming 4,000nm range Longitude will provide a tempting upgrade product for fans of Citation jets that need larger cabin, longer-range products. For Middle East customers accustomed to larger aircraft, it could prove to be an interesting entry-level product.

Another alternative for buyers is the swathe of superior legacy mid-size aircraft entering service now sold with full warranties. These include the Cessna Citation X Elite, Nextant's 400XTi and

G90XT and, eventually, the Textron version of the Hawker 400, the 400XPR.

So how well will they sell? Honeywell's latest forecast indicates that operators plan to make new jet purchases equivalent to about 22% of their fleets over the next five years as replacements or additions to their current aircraft. Around 80% of these are likely to be larger-cabin aircraft classes, ranging from super-mid-size through ultra-long-range and business liner.

The manufacturer reports that Middle East buyers are more conservative than previously, likely reflecting the political tensions and conflict in the region, coupled with low oil prices. The number of planned acquisitions has gone from 18% last year to 16% this year, and only a fifth of these are planned before 2018.

And, of course, they will have several more jets to choose from. Although Bombardier has discontinued production of the Learjet 60XR, last year the segment shone for the Canadian market leader. It delivered 54 Challenger 300/350 aircraft, Dassault shipped eight 900LX jets, while Gulfstream delivered 18 G280s, Embraer shipped the first three Legacy 500 types, plus 18 Legacy 600/650s, and Textron Aviation delivered 28 Citation Sovereign XLS+ and 9 X+ types.

Although Dassault had a flat 2014, the start of the Falcon 5X deliveries is in 2017, when the French manufacturer should benefit from higher earnings.

Anticipated demand

To cater for anticipated demand, Embraer Executive Jets is quietly ramping up its assembly facility in Melbourne for Legacy 450 and 500 production, which will begin slowly in Florida, with just six Legacy 450/500s coming off the Melbourne line in 2017, eventually building up to 72 of the types per year.

The forecasters are cautiously optimistic, too, although they are anticipating a dip in deliveries next year, reflecting weaker emerging market demand. The longer-range forecast through 2025 projects a 3% average annual growth rate, despite the relatively flat near-term outlook, as new models and improved economic performance contribute to industry growth. However, the share of projected five-year global demand attributed to the Middle East and Africa remains below its historical range of 4-7%.

The manufacturers should take heart though. UK operator Gama Aviation's latest research indicates that today 70% of the region's business aircraft are super-mid-size, long-range, or airliner derivatives, compared to 31% for the global fleet. Its findings also reveal that, compared to the rest of the world, the Gulf has a much bigger focus on mid to larger sized business aircraft. Some 59% of its fleet is classified as medium to heavy, compared with 29.8% in the rest of the world, meaning it is likely to take a super-mid-sized share of this market in future.

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As Abu Dhabi's Falcon Aviation Services (FAS) prepares to mark its 10th anniversary, the company's chief operating officer tells **Barbara Saunders** why oil and gas aviation support, business jets, and maintenance, repair and overhaul (MRO) remain important to the business.

The FAS track to success – 10 years on

Supported by Abu Dhabi's continued investment in hydrocarbon exploration and drilling, FAS has recently established an oil and gas aviation transport hub at the UAE's Al Bateen Airport.

It was opened to begin operations with two newly acquired Dash 8 Q400 NG aircraft to service the hydrocarbons industry.

"We've leased part of the Sheikh Zayed Terminal, created infrastructure and facilities with the support of Abu Dhabi Airports Company and introduced ARINC technology for speedy check-in," explained FAS COO, captain Ramandeep Oberoi.

"We've hired 15 staff to service check-in counters and they are currently processing 400 passengers a day through the terminal.

"Our systems allow for quicker check-ins, which, in turn, ensures on-time departures. Passengers prefer using Al Bateen Airport because of its location in the middle of the city. Flight times to the airports on Das and Zirku islands have been reduced and efficiency increased because we're not interfering with the international traffic at the Abu Dhabi International Airport."

Meanwhile, the company is talking to "potential partners" about leasing five of its 12 Bell 412 helicopters. "Our 412s are now in their mid-life cycle. They have been the workhorse for the oil sector for many years but new technology alternatives are now emerging," said Oberoi.

According to the COO, the backbone for the company's 21st Century helicopter fleet upgrade will be the twin-engine, 19-seater, medium lift Agusta Westland 189 and twin engine 10-seater AW169.

Two AW189s recently joined the fleet – the first AW189

operation in the UAE. "These are being used in the oil and gas sector providing class one performance as demanded by the new International Association of Oil & Gas Producers (IO&GP) guidelines for safety in the industry," said Oberoi.

Two AW169s will join the Falcon fleet in March.

Falcon Aviation maintains the helicopters at its Al Bateen Airport base. It has trained 12 pilots and 14 engineers for the AW189 and is in the process of creating similar numbers for the AW169.

"The AW189s have completed 500 flying hours for the oil sector in the past four months, which we are pleased with," said Oberoi, who added that the fleet investment was "a vote of confidence" in Abu Dhabi's hydrocarbon sector, where new generation helicopters are required.

FAS currently operates two AW189, 12 Bell 412, five Airbus EC130 and six AW109 helicopters. A third AW169 will join the fleet in December 2016.

Fixed-wing fleet

The company's fixed-wing fleet includes six Bombardier Dash8 Q400 Next Gen aircraft, one of which is in service in Ghana for domestic carrier Starbow, two are being used by oil companies from Al Bateen Airport and three are operating with Kazakhstan's domestic carrier, Qazaq Air, under an aircraft, complete crew, and maintenance insurance lease.

Falcon recruited 30 pilots and 20 engineers for the Qazaq Air project and helped to start the new domestic airline in a short three-month span.

The company's corporate jet fleet includes a Gulfstream G450, two Embraer Legacy 600s, and one Embraer Lineage 1000.

It has also recently beefed up its sales team, with particular focus on the Gulf Cooperation Council (GCC) market, to move more into block contracts and aircraft management.

Another area for development is the MRO sector. FAS is one of the region's largest executive MROs operating a specialised, 106,000sqft facility at Al Bateen Airport. It is currently an approved and authorised service centre for Embraer Executive Jets, supporting the Embraer Lineage 1000, the Embraer Legacy 600 and the EMB 145.

Falcon Aviation is also an authorised maintenance centre for Airbus Helicopters, the world's largest helicopter manufacturer, and is now looking to expand its original equipment manufacturer certification base.

The first quarter of Falcon Aviation's 10th anniversary year will also see a final decision on the make-up of its planned MRO facility at Dubai South (formerly Dubai World Central). Oberoi said: "Two format options are on the table and we are talking to industry partners to assess a realistic business case before selecting which one to go for."

Captain Ramandeep Oberoi:
"Our systems allow for quicker check-ins, which, in turn, ensures on-time departures."





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Stats the way to do it

From fantasy football to 10-year projections, we humans love playing around with statistics. Industry projections are our annual barometer of the business aviation scene. Liz Moscrop taps this year's mercury.

The Canadians said it first... light jets are taking off again. In May Bombardier's business aviation market forecast anticipated that, of an estimated 9,000 business jet deliveries from 2015 to 2024 (in the segments in which it competes), light jet shipments would rise from 15% to 38% of the market (3,420 aircraft), whereas large aircraft would drop from 51% to 28% (2,520 units).

Naturally, the Brazilians completely disagreed when they released their annual forecast in November. Embraer reckoned there'd be 2,420 light jet deliveries out of a total of 9,100, or around 27%, with 3,400 large jets taking around a 37% slice.

Meanwhile, Honeywell Aerospace projected demand for up to 9,200 new business jet deliveries at a value of \$270 billion, a decline of 3% to 5% in value over its 2014 offering.

Everyone agrees that long term, significant growth is expected in 2018 and beyond, mostly thanks to the slew of sophisticated new products set to hit the market over the coming years, such as the HondaJet, the Embraer Legacy 450, the Pilatus PC-24, the Cessna Longitude and Hemisphere, Bombardier's Challenger 650, the Global 7000 and 8000, the Falcon 5X and 8X and Gulfstream's G500 and 600.

There is also an uptick in the interest in the fractional ownership sector.

At the time of writing, the latest General Aviation Manufacturers' Association (GAMA) report (for 3Q 2015) indicates 465 units sold,



just six ahead of deliveries at the same time in 2014. Demand continues to be strongest from North America, which has 65% of the world's fleet. Honeywell projects 61% of worldwide sales to originate in North America, a hike of 2% from its 2014 survey.

Consultant Brian Foley has previous form in crystal gazing. In early 2009, he warned of an impending spiral dive, which eventually saw backlogs collapse, enormous lay-offs and the death of a major airframer.

This year he was one of several tipsters predicting a turn for the better in the ailing light jet market, offset by a dip in the large jet segment. He did point out, though, that is not necessarily good news.

Worldwide business jet shipments topped from a high of

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1,317 units in 2008 to a measly low of 672 in 2012, meaning the combined dollar value also decreased. Foley believes that the number of units delivered will continue to track upward. However, total shipment values may actually decrease, or at best remain flat.

He said there would be weakened demand for the biggest, most expensive jets, and future shipments would contain a greater proportion of less costly aircraft. He pointed out: "You have to sell up to 10 [small and mid-size jets] just to offset the value of one big Gulfstream lost sale."

This anomaly won't rectify itself until 2018 when the slew of new, large, pricey jet models from Dassault, Bombardier and Gulfstream hits the market. For the next decade, he predicts another 8,594 business jets worth \$238 billion will enter the skies.

Broker Jetcraft also threw its hat into the ring with a new 10-year outlook, predicting strength in North America, while other regions would be slow to recover.

It said that aircraft unit deliveries worldwide would plateau at 7.5% compound annual growth rate (CAGR) with a slight industry downturn around 2022. It is looking at 8,755 aircraft representing \$271.1 billion in revenues to be delivered through 2024.

Chad Anderson, president, said: "We noticed some definitive behaviour in the current business cycle. Customers are tending to shy away more from emotional purchases."

Projected growth

Indian analyst, RNR Market Research, also released a study earlier this year. It set a value of \$20.9 billion on the 2013 market, with a projected growth at a CAGR of 6.86% to \$33.8 billion by the end of 2020. According to RNR, both North America and Europe are showing signs of recovery. (However, this European assumption is not borne out by the latest GAMA figures, which indicate the market is still fairly flat).

The report also said that the global business jet market demand, which was nearly halved during the financial crisis, has now improved. This is true. In 2014, shipments were almost back to 2010 levels.

It's worth a look at how successful the forecasters have been historically. For simplicity's sake, I've used just three categories, light, medium and large and checked them against the actual GAMA shipments from 2008 until Q3 this year. (Full year doesn't come out till February).

While analysts do categorise aircraft differently, there is a definite trend. Back in the heady days of 2008, Embraer expected 7,420 deliveries in the light category to take 57% of all business jets shipments between 2008 and 2017. Honeywell, meanwhile, looked at 6,700 deliveries for the same period.

For large jets (including airliner derivatives), Embraer said 2,710, while Honeywell opted for 3,260.

Just as the forecasters mostly do today, there was general agreement on a similar-sized



Brian Foley: "The number of units delivered will continue to track upward. However, total shipment values may actually decrease, or at best remain flat."



Chad Anderson: "Customers are tending to shy away more from emotional purchases."

market in terms of units shipped but differences on how it would be distributed. Embraer seemed to be expecting more growth in the middle segments of the market, while Honeywell expected the upper end to do better. At that point everyone had high hopes for an "emerging air taxi market," and we all know how that panned out. Bombardier, meanwhile, pointed to an annual delivery tally of 1,320 business jets from 2008 to 2017, for a total of 13,200 units worth \$300 billion, hiking its 2007 forecast up by a massive 30%. Do read that last delivery figure again and remember that its prediction for the current 10-year period is for 9,000 business jet shipments.

At that point business jet shipments had averaged 620 a year, between 1998 and 2007. By 2015–8 years into that forecast—there have been 6,179 business jets shipped in total across all categories.

Large jet deliveries since 2008 actually peaked in 2013, with 277 deliveries, or 41% of the market. That was the year the light segment hit its lowest point with just 35% market share with 240 units shipped out of a total of 678. While the a resurgence in the light jet segment is making headlines, actually, on average, they have taken the lion's share of the business jet market since 2008, except for a ferocious dip to 37% in 2009 from the 2008 figure of 68%. The number climbed again until the 2013 blip, and last year grew to around 62%. At Q3 in 2015 it was sitting at 66% of 465 total deliveries.

Predict the future

So what does all this mean? It is actually impossible to predict the future, although trends do emerge based on historical patterns. And us humans do tend to have short-term memories.

Back in 2011, no one could have foreseen that political problems in some of the high-growth Brazil, Russia, India and China (BRIC) economies would massively shift the entire market by 2015. In the Middle East, for example, the impact of war has taken its toll, as evidenced in the subdued order books at the Dubai Airshow in 2015.

Regionally, it is also worth noting the recent report by Britain's Gama Aviation, which indicates that 10% of the Middle East's business aviation fleet is up for sale. Saudi Arabia, Turkey and the UAE have 61% of all business aircraft in the Gulf and account for 73% of those on the market. Individually, 16% of the UAE's business aircraft are for sale, and the corresponding figures for Saudi Arabia and Turkey are 13% and 7% respectively, with the Lebanon having the greatest percentage—21% up for grabs.

There's a final point to remember when looking at statistics. Foley concluded in his summation of his predictions: "Dollars have always been the more relevant health metric than units. From this perspective, the business jet recovery, although verifiable from an increasing unit perspective, is perhaps, for now, just running in place."



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Skycrane blazes a trail in Turkey

Erickson has entered a new market with the deployment of the first Skycrane equipped for aerial fire-fighting in Turkey. Chuck Grieve reports.

The bright orange livery of a Pan Aviation Erickson S-64E Skycrane helicopter is becoming a regular sight in the skies over Istanbul and surrounding areas.

Since it first arrived on the scene in January 2015, the 'helitanker' has flown missions ranging from its primary role of fire-fighting to emergency response operations in difficult terrain.

Pan Aviation and Erickson agreed a two-year contract last October following an initial 10-month period to assess the aircraft and crew's performance. The agreement – Erickson's first in Turkey – provides for a minimum of 500 flight hours, with aircraft availability 365 days a year.

Pan Aviation general manager Zerem Magdenli said the company was "delighted" to have secured the services of the Skycrane and crew.

Important step

Erickson chief executive Udo Rieder said at the time the first contract was announced that it represented "an important step in expanding Erickson's unique fire-fighting capabilities and services to other regions".

Based at Ataturk International Airport, the aircraft can be dispatched immediately for fire and emergency calls anywhere in an area of more than 5,400sqkm, of which almost half is forested. It is also available on request to other regions of Turkey.

Andrew Mills, Erickson vice-president of commercial aviation, said: "The municipality was extremely pleased with the aircraft capability, pilot expertise, uptime reliability and multi-role function that Pan and Erickson cooperatively provided during the trial period."

The aircraft has been used worldwide for fire-fighting for more than 40 years and can carry an array of tools designed for this type of emergency operation. The heavy-lift S-64E helitanker, working with Istanbul Metropolitan Municipality, is equipped with Erickson's proprietary 2,650gallon (10,000litre) fire suppression system, a detachable water tank with multiple refill options and eight coverage levels for targeted fire suppression.

Challenging missions

Portland, Oregon-based Erickson manufactures, operates and maintains utility aircraft around the world. It has operations in North America, South America, Europe, the Middle East, Africa, Asia Pacific and Australia, and specialises in challenging missions including fire-fighting, heavy-weight ventilation and air conditioning (HVAC) delivery and installation, construction, timber harvesting, oil and gas and specialty lift.

The company has been flying S-64s for more than 40 years. After acquiring the type certificate, Erickson gave the aircraft a new lease of life in the 1990s, increasing its operational performance with upgrades to airframe, instrumentation and payload capabilities. The S-64E's maximum cruise speed is 100kts (212kph), with a range of 258nm and maximum gross weight of 19,000kg.

Turkish air charter company Pan Aviation has provided aerial fire-fighting services for Istanbul Municipality and the Turkish General Directorate of Forestry since the mid-1990s. Aircraft it has operated during this time include Bombardier CL-215 amphibians, Mil MI-8 and variant MTV medium-lift and Mil MI-26 heavy-lift helicopters and Kamov Ka-32 heavy-lift helicopters.



FLOATING AN AIRSHIP SCHEME

The tourism boom hitting Dubai has seen a more liberal approach to the use of aircraft to support entrepreneurial activities, with seaplane sightseeing flights, free-fall parachuting and helicopter safaris.

But, by the end of this decade, a whole new form of air transport could take to the skies over the UAE if one Emirate aviator has his way.

Captain Khaled Ahmed Al-Ansari was at the Dubai Airshow in November to introduce 'Spirit of the Emirates', a UAE national project to develop an airship as a tourist attraction.

Airships are classified as 'lighter than air' aircraft and mix lift, generated by helium gas, with small engines to drive and manoeuvre.

Historically, airships were able to fly more than 1,500 commercial trips between Europe and America, where they carried some 34,000 passengers before aeroplanes dominated the route.

Al-Ansari, who flies transport aircraft for the government, said the 'Spirit of the Emirates' would glide quietly and elegantly at 1,500 feet over the most important tourist sites across the Emirates. He added that he had spent "enough money to build a house" on the concept.

"It will be a safe and environmentally friendly airship that gives a feeling of floating over the clouds. We will use massive windows that allow passengers vast uninterrupted views of the ground," Al-Ansari said.

□ □ □ □ □

The 'Spirit of the Emirates' project envisages a fleet of three Zeppelin NT airships carrying paying passengers on flights of between 30 minutes and three hours. A tablet-based augmented reality system will annotate the view from 1,500ft above the cities.

"The augmented reality makes the country like a big museum and the passengers will be walking inside that big museum with the device telling them about it in their preferred language," he said.

Al-Ansari has had initial approval for the idea from the UAE's General Civil Aviation Authority, and is seeking funding. He said the project could be in profit within five years.

"I think it's the right time to show the idea to decision-makers and to the public," he said.

The creative liveries on the new airship come from French designer, Happy Design Studios, whose founder, Didier Wolff, has been responsible for a number of the special liveries seen at shows – and in the air – over the past decade.

If the airship programme goes ahead it will have its own ground station, developed by Dubai-based White Space architects, and brings to fruition a plan that started some 12 years ago.

Passengers will be able to move freely inside the cabin after take-off.

Al-Ansari anticipates more than 20,000 guests per year will fly on the new airship.



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The United Arab Emirates' interest in space has moved up a gear with the establishment of a new space agency. Steve Nichols spoke with its director general, Dr Mohammed Al Abbabi, and found that it now has even bigger plans for the future.

THE SPACE SETTERS

Dr Mohammed Al Abbabi is passionate about space and technology. With an MSc and PhD in laser and fibre-optic communications, and more than 20 scientific papers to his name, his latest role is to make sure the UAE's space industry is a model for the rest of the Arab region.

"The UAE identified space as part of its long-term future some time ago," Abbabi said. "We had previously invested in space, in terms of education and buying technology, but it was a scattered initiative. The UAE feels the sector is important to our national economy, security and social development and decided to focus more clearly on what we are doing, and do it right."

He said that the UAE held a lengthy feasibility study as to what a national space agency should look like and what it could do.

