



# ARABIAN AEROSPACE

INTERNATIONAL  
AEROSPACE  
PUBLICATION OF THE YEAR

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

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# Winning over the world

Over a number of recent issues, I have used this platform to talk about the maturity of the aerospace, aviation and defence industry in the Middle East.

Go back a decade and the region's aerospace business was that of a customer. With the odd obvious exception, such as Emirates Airline, and the high net worth individuals (HNWIs) in the market for a top-of-the-range business jet, there was not much to interest the rest of the world.

How different it is today:

■ The region makes headlines with sales and, by leading the way in the demand for innovation, there is a thriving manufacturing base being established across the Gulf and North Africa.

■ MEBAA, the region's business aviation association, has seen an increase in business jets – and not just the biggest and costliest – and has led campaigns to fight the grey market.

■ Events like the Dubai Airshow, the Global Aerospace Summit, and the World Aviation Safety Summit, all have their place in the region.

■ And, when it comes to embracing technology, the world waits with baited breath to see the first of the autonomous air taxis being prepared for Dubai.

*Arabian Aerospace* has been alongside the industry since early 2009 and we are closing in on our 10th anniversary – and like the industry as a



whole, the magazine has been recognised by our peers for the work we are doing.

On the eve of the Farnborough International Air Show, my colleague and publisher, Mark Brown, represented us on the stage at the Royal Aeronautical Society in London to collect the trophy for the 'International Publication of the Year' at the global aerospace industry's media dinner.

Previous winners, such as *Flightglobal* and *Aviation Week*, are an indication of the standards that

have been set – and I speak for all of the team, editorial, production and sales, when I say just how proud we are of this recognition.

We are seen as being the record of the region's progress.

Our interviews with industry leaders and government officials has helped create some understanding of the region's strategies, the differences and the stories behind the news.

Mark and I would like to say a massive thank you to our team (the cast list appears on the column to the left) but also to our supporters – the sponsors and advertisers – and to you the readers.

I know from the feedback that I get that you enjoy the magazine, the weekly newsletter and the daily online updates.

Thank you for being with us.

**Alan Peaford, Editor-in-chief**

**COVER: Oman Air's new chief executive, Abdulaziz Al Raisi. PICTURE: BILLYPIX**

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## PUTTING A SMILE ON THE BELUGAXL'S FACE

Airbus' first BelugaXL is 'all smiles' after rolling out from the paint shop in Toulouse, France, ahead of its first flight on July 19. This next-generation oversize cargo airlifter was given a distinctive livery which features beluga whale-inspired eyes and an enthusiastic grin. The unconventional paint scheme was selected by Airbus employees in a company-wide vote conducted last year.

The BelugaXL was launched in November 2014 to address the transport and ramp-up capacity requirements for Airbus beyond 2019.

Derived from the freighter version of Airbus' A330-200 jetliner, the BelugaXL is six metres longer, one metre wider and has a payload lifting capacity four tonnes greater than the current Beluga A300-600ST.



## SaudiGulf launches new mobile app

CellPoint Mobile has partnered with SaudiGulf Airlines to develop and launch the airline's first mobile app to support booking.

As part of the launch, CellPoint Mobile enables payments through SADAD, the national electronic payment method used in Saudi Arabia.

SaudiGulf Airlines CCO, Karim Makhoul, said: "We chose CellPoint Mobile as we knew it would deliver a native booking app that would expand our revenue opportunities in the direct channel, and communicate our unique brand essence."

## First Trent 7000 engine despatched

The first Rolls-Royce Trent 7000 production engine was despatched in July to the Airbus facility in Toulouse in readiness to power the company's latest

aircraft, the A330neo, into service.

Chris Cholerton, Rolls-Royce president – Civil Aerospace, said: "We now look forward to supporting Airbus and TAP Air Portugal as they prepare for the aircraft to enter into service later this year."

■ See R-R goes for a TAP in, page 117.

## AMAC's MRO hangar in the mix

AMAC Aerospace opened its latest wide body Hangar in Milas-Bodrum, Turkey on July 23 in front of some 100 guests from all over the world. The 4,626m<sup>2</sup> Hangar will serve AMAC's MRO customers from the Middle and Far East. AMAC is the first to use a mixed hangar model for MRO where during the winter months, it carries out commercial line and base maintenance. During the summer months, it flips to VIP business maintenance.

## DCAF expands fleet

DC Aviation Al-Futtaim (DCAF) has added another Bombardier Challenger aircraft to its managed fleet.

The management contract will see DCAF provide full flight operational aircraft management services, in-house maintenance, continuous airworthiness management organisation (CAMO), hangar parking and FBO handling at its facility at Al Maktoum International Airport.

## Turkey's cabin flex

Turkish Airlines has taken delivery of the first A321neo in 'cabin flex' configuration. By applying modifications to the fuselage, it enables flexible cabin configurations for up to 240 passengers. Turkish Airlines will operate the aircraft in a configuration with 20 seats in business class and 162 in economy class.