"We visited a number of space-faring nations to see how their agencies work and, as a result, developed the UAE Space Agency along similar lines to the UK's. Last year the Government adopted our proposal and set up the first space agency in the Arab world," he said. "Our role is to coordinate, regulate, facilitate and support the country's space industry and activities."

International level

The UAE Space Agency also represents the country's space interests at an international level, including having a presence at the United Nations and International Telecommunications Union (ITU).

And there is plenty going on. Anyone who attended May's Global Space and Satellite Forum in Abu Dhabi could not fail to be impressed by the speed at which the UAE is pressing ahead with numerous projects.

The UAE investment in space technology and services is currently around \$5 billion, making it the biggest in the region. It operates six satellites and, within a few years, that will jump to 10.

The newly named Mohammed Bin Rashid Space Centre (MBRSC) – formerly the Emirates Institution for Advanced Science and Technology or EIAST – is building the country's new KhalifaSat

Earth observation satellite and forging ahead with the Mars 'Hope' mission.

KhalifaSat is a 350kg satellite that will orbit every 90 minutes at a height of around 600 kilometres.

The UAE already has DubaiSat-1, which was launched in 2009 and passes over the Emirates four times a day, providing 2.5-metre resolution colour images. The much bigger DubaiSat-2 was launched in 2013, providing 1m resolution panchromatic (black and white), plus 4m multispectral (colour) photographs.

KhalifaSat, which should be placed into orbit by 2017, will better the resolution of its predecessors thanks to developments in imaging sensors and optics.

Meanwhile, work is also progressing at MBRSC on the Mars 'Hope' probe that will launch in July 2020, arriving at Mars seven months later in time for celebrations that will mark the 50th anniversary of the UAE's foundation.

MBRSC has to hit its launch target precisely if the spacecraft is to rendezvous with the Red Planet. Once in orbit around Mars, Hope, which was named after a public campaign, will explore the Martian atmosphere using scientific instruments that include visible, infrared and ultraviolet spectrometers.

Its data should help scientists build an holistic model of the planet's daily and seasonal cycles, and may explain why Mars lost a lot of its atmosphere to space.

"Hope was named after a public competition and aims to live up to its name – to deliver hope to the region's youngsters, not just in the UAE, but across the Arab world," Abbabi said.

The UAE is also home to satellite operator, Yahsat, and telecommunications provider, Thuraya, as well as being one of the forces behind Virgin Galactic, through its investment by Abu Dhabi-based Aabar.

"Yahsat, which is owned by Mubadala, connects around 650 million people and leads the region in terms of its Ka-band satellite technology," Abbabi said. "It is ranked as one of the top 10 satellite communication companies in the world in terms of revenue, despite being less than 10 years old.

"Yahsat will launch its third satellite, Al Yah 3, by the end of 2016, extending its coverage to Brazil and an additional 16 markets across Africa," he added.

Meanwhile, Thuraya provides mobile satellite telecommunication services via small hand-held devices. It has two geostationary satellites providing coverage of Europe, the Middle East, Africa, Asia and Australia.

Thuraya says it has sold more than 670,000 hand-held satellite phones, giving it a 60% market share in its coverage area.

Abbabi added that the space agency is drawing up its own space policy, legislation and space law. "We are the first country in the region to do this," he said. "But the goal is to inspire the region as a whole, for us to act as a model for others to follow suit."

Top of the agency's agenda

And it is inspiration that is top of the agency's agenda. "With the Hope Mars mission we want to introduce a culture of space science, both in academia and with our young people," he said. "We have established four research centres in different universities in the UAE, the newest and biggest of which will be in Al Ain, costing 100 million Dirhams (\$27.2m)."

The contract for the project, which will act as an incubator for development and innovation, was scheduled to be signed as *Arabian Aerospace* was going to press.

"The centre will be open to people from outside the university and will offer space projects, research and development, serving both students and space operators," Abbabi said. "We have also been mandated by the Government to prepare a space policy – a visionary document to look at what we want as a nation over the next 10 years.

"The second document is a space strategy or plan – setting out at a high level how are we going to achieve the objectives we have set out in our vision."

These two documents, coupled with its space law regulations, will provide a roadmap for the UAE's future space-related activities.



“We are setting the stage for our future space activities and inspiring our youngsters. We have so many ideas and are hungry for more missions.”

DR MOHAMMED AL AHBAB

“This has been a big exercise and provides a cornerstone for what we do in the future. We also have to build big human capital capacity. That is, work towards providing the next generation of space engineers in the UAE.”

The agency is working with government, academia and the public to promote space.

“We are trying to inspire young people. The Mars mission is a perfect tool to do this, allowing us to go into schools to show why space is important and how youngsters could turn it into a career.

“We are injecting space-related subjects into the educational curriculum and helping to stimulate their science, technology engineering and mathematics (STEM) education.”

The UAE is also using competitions to stimulate interest – in November it launched its “Planet Mars” competition, inviting people to present innovative designs for virtual homes to accommodate any future population of the Red Planet. Participants have to think about how its occupants would breathe, find sources of food and drink, generate power, dispose of waste, and cope with the effects of low gravity on their health.

Science experiments

It is also working on cubesat projects for schools, such as the tiny Nayif-1 satellite, and, in partnership with Boeing, developing science experiments to be carried out on the International Space Station. Plus, there are scholarships to send students to study space science at universities, plans for summer camps, and a new science centre in Abu Dhabi – the list goes on and on.

So where does Ahababi see the UAE space industry in 10-20 years’ time?

“I would like to see the UAE space industry follow in the footsteps of our aerospace successes – Emirates and Etihad. They are leading the industry in terms of passenger numbers and innovations.

“We are setting the stage for our future space activities and inspiring our youngsters – the Mars Hope mission is just the start,” he said. “We have so many ideas and are hungry for more missions,” he concluded.

Massood Mahmood: looking at options.



Yahsat gets on board with Etihad

Abu Dhabi-based satellite operator, Yahsat, is to trial in-flight connectivity via its Ka-band satellites aboard an Etihad A320 aircraft. As Steve Nichols reports, if things go well and the system becomes adopted, it could be a direct competitor to Inmarsat's new GX system.

Mubadala-owned Yahsat says its Ka-band capacity will provide higher speeds and cheaper rates compared with other Ku-band in-flight connectivity systems.

Ka-band can offer speeds of up to 50Mbps to the aircraft, allowing passengers to stream video and enable bandwidth-heavy applications, such as video conferencing.

But what is Ka-band?

The 'band' in use refers to the radio frequencies used to and from the satellite. So:

- L-band uses frequencies in the 1 to 2GHz range;
- Ku-band utilises approximately 12-18GHz; and
- Ka-band services use the 26.5-40GHz segment of the electromagnetic spectrum.

Ku stands for 'Kurz-unt'en' – German for the band just underneath the 'short' or K-band. Not surprisingly, Ka stands for 'Kurz-above'.

Generally, the higher the frequency the more bandwidth you can squeeze out of the system. The difference is just like an FM radio broadcast compared with medium wave.

Digital bandwidth

Scale this up to the satellite's microwave frequencies and Ka-band should give you more digital bandwidth than Ku, which, in turn, should give greater bandwidth than L-band.

So, for given satellite power, Ka-band theoretically offers you the greatest bandwidth of all in-flight connectivity systems.

Yahsat CEO, Massood Mahmood, said that it was early days for the trial and the final details had not been worked out. He added that Yahsat was looking at a number of options, including different configurations, dual Ku/Ka-band antennas and coverage, and potential partnerships with others in the sector.

"We've been looking at the possibility of in-flight connectivity over Yahsat's satellites for some time," Mahmood said. "We now have extensive experience of providing Ka-band coverage to a wide range of users, including the UAE Government and military. That knowledge has proved invaluable for this next phase of our development – it's a very exciting time."

Mahmood said, initially passengers wouldn't have access

to the satellite system, which will only be used for tests. If the first phase is successful, it will then move on to test flights with invited users.

The final test would be to allow Etihad's passengers to use the system.

"Ultimately, if all the tests are successful, Etihad would like to move to full adoption as quickly as possible."

Yahsat is looking at a number of options, including using Ku-band satellites to fill in the gaps where there is no Ka coverage. Mahmood said satellite operator, SES, could be a suitable partner to do just that.

Potential partners

And, like ViaSat with its Ku-Ka antenna, Yahsat is talking to potential partners about developing its own dual antenna solution.

The company's first satellite, Yahsat Y1A, was launched in April 2011, and the second, Y1B, in April 2012.

Yahsat will launch its third satellite, Al Yah 3, by the end of 2016, extending its coverage to Brazil and an additional 16 markets across Africa.

Collectively, these will provide Ka-band coverage over Africa, Latin America, and southwest Asia. A partnership deal with SES on a future Ka-band satellite could add Europe and Africa.

"For Etihad, the European and Middle Eastern routes are very important," said Mahmood.

He added that Yahsat was also looking at other options to improve coverage near the polar regions, where satellite systems usually fail due to the low-angles. Inmarsat, for example, usually quotes a figure of around +/- 80 degrees latitude as being the limit for its L-band SwiftBroadband service.

"We are looking at the possibility of using phased array antennas to see if this could be extended further north and south," said Mahmood.

"We are delighted to be working with Etihad Airways, one of the UAE's major success stories. It is testament to our strategy to collaborate with leading local industry to deliver innovative, secure, reliable and cost-effective satellite communications solutions."

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Gulf Air used the Bahrain International Airshow (BIAS) as the platform to announce major new and adjusted orders with both Airbus and Boeing – but raised some doubts on whether its plans to add Bombardier CSeries regional jets to the fleet would come to fruition. Alan Dron reports.

Bahrain's national carrier is continuing its climb back towards financial break-even and will be undergoing an almost complete turnover of its fleet by the end of the decade, according to acting CEO Maher Salman Al Musallam.

Its financial figures for 2015 will see a further substantial improvement and take the airline close to the target it set itself when it began its major restructuring in early 2013.

The acting CEO said the figures would be "far better than 2014", when a loss of \$166 million (BHD62.7m) was hailed as the best result for a decade. In preceding years, the annual deficit had been as high as \$560 million (BHD211m).

"They will be good results," said Al Musallam. "We are very optimistic that these are the right figures that we were looking for when we started the restructuring. We know that if we can bring this airline up to this figure, we've done the job."

The results will be officially announced in the spring.

Wider range of services

Al Musallam is on record as saying that Gulf Air could not break even so long as it remained a company that merely sold seats on its aircraft, rather than the wider range of services, such as engineering, ground-handling or consultancy, that other major airlines in the region could offer.

However, in December 2015, it was announced that Gulf Air, Bahrain Airport Company and Gulf Aviation Academy would be brought together under a new organisation, dubbed the Falcon Group. This will have a common board of directors and will be jointly audited.

Falcon Group came into effect in the last quarter of 2015 and it remained too early to see the benefits, said Al Musallam.

However, he hoped that bringing together the three organisations would further boost Gulf Air's prospects.

"The airline should be the driving force" in the new grouping, he said, supported by the other organisations.

He added that Gulf Air's financial position had improved, despite the Gulf being "a very difficult, very combative

GULF AIR BACK ON ITS FLEET AGAIN

part of the world," given the proximity of the 'big three' carriers, Emirates Airline, Etihad Airways and Qatar Airways, with their huge route networks.

"They are like big malls and we are a small shop," said Al Musallam, admitting that: "It's very difficult to convince people to use Gulf Air rather than the big operators."

However, by keeping "below the horizon" of the three majors, Gulf Air had been able to focus on serving Gulf Cooperation Council nations with high frequencies, a tactic that was proving attractive with business executives wanting to fly to a meeting in the Gulf and return home the same day.

Further expansion

This approach would continue, said Al Musallam. The carrier planned further expansion into Saudi Arabia, for example, and he was hopeful that an agreement would be signed imminently that would enhance this.

"I hope we will see a bilateral with the Saudis that will at least give us additional frequency to Riyadh and Jeddah," he said.

He made his comments immediately ahead of BIAS, at which Gulf Air announced its long-awaited fleet replacement plans, with orders for 29 A320neo-family single-aisle jets – 17 A321neos and 12 A320neos worth \$3.4 billion at list prices. Ten of the A320neos had been previously announced in 2012, giving a net 19 new orders.

This order supersedes plans to acquire A330-300s.

Nine of the A321neos will be standard versions, while eight will be extended-range variants capable of flying to western European destinations. The airline's current A320/321 fleet already operates to Frankfurt, Paris and, occasionally, to London.

"This [Airbus] order is based on the experience we've gained in operating the A321s," said Al Musallam. "They work very well." The first aircraft from the new order, an A320neo, will arrive in June 2018.

Long-haul sectors

Gulf Air at present operates six A330s for its long-haul sectors to London, Manila and Bangkok. "The last thing we want to do is operate two wide-body types," said Al Musallam. However, it had become obvious that the airline's order for '12 to 16' Boeing 787-8s, announced in 2008, should be changed.

The company was, therefore, switching that order to the larger 787-9 variant.

"Is the -8 the correct answer for Gulf Air? No. It's not right because we need a larger aircraft with longer range and an aircraft that can be utilised throughout our network," said Al Musallam.

"I need a high-density aircraft to go to Manila and Bangkok. The -8 is fine for flying to London, but not to Bangkok and Manila because of the number of passengers."

The current A330s have a capacity of 214 passengers and Gulf Air finds itself competing with the major Gulf carriers that routinely put 400-seat capacity

"It's very difficult to convince people to use Gulf Air rather than the big operators."

MAHER SALMAN
AL MUSALLAM



aircraft on the London run. A two-class configuration on the 787-9 typically accommodates just less than 300 passengers.

Consultants and the airline's network planning team, studying long-haul needs over the past two years, "loved the A330neo, but we have a contract with Boeing", said Al Musallam.

The 16 787-9s will be worth \$4.2 billion, with the first due to be delivered in April 2018.

Ten will be delivered from 2018-20, with a second batch of six delivered in 2023-24, although they may be cancelled or remarketed if Gulf Air feels it no longer requires them.

The two orders will mean an expansion of the fleet after the sharp contraction from 40 to 28 aircraft as part of its turnaround programme initiated at the start of 2013. The airline anticipates having a fleet of around 39 aircraft by

around 2020 as the older A320/321s and A330s are gradually retired.

However, plans to order the Bombardier CSeries regional jet may be in doubt, with Al Musallam announcing imminent plans to meet the Canadian manufacturer.

The Bahraini national carrier contracted for 10 CS100s in 2012 but, like all customers for the Canadian twinjet, has had to cope with the aircraft's protracted development programme.

Initial example

Certification of the CSeries finally took place in December 2015 and the launch customer – Swiss International Air Lines – is due to receive its initial example in the first half of 2016.

"We were supposed to receive the first aircraft in December 2013," said Al Musallam. "We're supposed to be the launch customer in the Middle East – that's how they are referring to us.

Maher Salman Al Musallam: "We are very optimistic that these are the right figures that we were looking for when we started the restructuring. We know that if we can bring this airline up to this figure, we've done the job."

Insets: The Airbus signing (top) with the Boeing 787 deal commemorated below.

"We are going to meet with them very soon to look thoroughly through the contract [and at] the regional jet concept that led Gulf Air into buying the CSeries. This concept needs to be studied completely... whether it's going to be viable for Gulf Air to continue to renegotiate a delivery date with Bombardier or something else."

He anticipated a decision would be made around March.

When development of the CSeries began it had promised around a 20% fuel saving on the Airbus A320 family, Al Musallam noted. However, Airbus was now introducing the modernised, re-engined A320neo, which it said would deliver a 16-17% improvement in fuel costs on its predecessor.

"I don't know, as a small airline, whether we are able to operate a third type or not. This is a big decision," said Al Musallam.



Bahrain's Cobra fleet is ageing.

With operations against Daesh in Syria and rebels in Yemen, as well as defending the skies of Bahrain, the Royal Bahraini Air Force is keen to modernise its fighter force. As a result, the kingdom is now looking at more F-16s.

The static display at BIAS 2016 included a sizeable contribution from the RBAF. The undoubted star was the 2 Squadron F-16C, which had only recently returned from Taif in Saudi Arabia.

RBAF F-16s have been launching strikes on targets in Yemen for 10 months now, having earlier been involved in bombing Daesh in Syria. Personnel are deploying to the base in the kingdom's western reaches for one month at a time.

Greater need to integrate

War operations on two fronts have shown the GCC countries that there is a much greater need to integrate. In the past, talking has taken precedence over action but, according to one source, this now needs to be taken more seriously. "We need to train together more. Working with our allies in Saudi Arabia and over Syria has highlighted this," he said.

The GCC Council is now pulling a strategy together to pave the way forward. Each air force will be given specialist tasks and duties and their commanders, including the RBAF's Al Khalifa, are considering proposals for a single strategy to be announced soon.

The deteriorating security situation in the region, as well as keeping other threats in check, have meant modernisation is a must.

F-16s SHOW THE WAY FORWARD

A number of major defence news events took place in and around the Bahrain Airshow. Alan Warnes picks out his highlights.

One way forward is the upgrade of the RBAF's existing fleet of 20 F-16C/D Block 40s to Block 50 configuration, complete with the Northrop Grumman APG-83 scalable agile beam radar (SABR), which was selected ahead of Raytheon advanced combat radar (RACR).

The RBAF has also requested the purchase of 18 Block 50s, with Lockheed Martin offering the brand new F-16V version, which made its first flight on October 15 last year.

"The F-16V and upgraded Block 40s would almost be identical, although the latter would not have the capability to be fitted with conformal fuel tanks," explained Lockheed Martin's Rick Groesch.

"The F-16V has got faster computers, better avionics and a centre pedestal with a multi-function display (MFD). We are moving as fast as we can on delivering these jets so Bahrain, like the other countries, can continue to operate on multiple fronts.

Su-30s for Saudi?

One fascinating story which Arabian Aerospace heard was that the RSAF had completed a deal to buy "up to 60 Su-30s".

The Saudis, along with several other GCC countries including Bahrain, were not happy the US and UK stopped the supply of spares for their aircraft during the 2011 Shia uprising. To ensure such sanctions don't paralyse their air force in the future, the RSAF is now looking to diversify its fleet and ordering the multi role Su-30s is seen as one solution.

"When the US Government gives the go-ahead, Lockheed Martin will upgrade a single F-16C and F-16D at Isa Air Base, where the fleet is housed. It will then provide technical support to the RBAF to upgrade the remaining 18 jets."

Meanwhile, the F-5s, which at one point were close to being retired, are set to take on a new lease of life. A far eastern F-5 upgrade is one consideration.

One senior source said: "We are establishing a team to look at upgrading the F-5. We would like a new radar, precision-guided munitions like JDAMs, and laser-guided weapons, a better engine, as well as the capability to have better air-to-air weapons like the AMRAAM."

As well as fulfilling air-to-air and air-to-ground roles, the F-5 is playing a part in training pilots for F-16s. "Pilots transitioning to F-16 will usually step into the F-5 to ensure they get the experience of flying with an afterburner. Some will also go straight to the F-16," said the source.



The F-16s had a starring role at the show.

It's a different story for the AH-1 Cobra. The RBAF will continue to fly the attack helicopter for the foreseeable future.

"We almost signed a contract for the T129 but political issues with Turkey over Syria and Yemen saw us drop the deal," explained the source.

Two years ago, TAI brought a T129 ATAK helicopter to the show, but all the aircraft are committed operationally with the Turkish Army, according to TAI's Gorkem Bilgi.

Among the 10 T129s are nine early development helicopters (EDH) and one T129B. This latest derivative has been modified with a digital moving map and can be equipped with the UMTAS laser-guided rocket, CIRIT 2.75 air-to-ground laser-guided missile and Stinger air-to-air missiles.

Weapons integration trials

"We are close to finishing the weapons integration trials, with the UMTAS acceptance tests set to be completed in mid 2016," said Bilgi.

He added: "We are taking all the feedback from the Turkish Army operations in the field to help develop the ATAK further.

"We can develop the T129 to the specific mission profiles required by potential customers. We have done it for the Poland bid and could do it for Bahrain too."

Another option for the RBAF is the AH-1Z Viper, and Bell was keen to market it at BIAS 2016 along with its UH-1Y and V-22 Osprey.

Richard Harris, vice-president of Bell International Military Sales said "We have seen some fleets in the region flying with Bell helicopters that are more than 40 years old.

"They are difficult to maintain and can't keep up with modern demands. Bahrain has the oldest model Cobras, which are the great grandfathers of the current AH-1Z. They were designed to be quick but were built for specific missions in the 1960s and 70s.

"There are three, possibly four, countries within the GCC interested in Bell military products. North Africa is starting to become more active too."

While there was neither an AH-1Z or UH-1Y present, there were two USMC MV-22s. They were among a sizeable number of US aircraft in the Department of Defense static display, which also included two USMC AV-8Bs, currently deployed to Isa in Bahrain to attack Daesh targets in Iraq and Syria.

Positioned in front of the exhibition hall was the full-scale replica of a Eurofighter Typhoon.

Carrying replicas of all the latest weapons, dual-mode Brimstone, Storm Shadow and Paveway IV, the aircraft was the background for many of the visitors' photographs.

While BAE remained tight-lipped about the jet's chances in Bahrain, a high-placed source said the kingdom was on the verge of gaining 12 of 48 Tranche 3 aircraft ordered by its close ally, the Royal Saudi Air Force (RSAF).

BAE Systems would not make any comment.



Major General Sheikh Hamad bin Abdullah Al Khalifa.

Air chiefs' summit

Bahrain hosted its first Air Power Symposium at the Sofitel Hotel in Manama on the eve of the Bahrain International Air Show.

Joining the Royal Bahraini Air Force (RBAF) commander, Major General Sheikh Hamad bin Abdullah Al Khalifa, were the chiefs from Kuwait (Staff Major General (Pilot) Abdullah Al Foudary), Lebanon (Brigadier General (Pilot) Ghassan Chahine) and Pakistan (Air Chief Marshal Sohail Aman).

There were also senior officers from the UK RAF (Air Vice Marshal Gary Waterfall, AOC 1 Group), Royal Jordanian Air Force (Brigadier General Yousef Al Hnaity, Assistant Chief of Staff for Operations and Air Defense) and the US (Lt General Charles Brown, Commander of US Air Force Central Command (CENTCOM)).

One of the more fascinating presentations came from the Pakistan Air Force (PAF) commander, who talked about PAF operations in the Federally Administered Tribal Area (FATA) and how his capabilities had progressed in the past 10 years. He revealed that 90% of the terrorists (around 3,600) had been killed and a peace process was close.

Chahine talked about the methods the air force had been forced to take since the rise of insurgency in Lebanon. He focussed on the methods used by the Huey and Puma helicopters to bomb terrorist positions.

The audience was spellbound when it heard of surplus 400kg bombs, once used by their retired Mirages, being hung underneath Hueys. With not enough clearance between the underside of the Huey and the ground, the Vietnam-era helicopter was placed on two concrete blocks so the bombs could be fixed. The missions were a success and scores of insurgents were killed by the helicopter missions.



The minister of happiness

Minister of Transport and Telecommunications, HE Kamal bin Ahmed Al Mohammed, was beaming as the fourth Bahrain International Air Show came to a close.

“This year’s event will send a clear message that the kingdom is very much back in business and that it is open to regional and foreign businesses to grow their activities from Bahrain,” he said.

“Our show is your show,” he added. “We want people to come here and do their trade, meet new people, and even operate from here. We don’t have free zones like other places. The whole country is tax-free and companies can be 100% owned.”

King Hamad, the ruler of Bahrain, made a point of visiting exhibitors to demonstrate the country’s commitment to aerospace.

The growth of the show was an indicator of this. “We have more exhibitors from more countries than before; we have more official delegations, both civil and military, and we have more than 100 aircraft on the static display or flying.”

The 2018 edition will move to a November date to place it a year away from the established Dubai Airshow.



Minister of Transport and Telecommunications, HE Kamal bin Ahmed Al Mohammed: happy with expanding show.



Tejas pilots prepare for action.



Martin and Al Shuail with the Spitfire.

Indian signs looking good

Making its international debut at BIAS 2016 was the ADA Tejas, the great indigenous hope of the Indian Air Force (IAF).

While the jet has been bogged down by development issues, and received some scepticism from the IAF, things are beginning to look brighter.

Since making its first flight in January 2001, the Tejas has flown 3,063 flights and 1,956 hours.

Now R ‘Swami’ Swaminathan, from the Indian Ministry of Defence’s Aeronautical Development Agency (ADA), says the future looks great. The IAF jets were flown by the Tejas Squadron at IAF Base Sulur, near Coimbatore, in southern India

Double anniversary joy for the UK

The UK was at the show in force with delegations led by the country’s defence procurement minister, Philip Dunne.

The UK and Bahrain celebrated 200 years of partnership – and shared a 40th anniversary special moment as the show coincided with the commemoration of the very first passenger flight of Concorde. The route was London to Bahrain.

Hussain Al Shuail, under-secretary for civil aviation at Bahrain’s Ministry of Transportation and Telecommunications, and British ambassador to Bahrain, Simon Martin, marked the anniversary of Concorde’s historic flight alongside another iconic aircraft, the Spitfire

Students of the Gulf Aviation Academy had also assembled a World War II Supermarine Spitfire at the show.

Comlux's Richard Gaona (left) and Texel Air CEO Fraser Currie, celebrate the agreement.



Comlux and Texel in multi-million deal

Comlux and Bahrain-based Texel Air signed a multi-million dollar agreement to provide Middle East customers with dedicated MRO line maintenance, cabin upgrades and refurbishments on their VIP aircraft.

While Texel Air will provide hangar, maintenance and certification services through its 3,200sqm facility at Bahrain International Airport, Comlux will take care of system upgrades and cabin modification services by hiring high-skilled local craftsmen and engineers, managed and assisted by Comlux America on-site experts.

The agreement with Texel is designed to cut costs and time for Middle East clients requiring work done on their aircraft, said Comlux president and CEO, Richard Gaona.

He added: "Our strategy was to have a place in the GCC to avoid a client having to travel too far for jobs that aren't too big, such as installing satellite communications or changing cabin materials.

The agreement, which is for a minimum two years and which Gaona anticipates will be worth a minimum \$10-20 million a year, marks an expansion of Texel Air's activities.

Malcolm Macbeth with the first of DHL's new Boeing 767-200s.



DHL unveils two new Boeings

Express package and logistics specialist, DHL, used the show to unveil two new Boeing 767-200s to its Bahrain-based Middle East and North Africa (MENA) fleet.

The new aircraft will be deployed to destinations across DHL's regional network, increasing flight frequencies to markets such as Saudi Arabia, the UAE, Afghanistan and Pakistan.

"The expansion of our MENA air fleet further demonstrates our commitment to investing in the region," said Malcolm Macbeth, vice-president of DHL Aviation Middle East and Africa.



Air Arabia brought an A320 to Bahrain for the event.

Sim booster for Air Arabia

Air Arabia's demand for pilots to meet the UAE low-cost carrier's growth plans were boosted at the show with the purchase of a new Level D full-motion simulator.

The Sharjah-based airline announced the signing of the new deal with Textron's TRU Simulation to deliver an A320 FFS X simulator.

The EASA-approved simulator will be installed at Air Arabia's training centre at Sharjah International Airport by the second quarter of this year.

Bahrain Airport Company (BAC) was “very close” to announcing the main contractor to build a brand new \$1.2bn terminal at the kingdom’s international airport as Arabian Aerospace was going to press.

Dave Calderwood reports.

Detailed negotiations on various contracts for the new Bahrain International Airport terminal building took place during every day of the Bahrain International Airshow.

Over the course of the week, BAC signed contracts for air bridges with China International Marine Containers Group (CIMC), elevators, escalators and moving walkways with Finnish company Kone, security screening by L-5, baggage-handling equipment by Dutch company Vanderlande, a data centre with Bahrain Business Machines, and self-service kiosks with SITA.

Late in the week a new joint venture contract was also signed by BAC and NOGAholding (Bahrain’s natural oil and gas authority) for a \$53 million fuel farm. It will take 24 months to complete, relocating the fuel tanks from what has become an urban area, and will comprise of three tanks each holding 10,000 cubic metres of jet fuel, with space for another two should the need arise.

Big question

The big question, however, was who would be named as the main contractor?

Once a deal is signed, the contractor will be on site within 60 days, preparing for the tough challenge of maintaining 100% of the operations of the existing airport while building the new terminal.

“We are in the middle of negotiations so you can imagine how sensitive it is,” said BAC CEO Mohamed Yousif Al-Binfaleh. “We are close to concluding a deal. We are hopeful it will be made within the next few days, maybe even today, and we expect the contractor on site in early April.”

Before then, BAC will have a ground-



King Hamad bin Isa Al Khalifa, ruler of Bahrain is shown a model of the expanding airport by transportation minister Kamal bin Ahmed Mohammed.

BAHRAIN POISED FOR \$1.2BN TERMINAL CONTRACT



Mohamed Yousif Al-Binfaleh, CEO of Bahrain Airport Company.

Brand new island airport

Bahrain’s Ministry of Transport has started planning for a brand new airport to be built on reclaimed land north-west of the kingdom.

“The site has been allocated officially,” confirmed Al-Binfaleh. “The first step has been taken so it will kick-start the planning process, including looking at environmental impact, connectivity to the main island and, of course, first we have to reclaim the land.”

The idea was first suggested in 2010 and a technical study into its feasibility carried out in 2015.

breaking ceremony and hopes to coincide that with Bahrain’s National Charter celebrations on February 14.

The airport development is vitally important to Bahrain. “This is a major project outside of the oil and gas, and manufacturing sectors,” said Al-Binfaleh. “The cost will be \$1.2 billion so it’s the biggest infrastructure project in Bahrain outside manufacturing.

Single runway airport

“We are one of the smallest airports in the region, a single runway airport. Nevertheless, we have the potential to grow. You only have to think of the UK’s Gatwick Airport, with a single runway and 30 million passengers a year. We are currently operating at 8.5 million passengers, quite a healthy growth from 2014, and expect to reach 9 million this year.”

The new terminal, which will be ‘wrapped’ around the existing air traffic control tower, will be four times bigger than the existing one, with a capacity for 14 million passengers a year. It will be a kilometre long, end to end, have 24 gates and accept the Airbus A380.

The plan calls for phase 1, with eight new gates, to be ready in the first quarter of 2019. Phase 2 requires demolition of part of the existing terminal to allow the new facility to expand westwards. It’s due to be finished by the end of 2019.



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Horizon storage terminal has room for expansion.

Dubai's pipe dream set to become a reality

Alan Peaford
reports on an engineering feat that fuels Dubai Airports' growth.

Supplies to the world's largest airport fuelling facility has been secured for at least the next 35 years as the Emirates National Oil Company (ENOC), through its subsidiary, Horizon Terminals, confirmed the successful completion of Project Falcon, a 58km jet fuel pipeline that links its storage terminal in Jebel Ali with Dubai International Airport (DXB) – the world's busiest international airport.

The pipeline also includes provisions for expansion to meet the future needs of Al Maktoum International Airport.

The growth at Dubai Airport has been enormous, said Saif Al Falasi, ENOC's CEO. In 1999 there were 404 million gallons of jet fuel delivered. The 2015 calendar year grew to 2.1 billion gallons and the prediction is, that by 2020, there will be a need for 3.3 billion gallons.

"This pipeline is an important part of the infrastructure of Dubai and supports the industry that, by 2020, will represent 37.5% of the country's GDP and will be responsible for 750,000 jobs," Al Falasi said.

The project, valued at approximately \$250 million, has state-of-the-art oil terminal facilities with 140,000 cubic metres of storage capacity. The facility also has an 850 cubic metres-per-hour pumping capacity

Number of hurdles

The new pipeline faced a number of hurdles before commissioning, as ENOC needed to get 5,000 'no objection certificates' (NOCs) from 42 different government departments, local authorities, stakeholders, and agencies.

Approximately 10 kilometres of the pipeline's original proposed route was redirected due to Dubai's infrastructure development changes and the oil company worked closely with the Dubai Municipality and the transport providers to identify an alternative route.

The pumping capacity of the pipeline represents 55% of the ultimate fuel demand of Dubai International Airport. In the near future when pipeline extends to Al Maktoum



Saif Al Falasi: "This pipeline is an important part of the infrastructure of Dubai."

International Airport, it will be able to meet 60% of Dubai Airports' combined demand in 2050. The pipeline can also cater to other suppliers' fuel requirements at the airport.

"We could not have achieved this milestone without the assistance of all Dubai Government departments, local authorities, stakeholders and agencies. This project truly reflects the spirit of collaboration that Dubai is renowned for, where the Emirate, under the leadership of his highness sheikh Mohammed bin Rashid Al Maktoum, UAE vice president and prime minister and Ruler of Dubai, offers a platform for growth for enterprises, entities and establishments

through partnerships to foster growth and prosperity," Al Falasi said.

The aviation business in the UAE has sustained a compounded annual growth rate of about 11% over the last 15 years. Fuel sales volume have grown from about 460 million US gallons (USG) in 2001 and to about 2.2 billion USG in 2015, reflecting a 480% growth over this period.

Launch several initiatives

"Dubai International Airport's position as the busiest airport in the world and preparations for the World Expo 2020 has enabled the emirate to launch several initiatives to transform Dubai's economic landscape. The new pipeline eliminates the constraints of road trucking of jet fuel that would have serious limitations for meeting the airport demand in future years," Al Falasi said.

ENOC obtained approx. 5,000 No Objection Certificates (NOCs) from 42 different Government departments, local authorities, stakeholders, and agencies. Approximately 10 kilometres of the pipeline's original proposed route was redirected due to Dubai's infrastructure development changes, and has worked closely with the Dubai Municipality and RTA to identify an alternative route for the pipeline. The project involved a total of 45 road crossings without causing any traffic disturbances to the major roads and highways.

Aruba agreement could benefit Saudi owners.



SAUDI GOES DUTCH TO BOOST BUSINESS

A new agreement between Saudi Arabia and Aruba, the Dutch territory in the Caribbean, will allow new freedoms and commercial opportunities for Aruban-registered aircraft in the kingdom.

Alan Dron reports.

Following a round of negotiations that only took around a month, Saudi Arabia's General Authority of Civil Aviation (GACA) and Aruba's Department of Civil Aviation (DCA) agreed and signed an International Civil Aviation Organization (ICAO) 83bis agreement.

This is an agreement between two national authorities where the country in which an aircraft is registered may share oversight responsibilities with the state in which it is operated.

The move will give Saudi based operators the opportunity to register their aircraft in Aruba to operate them commercially, while benefiting from Aruba's cost-effective high level of Service along with their in high aviation safety standards.

"An 83bis agreement is standard ICAO procedure which can be done electronically, so long as the two authorities are communicating with one another," explained Alexandria Colindres, public relations manager and civil aviation liaison with The Registry of Aruba, which is the marketing partner of the Aruba DCA and handles client relationships.

"It's a pretty common agreement. We have one with Kazakhstan, one with Tajikistan, a similar one with Russia and we're working on one with Jordan." In addition Aruba has approved maintenance organisation based in the U.A.E. and Singapore; therefore a physical audited is no longer required for them to be accepted by the DCA.

Private aircraft

In this case, an Aruba-registered executive jet currently operating in Saudi Arabia as a private aircraft with business aviation specialist Arabasco – Boeing 737-400 P4-NOF – will be allowed to operate commercially under a Saudi air operator's certificate (AOC) issued by GACA.

Arabasco also has another Aruba-registered aircraft in its fleet, a Boeing Business Jet, but it is not known if this will also benefit from the agreement.

The deal was triggered by Arabasco, which wanted to be able to hire out the aircraft for commercial charters. The company offers a range of aviation-related services in the kingdom, from fixed-base operations (FBO) to aircraft maintenance, management and charters, plus aircraft fuelling services.

"They wanted to keep their AOC, which is in Saudi Arabia," explained Colindres.

The other option would have been to opt for an Aruba AOC, but this would have taken more time and seemed less sensible when it already had a Saudi AOC.

In accordance with the ICAO, the 83bis agreement, allows both authorities to share regulatory oversight responsibilities between the state of registration (Aruba) and the state of operation (KSA) of the aircraft, thus ensuring the safety of the aircraft and its operations.

Now that the ground had been broken with the Arabasco aircraft, other Saudi-based operators may follow suit and take up Aruban registry, said Colindres.

Very receptive

Saudi Arabia had been "very receptive" to the new arrangement, she said. "Arabasco is a very reputable operator, which I think made them comfortable about it."

A request for information from GACA on the agreement with Aruba was not answered.

A few months prior to the agreement between the Registry of Aruba and GACA, Arabasco had signed a memorandum of understanding (MoU) with the registry. This laid down the basis for further collaboration on aircraft registration and inspections for Arabasco aircraft. The Aruba DCA had already approved Arabasco's Part 145 maintenance repair organisation, allowing required work to be performed in Saudi Arabia.

A number of foreign-registered executive aircraft operate within Saudi Arabia, whose large numbers of high-net-worth individuals are regular users of private jets, for both business and leisure purposes.

The director of civil aviation of Aruba, Edwin Kelly, said the agreement marked the level of committed partnership and cooperation for maintaining the highest standards in air safety and regulatory compliance with ICAO by both states and their civil aviation authorities, and was an indication of the safety oversight, reputation and commitment to assist the aviation industry at large.

"We look forward to many more fruitful operations in conjunction with GACA," he said.

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February marks that big aviation date in the calendar, the co-located Aircraft Interiors Middle East (AIME) and MRO Middle East. This year, reports **Marcelle Nethersole**, organisers are expecting a larger than ever turnout with old and new exhibitors, including newly branded Stelia Aerospace.

When sitting pretty is the AIME

AIME and MRO Middle East take place on February 3-4 at Dubai World Trade Centre (DWTC). As ever, the event brings together many global aviation companies eager to showcase their latest cutting-edge designs, innovative cabin fittings and technological advancements.

This year, the show will feature an innovative airline buyers' programme, bringing together visitors and exhibitors in prescheduled one-on-one appointments, and it will see the return of the in-flight entertainment and connectivity (IFEC) pavilion, which will host the third annual in-flight workshop and awards.

Last year, a total of 85 international airlines from the Middle East North Africa (MENA) region and beyond, including Gulf Air, RwandAir and Turkish Airlines, attended AIME.

In a follow-up survey, 95% of airline attendees said they had bought, approved or recommended purchases. More than half of them added that they did not attend any other aircraft interiors event worldwide.

Around 60% of exhibitors rebooked for AIME 2016 off the back of the last event, proving the importance of the Dubai show. Due to this success, one company excited to debut under its new branding at the show is Stelia Aerospace.

Created from a merger

Last year was a busy year for Stelia Aerospace, starting with its new branding in early 2015, which was created from a merger between Sogerma and Aerolia.

"We retained the Sogerma name to help our customers make the transition to our new company identity but AIME 2016 will be the first outing for the Stelia Aerospace brand for the cabin interiors business line," said Emmanuel Regnier, head of sales Europe, Middle East & Africa, cabin interiors.

The company, which is known for designing and

manufacturing luxurious custom-made business and first-class passenger seats for airlines around the world, is present on three continents, including North Africa, where, last December, it laid the foundation stone of the group's new factory in Casablanca, Morocco.

"We offer a full product range, from fully customisable Ultimate first-class suites and Solstys and Solstys III, through to the Equinox family and the medium-haul Celeste seat," said Regnier.

"We are proud having built our reputation on quality and on-time delivery, which we believe is why our product range is certified on most of the latest aircraft manufacturers' programmes."

It is the Solstys III seat that the company is showcasing at AIME, which gained launch customers on the 787 and A350 XWB during 2015.

"The Solstys III offers a wider seat and a longer bed than most of our competitors," said Regnier.

Constant challenges

Seat manufacturers face constant challenges with IFE technology advancement. This is something that will certainly be discussed at AIME.

"Our business-class seats allow us to install up to 18.5in screens and our first-class seats up to 32in. With each new generation of IFE system the weights and power requirements are coming down. Our research and innovation department, as well as our partnership with Airbus Group Innovation, allows a close monitoring of electronic trends and improvements to make sure that our seat platforms support innovative and quality new features," said Regnier.

And it's not just technology that advances. In this age, more people are getting wider – a trend of which seat manufacturers are aware.

"Our premium-class seats are designed for comfort and are significantly wider than economy-class seats. As an example, the Solstys III offers a 23in (58.5cm) width, which is one of the widest seats on the market for premium business-class. In the premium segment we believe it is the overall passenger environment that is taking the lead over a purely dimensional analysis of seat comfort. Passengers wish to feel as comfortable in the air as they are in their living rooms. Seat width and bed length, of course, play a role in that, but just as important are the surroundings, such as well positioned tables and stowages to place your belongings, and the use of materials that are pleasing both to the touch and to the eyes," said Regnier.

"The customised experience and use of carefully selected materials will be the trends of the coming years. We are all becoming more sensitive to the question of design thanks to technology evolutions in our everyday lives and aircraft seats are already reflecting these trends."

Regnier added that the Middle East is one of the company's core markets with around 30% of its flying seats being installed in the region.

Stelia Aerospace is showcasing the Solstys III seat at AIME.





High quality
synthetic
vision gives a
sense of
reality.

Out-of-the-box training that's out-of-this-world

Rockwell Collins has taken flight simulation to the next level with the launch of its new WholeEarth high-resolution synthetic environment. Steve Nichols reports.

The new WholeEarth high-resolution synthetic environment enables pilots to undertake a realistic simulated flight anywhere in the world.

The product was launched at the Interservice/Industry Training and Simulation and Education Conference (I/ITSEC) held in Orlando, USA.

It provides an 'out-of-the-box' training capability for simulation training on all flight platforms and applications, with the added benefit of significantly reducing costs and preparation time.

It includes access to a catalogue of more than 10,000 airports worldwide, combined with Rockwell Collins' high-resolution capabilities.

Kevin Kovar, Rockwell Collins simulation product line manager, said: "We've had the WholeEarth product line for around 20 years but we've really now enhanced it to a new level. We've increased the resolution, the texture and also included new 3D features. We also have environments for summer, winter, day and night, and even sensor-like environments."

Synthetic vision

These mimic what a pilot might see with a synthetic vision or similar system.

The new WholeEarth database has been produced by taking existing 30-metre satellite data and 0.5-metre imagery and then 'painting' it with typical forests, mountains, lakes and other topological features.

"This is a little like painting by numbers, only we don't paint with colour, we paint with features," said Kovar.

"We also have databases of typical urban, suburban and cityscapes that can be included as required. The end result is a simulator environment that is very realistic and representative of the types of areas you would be flying in."

So the ground features you see won't be exact, but are representative of the type of areas you might be flying over. The airport runway features, though, are more precise.

Kovar said attention to detail has been paramount. "Obviously, the American east coast looks very different

to the west coast, which, in turn, looks nothing like Asia, for example. So we have databases of typical houses in the American south-west, north-west, mid-west and east coast," he said. "We've also built a database of typical scenery and housing in Asia.

"We aim to add a new geo-specific area every six months—the next one we will be working on is the Middle East and we hope to include that in the build that will be available in November 2016."

So will pilots be able to "fly" around the Burj Khalifa in Dubai?

"Not at the moment but we are looking at adding well-known landmarks and features at a later date," Kovar said.

Officially launched

He added that the new WholeEarth environment will be officially launched in May, when it is delivered to Rockwell Collins' first, as yet unnamed, customer.

"The customer has bought the environment and specified five airports from our catalogue. That makes it very cost-effective for them," he said.

LeAnn Ridgeway, vice president and general manager of simulation and training solutions for Rockwell Collins, said: "Our WholeEarth synthetic environment reduces the 'time to training' by an order of magnitude. The new WholeEarth can provide immersive training environments within hours or days."

Gaming enthusiasts can't help but see a parallel between the quality of the graphics used in WholeEarth and their own computer games.

The gap between games and real-life simulation has closed so much that Rockwell Collins recently partnered with University of Utah Entertainment, Arts and Engineering (EAE) Department on a cooperative research and development agreement.

Rockwell Collins said both it and the University of Utah will benefit from the collaboration, which will also expose the college students to careers in simulation and training.



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Still pushing the aviation boundaries – 60 years on

Zine Badissy has spent a career in aviation, pushing the boundaries of whatever he was focused on – and he's still at it, as Chuck Grieve learned.

When Zine Badissy was growing up in his native Morocco, he lived near enough to Casablanca airport to watch classic aircraft of the 1950s taking off and landing. It kindled a fascination with the “movement of great birds” that remains undiminished more than 60 years later.

Today, Badissy is the chairman and president of the US-based Air Transport Support Group (ATSG), which comprises three companies he founded in the 1990s: Global Aviation Services (GAS), Aviation Spares and Services International Company (ASSIC) and Global Inflight Products (GIP).

His operations may be global but the Middle East, and especially Africa, remain areas of special interest and affection. The way he sees it,

the lack of other modes of transportation means Africa, more than anywhere else in world, needs aviation. But it needs safe aviation, a message he has spread tirelessly to operators, manufacturers and suppliers throughout his career.

He joined Royal Air Maroc (RAM) as an engineer in 1969, a pivotal time for the airline. It was buying its first Boeing 727s and needed its own aeronautical engineer to follow up on final assembly in Seattle, Washington. The young Badissy received that appointment and soon found himself in purchasing and contract negotiations with aircraft and engine manufacturers.


He took two years out to complete his MSc in aeronautics and astronautics at MIT before returning to the airline, where he remained as

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“As far as I’m concerned, if you enjoy what you’re doing, that’s retirement.”

ZINE BADISSY

RAM’s assistant general manager in charge of fleet planning, financing and purchasing of aircraft and engines until 1990.

His experience in the mid-1980s, when Morocco had to reschedule national debt, convinced him that owning aircraft made more sense for airlines like RAM than leasing them. Rescheduling its debt meant Morocco could not guarantee export-import (EXIM) bank loans. Undeterred, Badissy explored asset financing without sovereign guarantee.

“By the late 1980s, I convinced the EXIM Bank to allow us to structure a defeased asset-based Japanese loan,” he said. “This structure earned \$4.5 million for RAM on the day of delivery of two 737s.”

In 1989, he accompanied the chairman of RAM to an Arab Air Carriers Organisation meeting in Amman, Jordan. On the agenda was possible cooperation among Arab airlines in buying aircraft. The upshot was his election as the head of a multi-national venture set up to look into consolidating the purchase of new aircraft and engines under common technical specifications and configurations, thus reducing the airlines’ cost and increasing inter-airline cooperation.

Purchasing over leasing

Although that initiative led nowhere, Badissy remains an advocate of purchasing over leasing. “Over the years, I’ve made numerous presentations across the African continent about export financing instead of leasing fleets in order for airlines to build up their assets over the long term to help develop their country’s economy and their tourism industry.

“The interest of EXIM banks is to export their national goods, so they offer US Government guarantees that secure low interest rates. Some [African airlines] are doing it. Sovereign airlines don’t have the same limitations that come with having shareholders. The big advantage is they end up owning the equipment instead of having to return it and start again with a more expensive lease.”

In 1990, Badissy left RAM and started GAS, specialising in aircraft and engine sales and leases to client airlines in the United States, Canada and the Middle East. ASSIC and GIP followed in 1992 and 1995 respectively, both set up with the encouragement of airline customers. ASSIC supports the spares and repairs needs of the aviation industry; GIP designs and manufactures on-board products. All three



companies are based in Redmond, Washington, near Microsoft and Boeing.

At 73, Badissy is busier – and more creative – than ever. He’s “trying to do less” with his companies so he has more time to develop new ideas and products; a new product just launched by GIP is a meal container that costs less and takes half the space of those currently used by airlines.

Porcelain made of magnesium

He’s “thinking about a lot of things”, such as porcelain made of magnesium – harder, lighter – and a new airsickness bag inspired by the Ebola outbreak and designed to prevent contamination of passenger and crew.

A few years ago, convinced that the ‘digital gap’ between the developed world and Africa is impeding its progress, he and a friend started the Sefrioui-Badissy Foundation to help bridge the gap by giving reconditioned computers by the container-load to schools on the continent.

He also wears the unlikely mantle of fruit farmer: he grows apples and cherries on a 7,000-acre farm in eastern Washington state. “This was supposed to be a hobby but it’s grown to become a huge company.” Two days a week he tends to what he calls his “side job”.

“I have no idea what retirement is,” he said. “As far as I’m concerned, if you enjoy what you’re doing, that’s retirement.”

Saudia Aerospace Engineering Industries (SAEI) is already a substantial player in the Middle East maintenance repair and overhaul (MRO) arena. Now, as Alan Dron reports, its CEO says major expansion and new strategic partnerships will give it a bigger role in both the civil and military fields.

SAEI takes a quantum leap forward

Jeddah-based SAEI used November's Dubai Airshow as the platform to give details of its plans for a major upgrade of its facilities. The company will bring together on one site personnel who are currently scattered in multiple locations around the city. It will create, what CEO Nader Khalawi described as the largest MRO facility in the Middle East, and one of the largest worldwide.

The huge facility, which will eventually cover around 1,000,000sqm and cost some SR2.87 billion (\$760 million), is already more than 60% complete on a site northeast of Jeddah's King

Abdulaziz International Airport. It should be open by the end of 2016.

It will contain 11 hangars, including four narrow-body and four wide-body, capable of conducting D-checks, together with a paint hangar and another for wide-body line maintenance operations.

There will be no fewer than 28 aircraft component shops, including an engine shop capable of handling General Electric GE90-size powerplants and three test cells.

When the new base is operational SAEI intends to perform MRO work on both aircraft as a whole and on individual components. "Components are a



An artist's impression of the \$760 million complex.

very big area we're concentrating on," said Khalawi.

"It's unfair to call it a launch, more like an unveiling," he said at the show. Construction work has been on-going for two years but the project has not been widely publicised.

"It was announced quietly before," added SAEI's director, technical sales and marketing, Abdulmohsen Aynousah. "We didn't want to talk about it until we could see it was happening."

It will mean a quantum leap for SAEI, which currently has a two-bay hangar and several plants around Jeddah. These will all be consolidated on the new site. "We have developed a lot of capability over the years," said Khalawi. "Our problem was capacity. We're going to a proper facility where we can use the people and equipment we have."

"Usually in this part of the world, people build the buildings and then start looking for the people. In this case, we have the people and are building the structures."

Three shifts

At present, 90% of SAEI's workload comes from Saudia. "We're working three shifts because the size [of the present facility] is too small. We're having to turn away work."

He says the cramped premises are "like sitting in a barrel, with somebody sitting on your head".

The new facility will handle both civil and military work and the latter category is something that Khalawi is keen to expand: "We're looking for a lot more military work, just because it's readily available and there's very little competition. We're competing with people in Europe and the US and have the advantage of being Saudi."

Asked if SAEI would be seeking to take on foreign military work, he noted that handling other countries' warplanes always came with a political aspect attached: "I can tell you that there's enough work from the Saudi military to keep us busy. We have 5,000 trained and highly experienced Saudis working for us. Their average experience is 18 years."

Around 92% of SAEI's workforce

Continued on Page 100

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CONTINUED FROM PAGE 98

is made up of Saudi nationals. While this is extremely high by the standards of the region, Khalawi does not want to aim for a totally Saudi workforce. The company benefited from having a mixture of nationalities, he said.

“Having 100% is not a goal. We would like to have a certain amount of other experiences, let’s put it that way – people who do things differently, so we learn as we go along. But the number might go over 92%. In the next five years we’re adding 400 Saudi technicians every year.”

An increase in military workload may drive this increase, so that the country’s military aircraft can be worked on by Saudi nationals.

SAEI was created 55 years ago as the technical division of Saudi Arabian Airlines. Its long-term plans always included training a new generation of young Saudis to maintain the company’s aircraft.

It was registered as a private commercial organisation in 2009 as part of the plan to privatise the national carrier and 50% of its shares are now held privately.

SAEI is confident that there will be enough work to keep the new facility busy. It currently has around SR5.3 billion (\$1.4 billion) per year under contract and Saudia is its major customer, although it believes that the percentage of third-party work it undertakes will increase when its new facility comes on-line.

“The market is under-served. There are a lot of things going out of the region [to MRO providers] in Europe and the US to be repaired,” said

First Premium leadership team
- Sheikh Ghassan Omar Attar (right) and Ribhi Al Husseini, general manager.



FIRST IN LINE TO FILL THE MAINTENANCE GAP

A new force in line maintenance has begun offering competitive services at Saudi Arabia’s busiest airport. First Premium, part of the kingdom’s Attar group of companies, is building on almost 60 years of experience in the aviation industry with its latest service offering at Jeddah’s King Abdulaziz International Airport (KAIA).

“As Attar Ground Handling, we were the first ground-handlers for Saudia and are now partners in the Saudi Ground Services (SGS) company, serving 28 Saudi airports. We have been general service agents (GSA) for as many as 16 airlines in Saudi Arabia and had successful travel and tourism businesses, so we know the industry,” Sheikh Ghassan Omar Attar, owner and CEO of First Premium said. **“We identified a gap for a licensed MRO business to provide the line maintenance for Jeddah and, with Ribhi’s experience with SAEI, we knew we could provide a proper service.”**

The company now has approvals for A320s and is adding A330 and B777s in the near future.

With the move to the new KAIA airport, Sheikh Ghassan is planning a 10,000sqm hangar and expanding to heavier maintenance.

Khalawi. SAEI’s position in the Gulf, together with the breadth of services it offers, will mean that, when the new facility comes on-line, customers will be able to have MRO work undertaken much closer to home, cutting both costs and the time that an aircraft is out of service, added Khalawi.

SAEI’s growth is likely to be helped by the expansion of Jeddah’s airport. Its capacity is due to be enlarged to 80 million passengers a year, complete with a high-speed train link to Mecca.

“We believe there’s a lot of business in both the civil and military fields,” said Khalawi. “The military in Saudi Arabia is, as you know, quite extensive and we believe there’s a big opportunity there. We’re working with major manufacturers such as Boeing, Lockheed Martin and General Electric to develop both civil and military capability.”

On the military side, he added: “If we can capture what’s [available] in Saudi Arabia, that will be enough. I think we’re in a position to maintain anything that’s built in the western world.”

There will be a separate, secure section of the new facility dedicated to military MRO activities.

Strategic agreements

The Dubai Airshow saw two announcements of two strategic agreements that will foster the company’s growth.

Lufthansa Technik (LHT) and Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) both signed strategic partnerships with the Jeddah-based company.

LHT will support SAEI with component maintenance for Saudia’s A320 and A330 fleets and will further assist SAEI to develop MRO capabilities for Airbus and Boeing aircraft at Jeddah. In turn, LHT will use SAEI as a sub-contractor for those parts for which SAEI already holds capabilities.

Both companies also intend to jointly market their mutual capacities to third-party customers in the region with commercial or military aircraft.

“We are pleased to extend our cooperation with Lufthansa Technik, a trustful, dependable and innovative partner, on components support for our current and future Airbus and Boeing fleet,” said Khalawi.

LHT’s CEO, Dr Johannes Bussmann, added: “The Middle East region is extremely important for us. We are delighted and honoured to be able to further expand our trustful and reliable cooperation with SAEI. Its objectives to become a sustainable MRO partner for Middle Eastern operators will be strongly supported by Lufthansa Technik in the future.”

Meanwhile, AFI KLM E&M has signed an agreement whereby it will support Saudia with a power-by-the-hour scheme, with Boeing 777 and 787 components, and help SAEI to develop MRO capabilities for future Airbus and Boeing aircraft. In turn, AFI KLM E&M will use SAEI as a sub-contractor for those parts for which SAEI already holds capabilities.

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*Is it time for Middle East airlines to widen their options on spare parts and repairs? As **Chuck Grieve** reports, one specialist supplier believes it is.*

When an alternative strategy looks the part

H EICO Aerospace's Flight Support Group states with quiet authority that it is the world's best and largest supplier of commercial, non-original equipment manufacturer (OEM), Federal Aviation Authority (FAA)-approved aircraft replacement parts.

"Essentially we design and manufacture parts under our parts manufacturer approval (PMA)," said Jim O'Sullivan, vice-president sales & business development for Europe, Middle East and Africa. "These FAA-approved parts are, by design, identical to the OEMs'."

The group is also engaged in component repair and overhaul of all parts of the aircraft; activities carried out at several US facilities. It also supplies manufactured components to OEMs.

HEICO's other group, Electronic Technologies, designs and manufactures specialised components for customers including space and defence agencies. Among many other applications, the Rover spacecraft on Mars and the New Horizon's first mission to Pluto carry HEICO components.

O'Sullivan said that although the supply of approved alternative parts has been around a long time, it remains an aviation niche business. In the context of overall maintenance, repair and overhaul (MRO) spend, the percentage allocated to alternative parts is still "in the low single digits".

"People like PMA for a couple of reasons. The primary reason in most cases is significant cost savings – this is what we've found in Europe, the US and parts of Africa.

"About 60% of the cost of overhaul is material-related. When the only source of parts is the OEM, you have little or no leverage for negotiation. Companies like HEICO, which manufacture FAA-approved alternatives, are seen as an important option for supply chain leaders to reduce costs.

"In the Middle East, continuity of supplies is equally important.

"After more than 20 years of doing business in the Middle East, we see an increased interest by the local carriers in using PMAs and designated engineering representative (DER)-approved repairs."

HEICO Flight Support's main Middle East presence up to now has been group company Seal Dynamics, a business focused on the aftermarket and specialising in technical sales and distribution of aerospace components.

Historically, HEICO has been an engine PMA company "heavily invested" in engine parts. It has experienced "phenomenal" growth in the last 24 years, becoming a \$1.2 billion company today from a \$26 million company at the time of its reconstitution in 1990.

Watching the changes over the last 15-20 years in the engine maintenance and overhaul environment, HEICO responded to customer demand and expanded into component overhaul and repair and the manufacture of PMA parts and spares.

Area of focus

Cabin components is a recent area of focus. Where cabin interior fittings are important for an airline's customer experience and brand differentiation, sourcing replacement parts from the OEM can be time-consuming and costly.

"That's where PMA parts come into their own," said O'Sullivan. Airlines are assured they are buying FAA/European Aviation Safety Agency (EASA)-approved parts that retain the design, quality and functionality of the originals.

Selling the concept of alternative parts takes time, he said. Many airlines in the Middle East are "OEM centric", and with good reason: they have very young fleets still under warranty and the OEMs have done a lot to help them become established.

"The HEICO mentality has always been that we're involved in a marathon, not a sprint," said O'Sullivan. "We are the natural partners for the airlines, always prepared to invest time, money and energy to help them reduce maintenance costs."

In Europe, HEICO has partnerships with all the big carriers. "We place people on site when an airline requests it. There's no blueprint, no one-size-fits-all."

Everywhere O'Sullivan and his team of eight travel, they are talking to airlines and MRO operators, advising on parts strategy and how alternative parts fit in the supply chain. "We have a 'face-to-face' attitude, which means we're here, we're consistent, we're available."

The MRO Middle East show has been important for HEICO since its inception. "It's a hugely important networking opportunity with a great mix of airlines and MRO decision-makers from the Middle East, Near East and North Africa, and a great place to showcase all we're doing," said O'Sullivan.

"This year our message is we're open for business and ready to expand."

Jim O'Sullivan - Heico has been responsive to change, Below Heico skilled in PMA parts manufacture.



SKILL FACTOR HELPS IRAN

Aircraft maintenance is one of the key areas of interest as sanctions against Iran are removed. Shahram Sharifi reports from Tehran on the current situation for maintenance, repair and overhaul (MRO) in the country.

It was the famous German philosopher, Friedrich Nietzsche, who first declared: "That which does not kill us makes us stronger." He could easily have been talking about Iran's MRO industry. For, despite what is believed to be the toughest sanctions ever imposed on one country by the world community, Iran boasts a strong, skilled and professional MRO industry.

Because of the sanctions, Iranian airlines still use different aircraft types with an average age of more than 20 years – sometimes B727s and B747s can be more than 40 years old.

However, the low rate of accidents and incidents attests to the excellent quality of maintenance being carried out.

Heavy maintenance tasks like C, D and S-checks have had to be carried out within Iran, which has led to the creation internally of a highly experienced and skilled workforce.

There are a number of diverse facilities within the country. These include:

■ **IRAN AIR, THE NATIONAL AIRLINE AND FLAG-CAREER OF THE ISLAMIC REPUBLIC OF IRAN.**

Maintenance services at Iran Air were established when it launched more than 50 years

ago. At first it was only line maintenance and routine checks, with aircraft being sent to European countries for heavy checks. Now, however, the airline does all services from line maintenance to overhauls in its bases at Tehran Mehrabad International Airport (three hangars) and Tehran Imam Khomeini International Airport (one hangar).

Iran Air accepts other airlines' aircraft maintenance services, too.

■ **IRAN AIRCRAFT INDUSTRY (SAHA):**

Saha industries is different from Saha Air. This company, with more than 30 years' aviation experience, is one of the few centres in the country able to complete heavy maintenance services and modifications on nine different aircraft and 20 different engine types for civil and military customers.

■ **IRAN ASEMAN AIRLINES:**

This airline, which boasts a joint aviation requirements (JAR)-145 certificate and experienced personnel, has two different hangars and is the only centre providing

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DA40 TDI



DA42 TDI



Simulator DIAMOND FSTD

DIAMOND AIRCRAFTS - DA40 TDI AND DA42 TDI, PURCHASE OPPORTUNITY

Atlas Capital, the leading independent investment bank in Morocco, has mandated MDS Aviation, Diamond Representative & Service Center, a maintenance workshop Part. 145 located in Morocco, to sell 6 DA40 TDI, 3 DA42 TDI, a DA 40/42 simulator and a lot of spare parts. Aircrafts are based at Tit Mellil airfield (GMMT) in Casablanca, Morocco.

MODEL	CN-CEC	MANUFACTURING DATE	ENGINE MODEL	ENGINE TOTAL HOURS	PROPELLER MODEL	PROPELLER HOURS	AVIONIC
DA40 TDI	CN-CEC	oct.-07	TAE 125-02-99	260	MTV-6-A	119	G1000
DA40 TDI	CN-CED	oct.-07	TAE 125-02-99	891	MTV-6-A	891	G1000
DA40 TDI	CN-CEE	feb.-07	TAE 125-02-99	725	MTV-6-A	001	G1000
DA40 TDI	CN-CEF	dec.-07	TAE 125-02-99	718	MTV-6-A	718	G1000
DA40 TDI	CN-CEG	dec.-07	TAE 125-02-99	100	MTV-6-A	1 217	G1000
DA40 TDI	CN-CEH	august-09	TAE 125-02-99	806	MTV-6-A	000	G1000

MODEL	MANUFACTURING DATE	ENGINE L MODEL	ENGINE L HOURS	ENGINE R MODEL	ENGINE R HOURS	PROPELLER L MODEL	PROPELLER L HOURS	PROPELLER R MODEL	PROPELLER R HOURS	AVIONIC	
DA42 TDI	CN-CEK	dec.-07	TAE 125-02-99	1 037	TAE 125-02-99	538	MTV 6-A-C-F	1 037	MTV 6-A-C-F	538	G1000
DA42 TDI	CN-CEL	dec.-07	TAE 125-02-99	001	TAE 125-02-99	250	MTV 6-A-C-F	178	MTV 6-A-C-F	1 081	G1000
DA42 TDI	CN-CEM	June-10	TAE 125-02-99	1 496	TAE 125-02-99	979	MTV 6-A-C-F	302	MTV 6-A-C-F	302	G1000

MODEL	MANUFACTURING DATE	DISPLAY SYSTEM	SIMULATED AIRCRAFT	TOTAL HOURS
Simulator DIAMOND FSTD	nov-10	Cylindrical Screen 180°x40°	DA40/42 G1000	11 208:00

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maintenance services to many different aircraft types in the country and region, from light to heavy planes like Commander turboprops, ATR-42 & 72, Falcon F-20 & 50, Piper Chieftain, Dornier-228, MD-80, F-27, F-28, F-100, B727, A320 and A340.

■ PARS AVIATION SERVICES:

This 17,000sqm centre, which is located in the northwest of Tehran Mehrabad International Airport, has both local and international staff working in 20 technical shops, two fully equipped hangars, four disposable part stores and two high-tech precise calibration buildings. It provides services to domestic and Russian civil and military planes/helicopters.

■ FARSCO:

Farsco Aviation MRO Centre is the leading provider of aviation services to the Iranian airlines and attracts customers from the Middle East and other countries. Its 40,000sqm hangar, which was established in March 2002, is the largest in the Middle East and is designed to receive six wide-body aircraft simultaneously.

Warehouses and workshops include a sheet metal shop, non-destructive testing (NDT) shop, cabin shop, paint shop, fibreglass shop, avionics shop and safety equipment shop.

Farsco combines a close-to-the-airline business model with a broad menu of capabilities, such as airframe, engine and engineering services, in order to help customers operate more efficiently with high levels of safety.

Iran aircraft industries (31%), Iran Air (25%), French airframer Stelia Aerospace – Sogerma (21%) and Mahan Air (20%) all have a stake in the business.

Statistics show that maintenance of an aircraft during its flying life can easily add up to two or three times its original purchase price. With some smaller airlines not having the ability to do the work themselves and, thus, handing over the maintenance of their fleets to international MROs, keeping costs down is vital.

If the sanctions lift in the near future and Iran has no more problems getting parts and enjoying financial transfers, its experience in base maintenance and cheap manpower could easily attract other airlines in the region.



Iran Air does it all from C-checks to overhaul.

**Innovation and competitiveness
in the heart of the Middle East**



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A 50-50 joint venture between AFI KLM ESM (AIR FRANCE KLM Group) and Aircelle (Safran Group), AMES provides maintenance and repair services for all engine nacelle types, serving airlines operating out of the Middle East region. AMES operates a state-of-the-art repair shop located in Dubai's Jebel Ali Free Zone, providing services for a full range of nacelle types: Rolls-Royce, General Electric, CFM International and Pratt & Whitney engines. The local anchorage of the joint venture in Dubai, in the heart of the Middle East, is an essential asset for its customers, which benefit from local support and a nimble response tailored to their needs, removing the need for time-consuming, costly, fleet transfers outside the region. AMES facility is approved GCAA and EASA Part 145.



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While the use of cameras on the flight decks of commercial aircraft is currently a thorny subject, a training organisation in Jordan has successfully implemented the recording technology on its fleet.

Ammar Yousef, COO of Ayla Aviation Academy, explains how the introduction of the equipment has brought benefits to the trainers and trainees.



Cockpit cameras help our trainees to focus

The camera is now a familiar piece of kit in an Ayla cockpit.

Installing cameras in commercial aircraft cockpits is a subject that would certainly generate lots of heated debates between proponents and opponents.

This is especially true after an incident or accident where, knowing what had transpired inside the cockpit seconds or minutes before a catastrophic malfunction or mysterious crash, is absolutely crucial in determining the root causes or any contributing factor.

Ayla Aviation Academy, an aviation training organisation based in Aqaba, Jordan, pioneered and adopted the use of cameras as standard operating procedure in all its training flights (both dual and solo) and started videotaping every single mission in early 2014.

At the beginning there was a slight resistance to change from flight instructors but, as time went on, and everyone realised the huge benefits, the new concept started to take hold and all training staff supported the initiative.

The initial objectives behind recording and archiving every training exercise in video and audio were:

- As a debriefing tool – a picture is worth a thousand words but a video is worth thousands of pictures. The ability to retrieve a video-recorded training exercise proved to be a fantastic training aid and made the debriefing process much more effective and robust.

- To demonstrate evidence of progress – video recording of training exercises is solid evidence to share with a parent or sponsor if they inquire about progress (or lack of) for a student, particularly if the student has accumulated extra flying hours above and beyond the set syllabus due to, perhaps, performance issues.

- To create a business-like cockpit – even though cameras were not intended to police students and instructors, the presence of a third set of eyes in a training cockpit played a significant part in elevating the instructional atmosphere and established a new bar for the instructor/student relationship.

Incidentally, there were two additional key benefits that were not initially envisioned or intended when we first adopted this technique and only came about after the fact:

- Cameras acted as a standardisation tool for flight instructors and students – in addition to the regular standardisation sessions conducted for instructors, the chief flight instructor now has the opportunity to conduct “unannounced” spot checks or audits of video-recorded missions with the aim of providing feedback to the instructor as part of continuous improvement. The same thing works during a solo flight where a flight instructor is able to monitor the student’s progress and provide feedback.

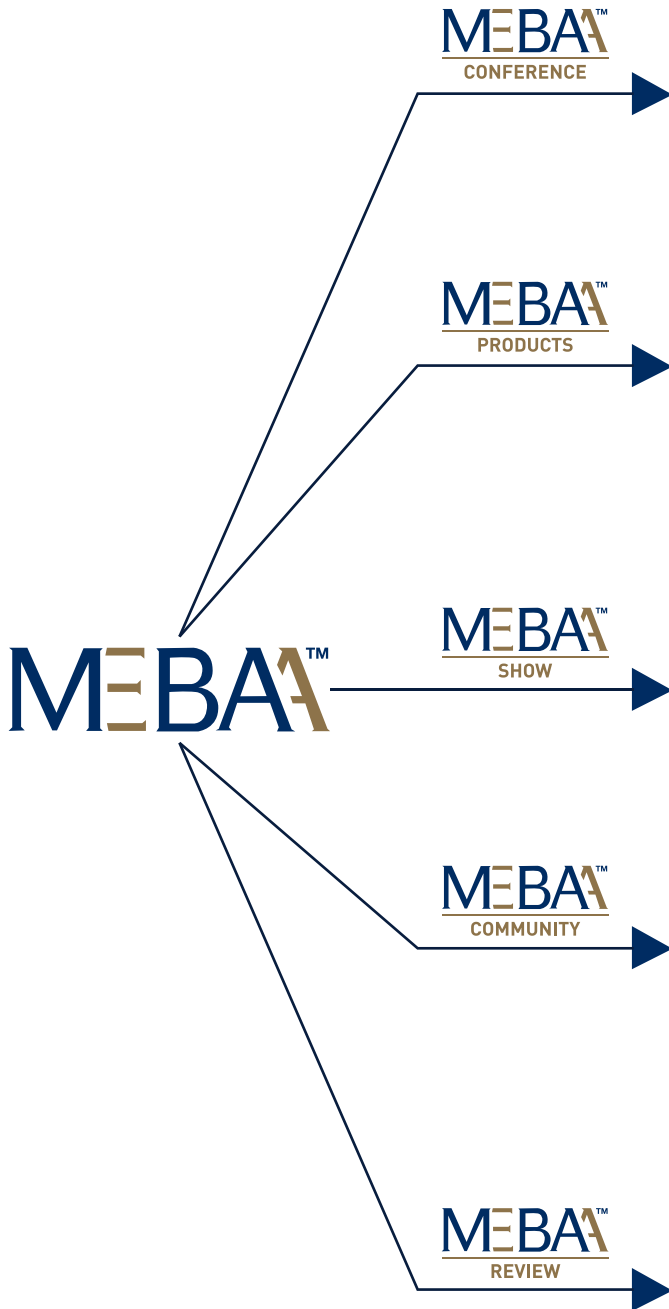
- More insight provided – in case of an incident, a camera in the cockpit could provide lots of insight as to the main chain of events leading up to an error or a violation.

I don’t believe that we can answer the long-standing question over whether a camera in a commercial aircraft cockpit is a friend or foe but I can unequivocally say that cameras are fantastic training aids.

It has worked for us and it can certainly work for others if deployed correctly.

A Go Pro camera is at the heart of the system.





REGIONAL FOOTPRINT

MEBAA hosted conferences in several cities such as Dubai, Jeddah, Riyadh, and Amman. These conferences, with complimentary access for MEBAA members, provide a platform for discussion among members with a particular focus on the host country.



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Emergency response planning workshop, free sample ERP manual and discounted customized ERP manual, discounted IS-BAO and IS-BAH certifications as well as new competitive insurance products through MAIS, exclusively for all MEBAA members.

The Middle East and North Africa's premier business aviation show will be held at DWC in Dubai, 6-8 December 2016. MEBAA Show 2014 showcased 44 aircrafts, 8,314 attendees, and 422 exhibitors. The show also had educational sessions, panel discussions and IS-BAO/IS-BAH certification workshops. MEBAA has also launched MEBAA Show Morocco, the first business aviation show in North Africa.



FLY AND FEED

GIVING BACK

With the support of its members, MEBAA has raised USD 25,000 within the first year of launching its donation program, Fly and Feed, in partnership with the United Nation's World Food Program (WFP.)

The annual business aviation review for the Middle East and North Africa addresses major issues and updates in the region for the year. In addition, the magazine showcases the profile and accomplishments of the association's 240 members.

*One area of defence that has become increasingly competitive is the transporter market and its multi-role capability, such as tankering and medical evacuation. In this special report, **Jon Lake** looks at the different types available and the opportunities that exist in the region.*



BRAZILIAN BLEND

Jon Lake sees how the latest Brazilian contender offers a new alternative for the region's tanker-transport needs.

Embraer's new KC-390 tanker-transport offers a unique blend of performance, capability and cost-effectiveness and looks set to enjoy significant sales success in the region, despite a number of recent sales of rival transport aircraft to Arabian air forces.

The twin-engined, T-tailed tactical transport and air-to-air refuelling tanker is the largest aircraft ever built in South America, and was developed as a C-130/KC-130 replacement for the Força Aérea Brasileira (Brazilian Air Force).

As such, the KC-390 was designed for use in the transport, air-to-air refuelling, and search and rescue roles, with the ability to fight forest wildfires, and to fulfil the nation's Antarctic research support mission.

Embraer believe that the KC-390's speed and range will make it particularly attractive as a special forces delivery/support aircraft.

In designing the KC-390, Embraer was determined to establish new capability and

performance standards in the tactical transport category, while at the same time delivering the lowest life-cycle cost in the market.

The KC-390 builds on the company's experience developing the world-beating E-jet series of narrow-body medium-range twin-engine jet airliners, and incorporates a state-of-the-art integrated avionics system, as well as fly-by-wire flight controls that reduce pilot workload and increase the mission efficiency.

Cargo-handling system

It is equipped with a modern cargo-handling system and can transport a range of large-sized items, including pallets, vehicles, and helicopters, in addition to troops, paratroopers, medevac stretcher or mixed cargo/passenger configurations.

The new transporter can carry 80 passengers, 64 airborne troops or paratroops, or 74 litter patients with

Continued
on Page 108

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two medical attendants, or up to six pallets (68in X 108in).

With a length of 17.75 metres, a width of 3.45 metres, and a height of 2.9 metres, the KC-390's cargo compartment is larger than that of the Hercules (including the stretched C-130J-30 in all dimensions, with about a foot of extra headroom and width).

The KC-390 will also be equipped with an advanced self-defence system and has ballistic protection in critical areas, increasing survivability in hostile environments.

Embraer is particularly proud of the new aircraft's refuelling capability, stressing that the tanker role was not an afterthought mission that was added later, as it has been with so many other tanker aircraft designs.

The KC-390 is purpose-designed to be able to refuel many types of aircraft over a wide flight envelope, from helicopters to high-performance fighter aircraft.

Fighter aircraft receivers won't have to slow down to their minimum flying speed in order to refuel from the KC-390, while helicopter receivers will not struggle just to 'keep up'. The KC-390 will be the first jet-powered tanker aircraft cleared to refuel helicopters.

The aircraft combines short-field and semi-prepared runway capabilities with a cruising speed of 465kts (Mach 0.8) at an operational ceiling of 36,000ft, and a range of 1,200nm with a maximum payload of 57,320lb (26 tonnes), making it faster and higher-flying than the Hercules, as well as offering a greater payload and a lower price.

Price promises

Embraer's ability to undercut the C-130J Super Hercules on price promises to shake up the market. Certainly, the Hercules has never faced such serious competition.

Having been hit hard by the USA's 2006 ban on sales of the Super Tucano to Venezuela, Embraer has been keen to reduce the KC-390's vulnerability to the possibility of embargoes, and the company has used commercially available civilian components wherever possible, including the aircraft's International Aero Engines V2500 turbofan engines (widely used on Airbus A320 airliners) and the Rockwell Collins Pro Line Fusion flightdeck.

Though it was developed to meet local requirements, Embraer hopes that the KC-390 will take a significant share (perhaps as much as 20%) of the C-130/An-12 replacement market over the next few years – a market that Embraer estimates at 700 aircraft.

"We're looking for a reasonable share of that," said Paulo Gastão, Embraer's programme director for the KC-390, adding that 15% of the market would be a healthy slice. "It doesn't need to be so much to be very interesting."

The Brazilian manufacturer has already succeeded in attracting a great deal of interest in its new airlifter. Some 32 countries were represented at the aircraft's roll-out including Egypt, Qatar, Saudi Arabia, and Turkey, all of which may be potential customers.

Jackson Schneider, chief executive of Embraer Defense & Security, said: "We have already had discussions with some countries. Two are pretty advanced."

Development of the KC-390 began in 2006, when Embraer began military tactical transport aircraft studies. In April 2007, Embraer reported that it was studying a medium-sized airlifter, which it designated C-390, incorporating many technological solutions from the Embraer E-Jets series.

Embraer's ability to undercut the C-130J Super Hercules on price promises to shake up the market. Certainly, the Hercules has never faced such serious competition.

two-year flight-test and certification programme. Certification was divided into two stages, the first covering the initial green aircraft and the second the complete aircraft.

This was expected to lead to initial deliveries to the Brazilian air force in late 2016 or early 2017, with four or five aircraft having limited operational clearances, able to carry cargo and troops, but with no refuelling capability.

The flight-test campaign for the KC-390 actually began in earnest in the third quarter of 2015, with a second prototype joining the programme. These delays mean that it will be 2017 before the type is certificated, and 2018 before the aircraft enters service with the Força Aérea Brasileira, with the first export aircraft following after that.

Some fear that this delayed entry to service may have handed rival aircraft a window of opportunity. This opening has been exploited by Lockheed, which has received several recent orders for C-130Js to equip a number of Arab air forces.



Development of the KC-390 began in 2006.

Short-field performance was a key parameter, together with the ability to land on semi-prepared landing strips – such as those with surface irregularities like bomb-damage and repaired tarmac.

The first KC-390 prototype rolled out from the Embraer subsidiary plant, Embraer Defense and Security, at Gavião Peixoto, São Paulo on October 21 2014.

Embraer originally hoped to begin test flights before the end of the year, but final avionics integration testing and the installation of all the instrumentation required for certification trials took longer than expected, and the aircraft made its maiden flight on February 3 2015, in the hands of test pilots Mozart Louzada and Marcos Salgado de Oliveira Lima.

This marked the start of an intensive

By 2017, about 30 C-130Js will be in service with Gulf Cooperation Council and neighbouring air forces, including the UAE (12), Iraq (6), Qatar (4), Oman (3), Kuwait (3 KC-130Js) and Saudi Arabia (2 KC-130Js).

Airbus Military has sold a number of smaller CASA C295s into the region, too, including two to Jordan and eight (including three configured as maritime patrol aircraft) to Oman, as well as four improved and 'wingletted' C295Ws. Six more were supplied to Algeria, and Egypt's C295 orders and deliveries now total 20 aircraft.

Fortunately, some of these operators will still have a requirement for further tactical transport aircraft (and tanker/transports), and other nations have yet to even begin the replacement of their transport aircraft fleets.



WHY MENA REGION COULD BE VITAL FOR THE A400M

Jon Lake
explains why export success is vital for the future success of the A400M.

Export success is fundamental to the A400M, which may not be profitable for Airbus on the basis of its core customers (Belgium, France, Germany, Luxembourg, Spain, Turkey and the UK, together with sole export customer so far, Malaysia). These nations ordered 174 aircraft between them but commitment to the programme is, in some cases, slipping, with reductions likely in Germany (from 53 aircraft ordered likely to reduce to 40), in Spain and even in France.

Rafael Tentor, Airbus Military's head of programmes, said the market in Europe is flat and "will not be the driver of sales and strategy in the years to come".

He contrasted this with growth in Saudi Arabia, Brazil and India.

Having consistently taken more than 50% of orders in the light and medium military transport markets, Airbus Military hopes to gain a similar share of the market for large military transport aircraft, and expects global sales of its A400M to reach 400 aircraft over the next 30 years – with 50 to 100 of them going to customers in the Middle East and North Africa.

The A400M has demonstrated its capabilities in the region many times, having been displayed at Izmir for the 100th birthday celebrations of the Turkish Air Force, and having conducted airdrop trials at Eskisehir and hot and high trials in Oman, as well as participating in the Riyadh Airshow in 2011.

The Turkish Air Force has already taken delivery of its first A400Ms and this is providing the aircraft with a regional template of operational success, and a possible springboard for further sales.

Though Airbus Military has been careful not to talk about individual potential customers, it claims to have answered nine formal requests for proposal (RFPs), "some of them in this part of the world", according to company spokesman Kieran Daly.

It is believed that Airbus hopes to attract interest in Qatar (which operates the C-130J and C-17), Saudi Arabia (where the C-130J is on order) and the UAE (already a C-17 operator).

The task facing Airbus Military is to make potential operators understand the A400M's capabilities. Comparing the aircraft with other tactical transports is like comparing the Boeing 737 and the Boeing 747. The A400M has double the payload/range and flies a lot faster, a lot higher, and is quieter and smoother,

meeting civil airliner noise standards. It is the only aircraft that meets both tactical and strategic requirements, with its unique ability to combine jet-like performance (cruising at Mach 0.75 at 40,000ft) with a turboprop's agility and ability to fly low and slow and to operate from soft and short austere strips (the A400M can fly steeper approaches than the C-130J).

This makes the A400M "the only aircraft on the market able to transport heavy loads right through to their final destination", contrasting this capability with aircraft like the An-124 and C-17, which operate in a 'hub and spoke' fashion, using an intermediate aircraft to then reach unpaved airstrips. This gives the A400M the ability to respond to crises rapidly and cost-effectively.

Understanding of the market

Airbus Military's understanding of the market for the A400M seems to have developed in recent months. Two years ago, the company was still talking about opportunities to replace the C-130, and for the aircraft to offer an alternative to the C-17. But recently, and especially in the Middle East, senior personnel clearly see opportunities for the aircraft even in countries where the new model C-130J and (in some cases) the C-17A are already in service, with their aircraft augmenting and complementing the older US types as it will do with Britain's Royal Air Force.

The A400M can accommodate up to 116 paratroops, and can carry a 30tonne payload 4,500km (2,450nm) or a 20tonne payload 6,400km (3,450nm).

The A400M has met all of its payload/range and performance targets and has started to demonstrate its capabilities in frontline service. It has already seen operational service with the French and Turkish Air Forces in Afghanistan, the Central African Republic, African Sahel Region, Mali and in the Middle East to support the air operations over Iraq and Syria.

And, though it has emerged the aircraft is not capable of refuelling helicopters in flight in its current configuration, thanks to prop blast and the proximity of the tail, studies are under way on the use of longer hoses, though flight trials would be required to prove them, and this would require customer funding.



The original Allison T56-powered C-130 Hercules has been the most successful post-war military transport aircraft, built in a bewildering array of progressively improved variants, adapted to meet a wide range of roles, and delivered to 73 nations.

In 2007, the C-130 clocked up 50 years' service with its original primary customer. Large numbers remain in service today, though many are now showing their age and are in need of replacement.

Designed in the wake of the Korean War, the original C-130 used the same high-winged, ramp-equipped configuration as the earlier C-123 Provider and its forebear, the Chase XCG-20 Avitric glider, combining this with the then futuristic T56 turboprop engine, which gave unmatched performance characteristics.

Combat transport

One of the first aircraft to be designed from the ground-up as a combat transport, rather than derived from passenger airliners, the C-130 had a cargo compartment that was approximately 41 feet (12 metres) long, 9 feet (2.7m) high, and 10 feet (3.0m) wide – perfectly sized to carry the military vehicles (and even military helicopters) of the time, as well as offering enough space to accommodate 92 passengers, 72 combat troops or 64 paratroops.

CONTINUING THE LEGEND OF HERCULES

Competition in the Hercules replacement market is fierce with a number of competing designs battling for orders.

Jon Lake has been looking at the options.

Plans to replace the Hercules with the Advanced Medium short take-off and landing (STOL) Transport aircraft in the early 1970s came to nothing and the C-130 remained in production.

Though some competitors believed that a new tactical transport should have turbofan engines, or significantly better STOL characteristics, or a bigger, wider, taller cargo hold, Lockheed pinned its hopes on the belief that the best replacement for a Hercules was a new, improved Hercules. After testing an array of features on the high technology test bed (HTTB) from 1984, Lockheed took some of the new elements and used them in the design of the C-130J Super Hercules, which first flew on April 5 1996.

Some 'heritage' Hercules operators have already turned to this latest model.

Compared to the HTTB, the J-model represented a more modest development of the Hercules, lacking the extended chord ailerons, fast-acting double-slotted trailing edge flaps, high-camber wing leading-edge extensions and three-section spoilers of the HTTB, as well as the larger dorsal fin and long chord rudder, and long-stroke landing gear and fully powered controls.

Instead, the new C-130J retained the aerodynamic configuration and general appearance of the classic Hercules, but introduced digital avionics with a modern two-man glass cockpit, including head-up displays (HUDs) for both pilots, and with no navigator or flight engineer.

Most obviously, the new variant was fitted with new Rolls-Royce AE 2100 D3 turboprop engines, driving Dowty R391 six-bladed composite scimitar propellers. These conferred 21% higher maximum speed, 40% greater range, and 41% shorter take-off distance compared to the standard C-130H, while carrying the same load – and armies around the world are already used to thinking in terms of C-130-sized loads.

Lockheed Martin received the launch order for the J-model from the UK RAF, which ordered 25 aircraft, with the first deliveries beginning in 1999. The RAF order included 15 stretched C-130J-30 'Dash 30' versions, with a 15ft fuselage extension (in plugs fore and aft of the wing). This increases usable space in the

C-27J PROVES ITSELF TO BE IN A WORLD OF ITS OWN

Slovakia and Zambia are just two of the countries currently awaiting deliveries of the C-27J. Jon Lake looks at this most enduring of aircraft.

The C-27J was developed by Lockheed Martin Alenia Tactical Transport Systems (LMATTS), a joint venture company set up by Lockheed Martin and Finmeccanica's Alenia Aeronautica division, as a modernised, enhanced performance derivative of the Alenia G.222.

Lockheed Martin was responsible for the propulsion and avionics and took the lead for product support and marketing, while Alenia Aeronautica was responsible for manufacturing, final assembly, flight trials and certification.

Alenia and Lockheed Martin began discussions to improve the G.222 in 1995, originally planning to use the C-130J's glass cockpit and a more powerful version of the G.222's T64G engine with four-blade propellers.

The aircraft has the same floor strength as a Hercules and the large cargo cabin cross-section is sufficient to accommodate Hercules pallets loads.

The C-27J Spartan that we know today was launched in 1997 and was based on the proven G-222 airframe but with the same advanced avionics and cockpit as the C-130J Super Hercules, adding the Rolls-Royce AE 2100 engine and its associated six-blade propeller.

The new engine and propeller increases range by 35%, cruise ceiling by 30%, and cruising speed by 15% in comparison to the basic G.222.

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The C-27J is, in many respects, a 'baby C-130J', optimised for tactical operations and for hot and high and austere runway operations. The aircraft has better payload/range characteristics than the rival C295, but has a higher price and is rather less economical.

The C-27J can carry an 11.5tonne payload and has a range of 1,000nm (1,852km) with a 10tonne payload, or 2,300nm (4,260km) with a payload of 6,000kg.

The development aircraft, a converted G.222, made its first flight in September 1999 and received full Italian military type certification in December 2001. The first order was placed in January 2003 when Greece signed a \$272.72 million contract to buy 12 aircraft with three on option. The first of these was delivered in August 2005.

The Italian Air Force ordered 12 aircraft, which were delivered between January 2007 and May 2009. Lithuania

ordered three for delivery from December 2008, Romania received the first of seven in July 2009, and Morocco gained the first of four Spartans in July 2010.

Bulgaria took three from December 2010 and Mexico received the first of four in September 2011, while Chad received two aircraft in 2013.

Both Peru and Australia received their first C-27Js in 2015, Peru taking the first of four on order in May (and with the prospect of ordering 6-8 more), and Australia taking the first of 10 in June. Ghana has also received the first pair of four aircraft on order in 2015.

Slovakia has ordered four C-27Js, which are due for delivery in 2016-2017, while two aircraft for Zambia are due for delivery in 2017.

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Though the USA is the largest operator of the C-27J, with 21 aircraft, the total delivered there fell far short of the planned total. The type was offered to meet the US Army and US Air Force Joint Cargo Aircraft (JCA) requirement, which was for up to 75 aircraft for the Army National Guard and up to 70 aircraft for the Air National Guard.

Because Lockheed Martin offered the C-130J to meet the same requirement, LMATTS was dissolved in 2006. Instead, Alenia Aeronautica partnered with L-3 Communications and Boeing to form the Global Military Aircraft Systems (GMAS) joint venture to market the C-27J.

In 2012 the US Air Force elected to retire the C-27J due to budget cuts, after only 21 aircraft had been delivered. Seven aircraft were transferred to Special Operations Command and 14 to the US Coast Guard.

Undeterred, Alenia Aermacchi has continued to actively and aggressively market the aircraft, and believes that the C-27J has the potential to achieve significant new orders in the near to medium term, both in its baseline C-27J transport form, and in the form of the new multi-mission MC-27J.

The MC-27J Special Mission Aircraft uses a range of roll-on/roll-off palletised mission payloads to tailor the aircraft for specific missions, while remaining easily reconfigurable back to the basic transport role. Reconfiguring for any of the multi-role configurations can be accomplished by a single loadmaster in less than an hour.

hold, allowing two extra pallets to be carried, or 36 extra passengers, 28 extra paratroops, or 23 extra litter patients.

A tanker-transport variant, the KC-130J, has been developed, as well as an armed 'Harvest Hercules airborne weapons kit (HAWK)' tanker.

This can be fitted with an intelligence, surveillance, and reconnaissance (ISR)/weapon mission kit, with a roll-on/roll-off weapons systems operator's console in the cargo area, an AN/AAQ-30 targeting sight system (TSS) mounted below the port external under-wing fuel tank, and with under-wing hardpoints for AGM-114 Hellfire or AGM-175 Griffin missiles.

One million flying hours

By April 30 2013, the global C-130J Super Hercules fleet (then being operated by 13 nations) had surpassed one million flying hours.

About 280 C-130Js have now been delivered to 16 nations. Orders total 134 from 16 export customers, while the US armed forces are expected to take more than 200 more.

The C-130J has already been ordered by a number of Gulf Cooperation Council and Middle East North Africa (MENA) air forces, including Iraq, Kuwait, Oman, Qatar, Saudi Arabia and Tunisia, but there are plenty of further outstanding requirements for an aircraft in this class, and additional orders are likely.



Jon Lake looks at the future possibilities for the Airbus Military A330 MRTT.

Though the Airbus Military A330 Multi-Role Tanker Transport (MRTT) eventually lost out to the Boeing 767-based KC-46 Pegasus in the US Air Force's KC-X tanker competition, this was widely held to have been the result of a political decision favouring the US design.

The MRTT is widely acknowledged as being the superior tanker, able to lift more fuel from shorter runways, and operating over longer ranges.

The A330 MRTT has a fuel capacity of 111 tonnes (all theoretically transferable) without recourse to under-floor tanks (unlike the Boeing KC-46, whose 96 tonnes require the use of tanks which compromise that aircraft's under-floor holds). This leaves its normal under-floor holds untouched and available for cargo, and a new MRTT customer could opt to have main deck cargo doors and a strengthened cargo floor on the main deck as well, if required.

All MRTT customers so far have opted to have tankers based on the A330-200 airliner airframe and, as such, have tankers that can also carry more than 200 passengers.

Safe operation

The KC-46A has space for just 114 passengers in its usual configuration and is only certified to carry 58. Though the 767 can notionally take off in a shorter distance than the A330, it requires more runway length for safe operation (for example in the event of a rejected take off) leaving it unable to use many existing tanker base runways with full fuel.

Accordingly, apart from the USAF aircraft ordered under KC-X, Boeing has sold just eight 767 tankers to two operators, Italy and Japan, while an Israeli 767 tanker conversion has achieved three orders from Brazil and Colombia.

By contrast, Airbus Military has sold seven MRTTs to Australia, 14 to the UK, three to the UAE, six to Saudi Arabia, six to Singapore, four to South Korea, and 12 to France, while India is expected to buy six, Belgium three, and Qatar and Spain two each. Negotiations are under way for four aircraft for a consortium formed by the Netherlands, Poland and Norway – a total of 69 aircraft for 12 operators.



MRTT LIFTS ITSELF TO A NEW LEVEL

The type has been demonstrated to a number of other nations, including Algeria, flying with Algerian Air Force Sukhoi Su-30 receivers.

There seems to be a strong possibility of top-up buys of extra aircraft for some existing customers, including Saudi Arabia and the UAE, and there are a number of embryonic tanker requirements for which the A330 MRTT seems a good fit, for example in Turkey.

There are a number of different MRTT configurations – some powered by Rolls-Royce Trent engines, and some by General Electric CF6-80E engines.

The British RAF's Voyager K.Mk 2 is a two-point tanker, equipped with a single FRL Mk32B 900E pod under each wing, while the K.Mk 3 is a three-point tanker with an additional Cobham 805E fuselage refuelling unit (FRU) giving a centreline hose for use by larger 'receiver' aircraft.

The Royal Australian Air Force's KC-30A has an aerial refuelling boom system (ARBS), a fuselage refuelling unit and two under-wing refuelling pods, while some other operators have opted for a configuration with a boom, under-wing pods, and no fuselage hose unit.

The first A330 MRTT for Singapore will be built to a new standard, taking advantage of improvements to the baseline 'green' A330 airframe, including minor aerodynamic modifications to the slats and flaps, which will bring small but worthwhile improvements in fuel efficiency, as well as minor structural changes and improved computers and avionics.

The new standard MRTT (incorrectly reported elsewhere as the MRTT-E or MRTT Enhanced) will also include upgrades to the mission systems, refuelling boom control laws, as well as to the boom visual systems and the mission

The gas station in the sky

The Dubai Airshow proved an ideal opportunity for Alan Warnes to get close to the UAE's A330 MRTT and meet its operators.



planning systems. The aircraft will also incorporate the latest identification, friend or foe (IFF) Mode 5, and full compatibility with civil automatic dependent surveillance – broadcast (ADS-B) regulations.

A prototype incorporating the features of the new standard MRTT will fly in July 2016. All MRTT deliveries after late 2017 will be to the new standard. Most of the enhancements can be retrofitted and some existing customers have already contracted Airbus to examine the feasibility of incorporating some of the upgrades on their aircraft.

Longer term

In the longer term, Airbus could offer a tanker version based on the Trent 7000-powered A330-800neo or A330-900neo, or at least with the neo's Trent 7000 engines.

Airbus is believed to be conducting feasibility studies on providing special mission capabilities including signals intelligence (SIGINT), electronic intelligence (ELINT) and communications intelligence (COMINT), as well as airborne command post functionalities, for the MRTT, transforming the aircraft into a truly multi-role platform.

The UAE operates three of the MRTT.

The UAEAF&AD is extremely happy with its combat-proven A330MRTT. It is one of four air forces flying the aircraft in the Middle East, supporting fighters on operations over Iraq, Syria and Yemen.

PICTURE: ALAN WARNES

Much of the media focus on allied operations over Iraq and Syria has concentrated on jets bombing the Daesh and other jihadi groups. The same applies to the Saudi-led coalition fighting anti-government rebels in Yemen.

This might not have been as easy without the new Airbus A330 multi-role tanker transport (MRTT) acting as a mobile gas station.

The reliability and service being offered to the bombers from Australian, Saudi Arabian, UAE and UK tankers has been a breath of fresh air. At the Dubai Airshow in November, the Royal Australian Air Force and United Arab Emirates Air Force and Air Defence (UAEAF&AD) commanders were both highly complimentary about the new aircraft and what it brought to the fight.

UAEAF&AD commander, Major General Ibrahim Naser Al Alawi, spoke of how his A330MRTTs were operating 24/7, only landing to refuel and change crews before getting back into the air. His F-16s and Mirage 2000-9s are playing a major part in the Yemen offensive, as are the Royal Saudi Air Force F-15s and Typhoons.

The MRTT is versatile, carrying cargo and passengers, but it's the air-to-air refuelling role where it has really shown its worth. The aerial refuelling boom system has been effective for the US-built F-15s and F-16s, while the two under-wing Cobham 905E pods have offloaded fuel to the probe-equipped F/A-18 Hornets, Rafales, Tornados, Typhoons, Mirage 2000-9s. The fuselage-refuelling unit (FRU) has done likewise for the RAAF E-7 Wedgetail.

Furthermore there has been clearance with limited endurance (CLE) for all US Navy F/A-18s and French Air Force Rafales.

Air commodore Harvey Smyth, who is steering the Tornado operations over Iraq, and now Syria, has been impressed with the Voyager, as the RAF calls the A330MRTT.

A former Harrier pilot, used to working with the RAF's unreliable Tristar and VC-10 air-to-air refuellers, he said: "Our air-bridge into Akrotiri is now much more robust, helped by the development of our air transport fleet. The

Voyager is proving to be worth its weight in gold. We are obviously flying Voyager tankers out of Akrotiri as well, and on a lot of our missions we will get airborne as a team and go in together. That way you have your petrol station with you should you need it."

The MRTT has also been essential for air transport tasks and deployments all over the world. The RAF uses it for the long haul down to the Falklands, while the UAEAF&AD used two MRTTs to take their Mirage 2000-9s to exercise 'pitch black' in Australia in 2013. The RSAF used a couple to ferry F-15s to the USA for a red flag exercise in 2014.

The Royal Australian Air Force is set to increase its fleet to seven, having purchased two second-hand A330s that will be converted by Airbus Defence and Space at its Getafe facility.

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Further A330MRTT orders are being built to the new standard programme (NSP). NSP has been triggered by the new green aircraft configuration, with its Power-8 computers and new displays/green computers in the aviation pack. There will be an upgrade to the military systems and improvements to the industrialisation process, too.

The Republic of Singapore Air Force announced an order for six in March 2014, with the first airframe flown, on September 30, 2015, to Getafe, where conversion will start in mid-2016. First delivery is expected in mid-2018.

France announced on November 20, 2014, the purchase of 12 A330 MRTTs for the French Air Force, which will name it Phénix (Phoenix), with deliveries expected to start in late-2018.

Undoubtedly the most important purchase was the four by the Republic of Korea, with deliveries expected to start in 2018. The competition pitched the A330 against the Boeing KC-46 Pegasus and Korea usually buys from the US. It meant Airbus has won every tanker campaign outside of the US, although it has even won that once!



With six aircraft for Algeria, 24 for Egypt, four for Jordan and eight in Oman, a new order from Saudi Arabia has cemented the Airbus Military C295's position as the market-leading medium transport and patrol aircraft in the Middle East North Africa region. Jon Lake reports.

Airbus Military is unusual among military transport aircraft manufacturers in offering a range of aircraft spanning virtually the full spectrum of size, payload and range, from the C212 – which can carry 25 paratroops or a 2.8 tonne/6,200lb max payload – to the A400M.

Lying between these two extremes are the CN235 and the stretched C295.

Though Airbus has built some 273 examples of the CN235, which can carry 35 paratroops, 51 passengers or a 6,000kg (6 tonne) payload, it is the stretched C295 that seems to be enjoying the greatest success.

First flown in 1997, 136 C295s have been built, the aircraft is in service with the armed forces of 20 countries, and the order book is healthy, with at least two more customers awaiting deliveries of ordered aircraft.

Stretched fuselage

Developed from the Spanish-Indonesian CASA/IPTN CN-235 (later redesignated CN235 by Airbus) the C295 has a stretched fuselage and new PW127G turboprop engines, giving 50% greater payload capability, carrying up to nine tonnes of payload or up to 71 personnel, at a maximum cruise speed of 260kt (480km/h).

The C295 has obtained civil and military certification, including stringent FAR 25 requirements, ensuring that the aircraft complies with international

C295 STRETCHES LEAD OVER RIVALS

airworthiness regulations and safety standards.

The C295 is noteworthy for its very low fuel consumption and corresponding very long endurance (of up to 11 hours). This endurance has led to the development of dedicated maritime patrol and airborne early warning (AEW) variants of the C295.

The C295MPA Persuader is a maritime patrol/anti-submarine warfare version with search and weather radar, an elect optical/infrared (EO/IR) turret, electronic surveillance measure (ESM) and other role equipment. There is provision for six under-wing hardpoints.

The company has completed carriage and release trials of the Marte air-to-surface missile and is evaluating different weapons options for the Persuader and for a so-called C295 Gunner gunship derivative.

An airborne early warning and control version has flown in prototype form, with an IAI active electronically scanned array (AESA) radar and integrated identification friend or foe (IFF) system

in a 360° radome mounted above the fuselage.

Neither the C295, nor its principal competitor, the C-27J, quite match the performance and capabilities of the four-engined Lockheed C-130J, but each of these modern twins offers a compelling alternative to the C-130J, and each represents a viable replacement for older 'Heritage Herks'.

The C-27J is a more tactically focused airlifter and "enjoys better performance at the margins of hot and high", according to one industry source, "but it is similar in cost to the C-130J".

Lower operating costs

By contrast, the C295 is longer internally and carries more paratroops. A programme source said that the C295 does 90% of the C-27J's job, much of it better, and at significantly lower cost, and with much lower operating costs.

Airbus Military is continuing to develop and improve the C295 and a new variant, the C295W, is now in production, with the first examples having been delivered to the Mexican Navy and the Saudi Ministry of the Interior during 2015.

The new version combines an existing enhanced performance package (giving a higher powerplant rating) with newly designed winglets that confer improved hot and high performance. Airbus has calculated that the new winglets will allow the C295W to transport more payload over longer distances, while achieving fuel savings of around 4%, even under hot and high conditions.

The Mexican Navy became the launch customer of the winglet-equipped C295W in March 2015, specifying winglets for two of the aircraft it already had on order. In May 2015, the Indian Defence Ministry approved the purchase of 56 transport aircraft from Airbus Group NV as part of a \$1.87 billion deal.

On June 16 2015, it was announced that the Ministry of the Interior of Saudi Arabia had purchased four C295W aircraft to enhance its capabilities.

The Airbus C295 is bringing in the sales.





Antonov looking for a world beyond the Russian market

Jon Lake takes a look at the future for Antonov's new transport aircraft following the breakdown in relations between Russia and the Ukraine.

Before the problems between Russia and the Ukraine, Antonov could rely on Russian military orders to underwrite its military transport aircraft programmes.

Russia was expected to order the An-70, for example, a four-turboprop tactical transport in much the same class as the Airbus A400M, with a 47tonne maximum payload, and with similar payload/range figures, reaching 5,000km (2,700nm) with 35 tonnes of cargo, or 6,600km (3,564nm) with 20 tonnes. The An-70, which relied on co-production by Russian factories, has now been abandoned.

The twin-jet Antonov An-178, with its 15-18tonne (33,000- 40,000lb) payload, is well suited as a replacement for aircraft like the Lockheed C-130, Antonov An-12 and C-160 Transall. Like the An-70, it was also originally developed to meet the requirements of the Russian Air Forces, but with the growing acrimony between Russia and the Ukraine, Russia turned to the rival Ilyushin Il-214.

The twin-turboprop Antonov An-140T had been selected to meet a Russian Ministry of Defence requirement to replace the Russian Air Forces' current fleet of 300 An-24, An-26, An-30 and An-32 aircraft. Deliveries were scheduled to begin in 2017, but these were cancelled in 2013, and Russia received only about seven extended wingspan An-140-100s before arrangements were abandoned.

Antonov hopes that the company will soon return to producing at least 200 aircraft per year but realises that Russian orders will no longer be forthcoming.

Antonov has, thus, been forced to focus its efforts on exporting its aircraft to new customers in new markets.

The An-140 was already being built under licence by HESA in Shahin Shahr, Iran, from

kits supplied by Antonov, though the programme was hampered by a series of accidents and by spares shortages, and the type's future seems uncertain.

Things look more optimistic for the smaller An-132, a new and much-improved derivative of the An-32, which was originally aimed at meeting a possible Indian Air Force requirement.

The new-generation An-132 was to be fitted with a two-man glass cockpit, a Honeywell navigation system and western avionics and was powered by modern 5,071shp Pratt & Whitney Canada PW-150A engines (originally designed for the Bombardier Q400) driving Hamilton Sundstrand six-bladed auto-feathering, synchrophasing composite propellers, like those used on the Airbus Military C295.

□□□□□

This made the An-132 capable of carrying payloads of up to 9.2 tonnes out to a maximum range that is double that of the original An-32, and with a maximum cruising speed that was 80km/h faster than the An-32.

The conflict between Russia and Ukraine has meant that the new Antonov is no longer in contention for the Indian requirement, however.

Fortunately, Antonov was able to reach agreement with the King Abdulaziz City for Science and Technology (KACST) and the Taqnia Aeronautics Company, for the An-132 to be co-developed and produced jointly by Ukraine and Saudi Arabia for both military and civilian use. Under the terms of the agreement, the Saudis will 'own' the intellectual property and engineering designs for the aircraft, and the An-132 programme is

intended to play an important part in strengthening the kingdom's drive to develop a domestic military and aerospace industry.

The first of up to three prototype An-132s will be rolled out at the end of 2016, and will then be followed by series production aircraft from 2017 or 2018, with an initial annual build rate of 8-12 aircraft.

The An-132 is being marketed to potential customers in the Middle East, Africa, Asia, and South America. Though primarily intended as a military tactical transport and commercial cargo aircraft, dedicated sub variants are already being studied for fire-fighting and for maritime patrol.

The Antonov An-178 military transport aircraft may be the most promising of Antonov's current programmes, although it has an almost direct competitor in the shape of the slightly larger but similarly turbofan-powered Embraer KC-390.

Though derived from the commercial An-158 airliner, the An-178 has a new main undercarriage and a new fuselage, and is optimised for operations from different runway surfaces and in more challenging weather and climatic conditions.

The An-178 was first exhibited at the Paris Airshow in June 2015, just one month after its maiden flight. It was then shown at Dubai in November.

The Antonov An-188 was launched at the 2015 Paris Airshow. The aircraft is a derivative of the An-70 powered by four jet engines, with some aerodynamic modifications, and fitted with a modernised NATO-compatible western cockpit. The An-188 is intended to fill the gap between the C-130 and the C-17, making it a direct competitor to the A400M.

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SIX APPEAL

The week comes to a climatic end with Abu Dhabi's showpiece cornice hosting the season opener of the visually spectacular 2016 Red Bull Air Race World Championship.



With a multi-million new airport terminal due to open in 2017 and being home to one of the world's fastest-growing airlines, Abu Dhabi's ambitions are now fixed on becoming a leading global hub for specialised aviation and aerospace events.

Barbara Saunders reports.

Abu Dhabi will demonstrate its ambitions to the world when, next month, it stages the inaugural Abu Dhabi Aviation & Aerospace Week (ADA AW), which has the patronage of the emirate's crown prince, his highness general sheikh Mohammed Bin Zayed Al Nahyan who is also deputy supreme commander of the Armed Forces.

The crown prince's patronage is seen as a stamp of authority on the seriousness of Abu Dhabi's ambitions.

So, from March 6-12, the industry can expect ADA AW to pull together six trade, defence, entertainment, and sports events into one mega aviation and aerospace spectacular which, the Government-led organising committee believe, will become a biennial fixture.

It's a collaborative initiative from a number of leading Abu Dhabi-based entities, including Abu Dhabi National Exhibitions Company, Abu Dhabi Tourism & Culture Authority (TCA Abu Dhabi), Mubadala Development Company, Abu Dhabi Airports, and the Abu Dhabi Sports Council.

ADA AW will have industry-only events mostly centred around the Abu Dhabi National Exhibitions Centre (ADNEC) and Al Bateen Executive Airport, but organisers are also hoping to engage the general public and spur greater interest in aviation and aerospace, which the

emirate has keenly identified as key economic diversification areas.

Here's what's on the agenda:

The second Unmanned Systems Exhibition and Conference (UMEX) will run at ADNEC with live demonstrations at Al Ain Airport in the emirate's second city, about an hour's drive from the UAE capital – from March 6-8.

This is being organised by Abu Dhabi National Exhibitions Company in collaboration with the UAE Armed Forces. It's a spin-off from the first UMEX, which was launched during the International Defence Exhibition and Conference (IDEX) 2015, but with the organisers promising "a broader scope" to include a dedicated Military Simulation Training (MST) zone and the inaugural Simulation Exhibition and Conference to "reflect the growth and investment in the UAE and GCC countries" in both defence and civilian applications.

ADNEC is marketing UMEX as "the only exhibition of its kind in the region dedicated to unmanned systems and technologies used in air, land and marine operations" and says it expects nearly 100 local and global defence system manufacturers to take part and more than 5,000 international experts and specialists to participate. Abu Dhabi Autonomous Systems Investments is a strategic partner.

Continued
on Page 118

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While being billed as a trading platform for manufacturers and operators to meet and do business, UMEX and MST are also expected to promote “the ecological, environmental, civil and humanitarian benefits of unmanned systems and military simulation and training”.

Certainly, the UAE Armed Forces will be highly visible during UMEX. Its spokesman, brigadier general Rashid Mohammed Al-Shamsi, says it views the event as “an excellent opportunity to explore and acquire the latest technologies in unmanned systems and simulation techniques”.

He added: “We look forward to utilising the full potential of unmanned systems and their future applications in optimising civil, defence and security aspects by attending the live demonstrations to be hosted by Al Ain. Additionally, the platform will offer an excellent opportunity to expand our collaboration and strategic partnership with related industry partners.”

In addition to the anticipated 100 exhibitors, the organisers expect to welcome seven national pavilions and count the UAE Space Agency, Boeing, Airbus, Lockheed Martin, Piaggio Aerospace, OIS, TIG and DIGI Robotics among the exhibitor profile.

On March 7, the two-day Global Aerospace Summit, the third in the biennial series, takes off at ADNEC with ‘innovation’ as its 2016 theme.

The summit will see 1,000 of the industry’s invited C-suite leaders debate the hottest topics in the aviation, aerospace, defence and space sectors, which have been identified by a high-powered, elite advisory committee. These include globalisation, automated manufacturing, heightened connectivity and the break-neck speed technological advancements.

New ways of building aircraft

The 2016 agenda will examine new ways of building aircraft, launch systems and satellites, innovative business strategies and financing, disruptive technologies, using new materials and the ground-breaking applications for which they will be used.

Abu Dhabi’s home-grown aerospace leader, Mubadala, is hosting the summit with the CEO of its Aerospace and Engineering Services, Homaïd Al Shemmari, saying the local industry is awaiting the event with eager anticipation. “This platform provides the perfect opportunity to collaborate with diverse influencers and consider a range of key themes that will shape the future of aerospace, and also showcase the



Etihad’s James Hogan and Mubadala’s Homaïd Al Shemmari key speakers.

UAE’s growing influence and position as a key international aerospace hub,” he said.

The summit agenda is made up of a main programme and specialised strategy sessions, which take the form of panel discussions and roundtables, with two dedicated sessions to cover the emerging aviation markets of Saudi Arabia and Africa.

Confirmed speakers scheduled for the first day opening talks include James Hogan, president & CEO of Etihad Airways, and Marillyn Hewson, chairman, president and CEO of Lockheed Martin.

One of the first day panel discussions will examine ‘getting the next one billion passengers in the sky: what do commercial airlines and OEMs need to do?’

“This session will discuss how the industry is keeping up with the growing demand in emerging markets to cater to the next one billion passengers, from reforming business models to producing new and appropriate technologies that will fit with the markets’ existing infrastructure and requirements,” said Nick Webb of Streamline Marketing Group, which organises the summit.

Addressing this particular panel debate will be Ethiopian Airways CEO Tewolde Gebremariam, and Air Arabia CEO and board member Adel Ali. Facilitated by Abdul Wahab Teffaha, secretary general of the Arab Air Carriers Organisation (AACO), this panel will examine how airlines are changing their business models to expand to emerging markets; whether commercial aviation is

ready to cater to emerging market needs; how original equipment manufacturers can support emerging markets expansion and whether the industry can overcome the main emerging market challenges of infrastructure, regulations and qualified human resources.

Other high-profile panellists lined up include: David Storch, chairman, president and CEO of AAR Corp; David Melcher, president and CEO, Aerospace Industries Association; Eric Roegner, CEO, Alcoa Investment, Castings, Titanium and Engineering; Fahad Al Shamsi, CEO of AMMROC; Sanjeev Gadhia, CEO of Astral Aviation Limited; Chris Boardman, MD of BAE Systems and Tom Fillingham, director Future Combat Aviation Systems, BAE Systems.

Static display

The fourth Abu Dhabi Air Expo opens for a three-day run on March 8 at Al Bateen Executive Airport with a main exhibition area, an outdoor static display and hospitality chalets.

In 2016, however, in addition to the main exhibition area, the show will feature new, dedicated areas for airport suppliers, the Middle East Aviation Career Exhibition and Conference (MEAC) and the first Abu Dhabi Heli Expo.

The airport supplier area will focus largely on Abu Dhabi International’s Midfield Terminal project, due to open in 2017, and is being marketed to those wanting a foothold into the project via airport products and services, including maintenance, property management, airport security, air traffic management, ground support services, airport technology, terminal and FBO services and operations.

The first MEAC will focus on the latest trends, training and recruitment within the aviation industry under the theme ‘empower through training.’ The organisers say MEAC’s aim is to “provide an opportunity to learn about careers, exchange ideas





The airport supplier area will focus largely on Abu Dhabi International's Midfield Terminal project, due to open in 2017.



Mubudala focuses on careers for nationals

Careers for nationals will be a key theme throughout aerospace week and one that resonates with the emirate's largest aerospace business Mubadala.

It believes that the UAE could be developing many more innovative products and systems and anticipates creating 10,000 jobs at the aerospace park in Al Ain by 2030, with its emphasis on training the next generation of Emirati scientists, engineers and technicians.

Homaid Al Shemmari, chief executive of aerospace and engineering services at Mubadala, said: "The air show is an opportunity to display the innovation and growth of the UAE's aerospace sector, including our capabilities, product offerings and services, to a global audience as we continually work towards supporting Abu Dhabi's Economic Vision 2030 in developing a global aerospace hub."

Among Mubadala's successes include employing a large percentage of females at Strata, and Yahsat becoming the eighth largest satellite operator in the world.

and address the challenges which face human capital development needs in the UAE and in the wider region". The event is targeted at suppliers, employers and students about to enter the aviation and aerospace industry.

Organisers believe the event will aid a market where demand for pilots, air traffic controllers, ground crew and support staff is expected to increase until 2030 and

where there's a huge appetite for the engagement of national cadres of professionals.

"The growth rate in the sector also presents opportunities for global players in the industry to collaborate on exchange programmes in human capital development," said the organisers.

The first Abu Dhabi Heli Expo will have dedicated exhibition and static display areas as well as

associated conferences. It's in response to increasing helicopter demand within the emirate and beyond, which is fuelled by the major offshore oil transportation sector; VIP charters, aerial sight-seeing and photography, heavy-lift requirements and police, ambulance surveillance and rescue.

The week comes to a climatic end with Abu Dhabi's showpiece cornice hosting the season opener of the visually spectacular 2016 Red Bull Air Race World Championship – the ninth season of the high-speed, low altitude airmotorsport series. Britain's Paul Bonhomme will be defending his title.

A combination of high speed, low altitude and extreme manoeuvrability makes the race accessible only to the world's most exceptional pilots, who are challenged by specially designed aerial racetracks, which are unique inflatable air gates.

Captivate spectators

Set to span seven countries over eight races, the event is expected to captivate spectators in Abu Dhabi on March 11-12.

Erich Wolf, general manager of Red Bull Air Race GmbH commented: "The pilots and teams are already hard at work on technical innovations and strategic plans, and the races at all eight stops promise to be faster and more competitive than ever. The year ahead should be thrilling for spectators and competitors alike."

For two days prior to the race and its qualifying day, Abu Dhabi cornice will roar with the sound of the competitors' putting their high-performance aerobatic aircraft, such as the Zivko Edge 540, MXS-R, and the Corvus Racer 540, equipped with Lycoming engines that can reach top speeds from 406 to 426km, through training.

The training, qualifying and race days will complete the heady atmosphere of a week when aviation and aerospace gain top billing throughout Abu Dhabi emirate.

IATA looks to reset the connection standard

Dubai-based TPConnects is forging ahead with its new travel aggregator platform – a multiple search engine system – that is based on the International Air Transport Association's (IATA's) new travel industry-supported data-transmission standard.

Steve Nichols
reports.

IATA's new distribution capability (NDC) is an extensible mark-up language (XML)-based distribution standard for airlines and travel companies that aims to enhance communications between airlines and travel agents.

The new NDC technology enables airlines to distribute more of their content to travel agents, including the option to book ancillary items like preferred meals, duty-free products and chauffeur services, just as airlines do on their own websites, in addition to other products like hotels, cars, and transfers.

Abu Dhabi-based Rotana Jet is a travel aggregator customer and more are said to be in the pipeline using TPConnects' direct connect system. A number of major travel agencies have already signed up to use the TPConnects B2B and B2C platform.

IATA director general, Tony Tyler, announced Rotana Jet had become the first Middle East North Africa (MENA) airline to deliver a live transaction using the NDC scheme via TPConnects' travel aggregator during the IATA Middle East and Africa Aviation Day in Abu Dhabi on October 27.

Advanced stage

He added that 10 other airlines are in advanced stage in testing the new IATA NDC standards, though none are believed to be Middle Eastern carriers.

Rotana Jet CEO, George Ibrahim, said: "We are glad to be the first MENA airline to go live with NDC with the first publication of the latest standard.

"As Rotana Jet develops bundled and unbundled offers, the travel community needs to be able to shop and compare the value of these options for their customers, just as they do when they shop online for any consumer items or walk in to any retail shops.

"With a complete deployment of the NDC standard into our distribution system, air travellers will benefit from greater transparency and access to all our offerings."

TPConnects is one of the first IT provider/aggregators to meet all the requirements of IATA's NDC level three certification. Its travel aggregator allows retailers to compare products and maximise their profits by selling ancillary products along with non-air commissionable products and airline seats.

TPConnects' basic package, built on Java multi-threading computing, includes flights, hotel stays, car hire, insurance and ancillary revenue integrated with multiple aggregators, global distribution systems and airline passenger service systems. Typical ancillary revenue items include in-flight Wi-Fi, meals on board, duty-free products, and event and show tickets.

Financial pressure

Kristine Fernandez, director business development at TPConnects, said: "We are glad that our first airline customer went live with IATA NDC. The airline industry is under extreme financial pressure, facing stiff competition, and consumers are growing increasingly tech-savvy and mobile.

"TPConnects' booking and distribution tool with the NDC standard assists airlines to adopt a merchandising strategy that not only takes the need of travellers into account, but also achieves the main goal of airlines to increase their profits and shift from a service provider to a retailer.

"The objective of TPConnects is to help airlines to retail travel products, deliver rich content and offer bundled and unbundled products through the direct connect platform.

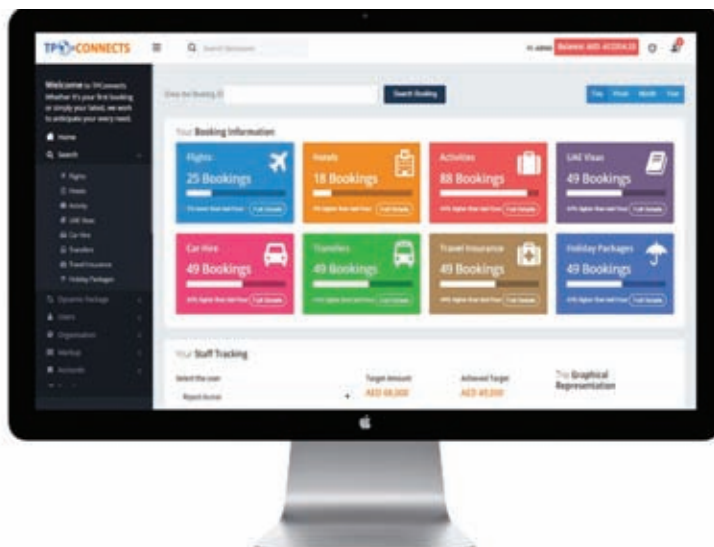
"It enables travel agents to search, compare and sell travel products, including ancillary products. The TPConnects platform is currently integrated with a couple of passenger service systems (PSS), supported by a merchandising engine, and integrated with other non-air products like hotel, car and activity suppliers."

She added: "We are already integrated with some of the passenger service and global distribution systems, plus non-air suppliers like Expedia, GTA, Hotelbeds, DOTW, Team America, Lots of Hotels, and Tourico for hotels, transfers, car hire, cruise and insurance.

"We are also the only supplier providing air charter integration in addition to integration with back office systems."

In 2014, air travellers spent an estimated \$38.1 billion on ancillary options, such as on-board food and beverages, checked baggage and seat assignments.

These have traditionally been booked via airline websites, but the NDC standard and TPConnects' travel aggregator mean other suppliers can also now cash in.



Moulay Omar Alaoui: "In terms of structure, sharia-compliant financing involves a notion of fairness to the customer."



Sharia-compliant financing is emerging from being a niche form of funding and is taking its place in mainstream financial deals. Alan Dron has been looking at the phenomenon.

Sharia deals are on the money

The Saudi Arabian Airlines deal in June 2015 to buy 50 Airbus airliners was notable for several reasons. Saudia became the first operator to order the A330-300 Regional version of the European twin-aisle aircraft; it was the largest leasing deal in the airline's history; and the aircraft were acquired through sharia-compliant finance.

The last of those points was significant.

Sharia-compliant financing is increasingly taking its place in mainstream financial deals. It is also starting to spread beyond its Middle East base and is potentially a new funding mechanism for airlines with no connection with the Islamic world.

"We have in the pipeline a robust flow of transactions," said Moulay Omar Alaoui, president and CEO of International Airfinance Corporation (IAFC), which exclusively finances Airbus aircraft for clients in the Middle East, Asia and Africa.

IAFC was launched in June last year with seed capital from Airbus and the Jeddah-based Islamic Development Bank. In 2015 it bought five new A330-200 aircraft, which were delivered and leased to Kuwait Airways.

List prices

The Saudia deal – worth \$8.2 billion at list prices – took more than a year to pull together, with negotiations for the aircraft and the funding being worked out in parallel. Deliveries will take place between 2016-18.

"Our deal with Saudia is an operating lease," explained Alaoui. "The lease, in essence, is a sharia-compliant funding tool."

Leasing, as opposed to ownership of aircraft, is an increasingly popular route for Middle Eastern airlines, he added. Around 40% of airliners in the region are currently leased and this figure will grow to a 50-50% split in the next few years, he believed.

Principles of Islamic finance

In very simplified terms, here are some of the principles governing sharia-compliant finance:

■ **There should be 'no unjustified advantage' in financial dealings.**

This means that charging interest for providing funding is not acceptable. Instead, the principle of 'profit and loss sharing' is used. This is a form of partnership where the partners in a financial contract share profit and loss on the basis of their capital share and effort. There is no guaranteed rate of return; the Islamic view is that creditors act as partners in the business.

■ **Any transactions involving speculation or uncertainty are prohibited. Both parties in a contract must have knowledge of the subject matter and its implications.**

■ **The most popular form of Islamic financing is 'murabaha'. This is where a bank agrees to buy assets or goods from a third party at the request of its client and then re-sells them to its client with a marked-up profit. This mark-up is regarded, not as interest, but as a payment for the services the bank provides.**

While there were already sharia-compliant funds in the region, said Alaoui, IAFC was unique in that it was the first to be seeded and sponsored by an aircraft manufacturer.

"In terms of structure, sharia-compliant financing involves a notion of fairness to the customer. So you cannot, for example, claim prohibitive penalties for late payments," he said.

Alaoui is also president of lessor Palma Holding, as well as several companies involved in the aircraft leasing business. Palma Holding, in a joint venture with Ibdar Bank in Bahrain, has acquired in the past year several new Bombardier Q400 turboprops that were leased to Ethiopian Airlines, RwandAir and Abu Dhabi-based Falcon Aviation.

Joint venture

The joint venture specialises in commercial aircraft, with particular emphasis on the Middle East and Africa. The deal, signed at the 2013 Dubai Airshow for four Q400s for Ethiopian Airlines, was an indication that sharia-compliant financing is spreading beyond its traditional homeland, said Alaoui: "Ethiopia is a non-Moslem country but it's a fully sharia-compliant deal.

"In the past, sharia-compliant funding was expensive because of its structure, but now it's more competitive." This, he said, would lead to an increasing number of deals of this type.

"To an airline it's a lease, it doesn't make any difference to it. There are a few parameters that make it fairer to them as well as making it more competitive.

"We don't have any reason not to have exposure to other airlines in other parts of the world, but it's natural that our investors are from this part of the world and prefer to have exposure in this region. People want to invest in the regions that they know best and in airlines that they see and fly on."

The International Federation of Air Line Pilots' Associations (IFALPA), the Montreal-based 'global voice of pilots', says it's looking to secure ties with Middle East carriers but admits it's got work to do to overcome "prevailing misconceptions" of its purpose. Barbara Saunders reports.

Chalk draws a clear picture to bridge the Gulf



IFALPA president, captain Martin Chalk, has been on a 'fact-finding' visit to the Middle East, reaching out to carriers to dispel preconceived notions of any union-creation agenda and laying out a joint approach to a roadmap focused more on mutual safety and technical development.

The task is, the captain admits, something of a steep incline.

"There are long-held assumptions that associations are simply there for union-style support to members but this is old hat," he said. "The majority of our member associations are professional organisations focused on safety and technical development and provide independent advice and support where pilots may see challenges. There are some that have a trade-union-like element, but by no means all, and these we know would not fit the culture of the Middle East."

The IFALPA president, whose organisation represents 100,000 pilots and flight engineers in more than 100 countries, knows he's facing a long game in convincing Middle East airlines to work with his organisation. He admits, too, that it could be something of a game-changer for his own organisation.

Interact with Gulf airlines

"We have to find a way to interact with Gulf airlines so that their approach and concerns are included in our deliberations. But, for sure, we will have to change and it will require us to get over preconceptions and prove we are more than just a workers' organisation because that's not the case at all. In the same way that we have no remit, nor do we seek any role, in any of our members' negotiations; nor would there be any desire for such activity on IFALPA's part here.

"At this stage I'm very much in listening mode. Before we even attempt to solve the problem, I need to collect as much data as possible. The solution will inevitably include how we might create an informal contact, which will involve developing understanding and trust that can then be turned into a formal development further down the road."

Chalk says, currently, many pilots within Middle East airlines do belong to professional pilots' associations but prefer to keep their membership quiet. "We do have members in the Gulf airlines but they are members within

their 'home' organisations and do not want to make a big song and dance about it," he said.

Talking the Middle East airlines round will be no mean feat – but Chalk said there is plenty in it for the carriers with IFALPA's stated mission being: 'To be the global voice of professional pilots by providing representation, services and support to promote the highest level of aviation safety worldwide'.

"It is in the interests of improved safety," he said. "We offer an additional channel through which to talk to the International Civil Aviation Organization (IACO) to ensure safety regulation is both effective and practical and not overloaded by bureaucracy.

Pilot requirement

"Secondly, the Middle East airlines have a challenge with pilot requirement over the next decade or two. With the current situation, pilots may not be attracted to work for them when they could work for others who are connected to the global professional pilots' body. This doesn't mean we intend to unionise the Middle East, I reiterate, we don't want to interfere in domestic arrangements."

Chalk says he is making some headway with carriers he prefers not to mention; with others, he's being stonewalled. "Some are talking to us – we don't want to name them at the moment as discussions are at an early stage – others, well the response, considering we just want to talk and find mutual beneficial ground, is surprising."

However, the IFALPA president will be taking his 'safety first' message to the Global Aerospace Summit in Abu Dhabi in March, when he's part of a panel discussing: 'Safety -v- efficiency: are we going far enough to ensure safety?'

And, he's looking to nurture Middle East links by holding more IFALPA events in the region – the federation's accident analysis and prevention committee meeting was held in Abu Dhabi last year.

"We hope to organise an IFALPA board meeting in the region to which we would invite civil aviation authorities," he said.

Ever the pragmatist, Chalk accepts he's in for a long game. "I recognise it's not going to happen overnight. But there has to be change at some time and we have to show that IFALPA's interests have now broadened."

SITA's Violante to step down

SITA CEO Francesco Violante will step down in the second half of 2016 after 13 years in the position.

Violante led SITA through big changes during his time as CEO, merging previously separate entities into one company that provides IT solutions to the air transport community.

Dr Omar Jefri, chair of the SITA board and executive vice president corporate management & regulations at Saudi Arabian Airlines said: "Over the past decade Francesco has positioned SITA as a leader in IT technology in the air transport industry and has successfully steered the organisation during a time when technology is rapidly changing the way we travel."

A search for Violante's successor is currently under way.

Avtrade appoints new Dubai director

Avtrade has appointed Aymeric de Warren as

regional sales director – Dubai.

Aymeric will be responsible for the Dubai office and team. Focus will be on progression of business opportunities, strong sales growth and development of existing and new customer relationships and support.

Cooper steps up for Airways Aviation

Ian Cooper has been named as the new CEO for Airways Aviation Group, which supplies training to the Middle East market.

Cooper steps up from his

current role as general manager and head of training for Europe.

He takes over effective day-to-day responsibilities from current CEO, founder and owner of the Airways Aviation Group, Romy Hawatt, who is retiring.

Cooper said: "Airways Aviation Academy is growing rapidly. We have made significant strides forward and have more to achieve. We have the right capability, desire, commitment, passion and experience to deliver exceptional results."

SIX OF THE BEST FOR ETIHAD



Etihad Airways has announced the appointment of six UAE nationals into key positions.

The airline has appointed captain Salah Alfarajalla (left) as senior vice president security and national pilot development, while Ghudayer Al Dhaheeri has been named as the new vice president corporate security, and Sultan Mohamed Al Mahmoud joins the airline as vice president corporate strategy.

Meanwhile Omar Al Memari has been named Etihad Airways' airport manager at San Francisco Airport and Khaled Al Mazrouei is the new assistant airport manager at Los Angeles Airport.

Rashed Al Sharji, has been appointed to the role of assistant airport manager for Etihad Airways in Cairo.

Geert Boven, Etihad Airways' senior vice president, airport services, said: "These appointments will greatly support the continued growth and success of our US and Egypt operations."

Culver is Hadid's new CEO

Brian Culver became CEO at Hadid International Services on November 4.

The Dubai-headquartered company provides a diverse range of flight support services such as permits, handling, fuelling, charter, flight planning, and concierge services worldwide.

"I am thrilled to partner with Hadid's dedicated board, committed staff and much-valued partners," said Culver. "Hadid provides the ideal leadership opportunity



to marry my passion for exceptional service with my proven record of increased organisational performance and effective market impact.

"Working alongside our partners and our ground supervisors, we will achieve our objective of success and building towards a sustainable future."

NEXUS NAMES HALAWANI FOR TOP ROLES



Omar A Halawani has been appointed as the new president and CEO of Nexus.

Abdullah Al Sayed, who has been president and CEO of the Saudi Arabian-headquartered company since its inception in 2010, becomes chairman.

"Omar is an exceptionally well qualified leader," said Al Sayed. "He has a proven track record of building successful multi-national organisations, exceeding established business goals, and working effectively with both the private and government aviation sectors. The board of directors look forward to working with him and continuing to build Nexus as a global leader in flight operations services."

all in a day

PEOPLE

Vince Reffet

Steve Nichols talks to one half of the famous Jetman Dubai duo, who recently flew in formation with an Emirates Airbus A380 over Dubai.

1

■ What does your job entail?

My day-to-day work involves flying the jetwing, skydiving and BASE jumping. Establishing our headquarters in Dubai gives us access to world-class facilities, including Skydive Dubai, which will enable us to take Jetman Dubai and the development of our new wing to its next stage.

Yves and I have also developed two exhilarating jetwing flying formations that are sure to set the sky on fire and further spread the joy of flight to a larger audience.

2

■ Tell me something about the jetwing?

Yves got the idea for Jetman when he was skydiving. Floating through the air with nothing but a backpack strapped to his back was the closest he had ever felt to actual flying.

The jet-propelled wing took 20 years of trying and testing to reach where it is today.

The first version of the wing was developed in 2004, after experimenting with 10 different prototypes, and had just two engines. It was able to fly for approximately six minutes at a speed of 180kph. Today, we fly with a 55kg high-tech carbon-fibre wing fitted with four engines and can achieve speeds of approximately 300kph. We are able to maintain a flight time of 10 minutes and can also loop.

3

■ How did you prepare for the Jetman/Emirates A380 flight over Dubai?

Yves and I have been training a lot over the past two years to learn how to fly together. Nevertheless, for the three flights with the Emirates A380, we had to take a lot of care.

Even if fully prepared, flying next to an Airbus A380, as mosquitos next to a giant eagle, is quite an arduous and yet impressive experience.

The most challenging part was definitely the coordination between us, the Jetman helicopter, the filming aircraft, the filming helicopter and the Emirates A380.

Our priority is always safety and we're glad and very proud that the project has been a great success.

4

■ What are the biggest challenges you face?

The only big challenge is to realise all the dreams I have.

The physical challenge is quite tough though. As soon as I start to do figures like loops, the load goes up to 3G and I have to arch with a lot of strength. I have to make my body into a banana shape to control pitch. After three or four days of flights, I really feel the strain in my lower back. Try lying on the floor and keeping your head up for thirty seconds – it's just like that.

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■ What plans do you have for the future?

I want to keep exploring the limits of human flight, together with Yves and hopefully more pilots. There're so many places we would love to discover and fly the jetwing to.

But, of course, the big dream is to be completely autonomous – that is, to be able to take off and land from the ground instead of dropping from a helicopter – maybe just like the superhero Iron Man!

The team are working towards finding different alternatives that would help us take-off from the ground and also maintain a sustained flight longer than 10 minutes.

Vince Reffet is a well-known name in the world of skydiving, has completed more than 15,000 jumps and comes from a family of skydivers. He has achieved extraordinary feats, including a record-breaking base-jump from the world's tallest building – Dubai's Burj Khalifa – as well as a jump from 10,000 metres over Mont Blanc in France. Reffet completed five years jetwing training with Yves Rossy, the original Jetman, who relocated to Dubai in 2014, and the two now fly together.

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