Winning smiles: Publisher Mark Brown and editor-in-chief Alan Peaford.

## Arabian Aerospace scoops industry award

*Arabian Aerospace* magazine won 'Best International Publication 2018' – sponsored by BAE Systems – at the aerospace media dinner and awards in July.

Publisher Mark Brown said: "I am proud of the whole *Arabian Aerospace* team, who have made this achievement possible. We have a passionate and dedicated group, most of whom have been with us since the launch 10 years ago. To have won the votes of such an esteemed panel of judges is a huge honour."

Alan Peaford, editor-in-chief, added: "This is tremendously exciting for a regional magazine to shine among some of the great names of aerospace publishing. It says a lot about the vibrancy of the MENA aerospace and defence industry and is a recognition of our great team."

## RJ teams with TGV AIR

Royal Jordanian (RJ) has signed a bimodal partnership agreement with SNCF's (French National Railway Company) TGV AIR, whereby Royal Jordanian passengers benefit from a pre- and post-transportation service by TGV from Paris-Charles de Gaulle airport to 19 French cities, as well as Brussels, Belgium.

RJ CEO Stefan Pichler said: "We believe that the partnership with SNCF will enable our customers to reach several new destinations in France. This partnership demonstrates RJ's commitment to adopting the services TGV AIR offer as a major tool in its overall strategy, which aims to provide more travel options to its passengers."

## Kuwait helicopter deal

Kuwait Prime Minister, Sheikh Jaber Al-Mubarak Al-Hamad Al-Sabah, has ordered an investigation into the €1 billion (\$1.19 billion) order signed by the air force for 30 H225M Caracal multirole military utility helicopters, 24 of them for the Kuwaiti Air Force and six for the Kuwait National Guard.

"It has been decided to transfer the case of the Caracal helicopter deal to the National Anti-Corruption Commission," said Kuwait Minister of Cabinet Affairs, Anas al-Saleh. The deal will also be probed by the State Audit Bureau.



## Pilatus PC-24 off-roader lands on unpaved runway

The PC-24 aircraft made its first landing on an unpaved runway in June. The super versatile jet is currently undergoing a programme of post-certification tests, with special emphasis on unpaved runway operations, at Woodbridge Airfield to the north east of London, UK. Pilatus plans to obtain 'rough field' certification in the fourth quarter of 2018.

From the outset, the PC-24 was designed for "off road" operations.

Oscar J Schwenk, chairman of Pilatus, said: "What a picture – the PC-24 in the toughest conditions, using an unpaved runway for the first time!

"This sort of mission would not be conceivable without the PC-24's rugged landing gear, clever flap systems and special wing design. The PC-24 was designed with exactly this sort of operation in mind – that's Swiss engineering at its very best."

## Saudi grows Black Hawk fleet

The Saudi Black Hawk fleet is set for dramatic expansion following the announcement of a \$193.8 million firm-fixed-price foreign military sales contract for 17 UH-60Ms in January 2018.

Eight of the new UH-60Ms will go to the Saudi Arabian National Guard and nine to the Royal Saudi Land Forces Airborne Special Security Forces.

These will join the survivors of a single S-70A VIP helicopter, 12 S-70A-1 Desert Hawk utility helicopters, eight S-70A-1L medevac helicopters, eight ex-US Army UH-60As, transferred during Desert Storm, as well as

about 24 UH-60Ls delivered between 2008 and 2014.

## Etihad boost chauffeur services

Etihad Airways has implemented new features enhancing its chauffeur services in the UAE.

Customers can now book and manage Etihad's chauffeur services directly through the airline's upgraded mobile optimised website without having to call Etihad's contact centre or a travel agent.

## New IT for RJ

Royal Jordanian has entered a new-term partnership with Amadeus IT Group.

The airline has signed for

the full Amadeus Altéa suite, meaning its critical systems, including reservation, inventory and departure control, will be moving on to Altéa technology. Its distribution agreement with Amadeus has also been renewed.

## Turkey swallow

Turkish Aerospace is getting a fresh look with a new logo and identity.

Temel Kotil, president and CEO of Turkish Aerospace, said: "Our company, which from the very first day of its establishment until today is a source of pride to the industry, has introduced its new logo. The swallow's unique characteristic,

which represents freedom, has played a significant role in logo identification."

## Emirates one-off service to Accra

Emirates A380 aircraft will operate a one-off flight to Kotoka International Airport Accra, on Tuesday 2nd October, as the global airline joins local authorities in celebrating the opening of the airport's new Terminal 3.

"The launch of Terminal 3 is a milestone in Ghana's aviation history and we support every effort to facilitate greater trade links, grow tourism and boost cargo to the region," said Orhan Abbas, Emirates' Senior Vice President, Commercial Operations – Africa.

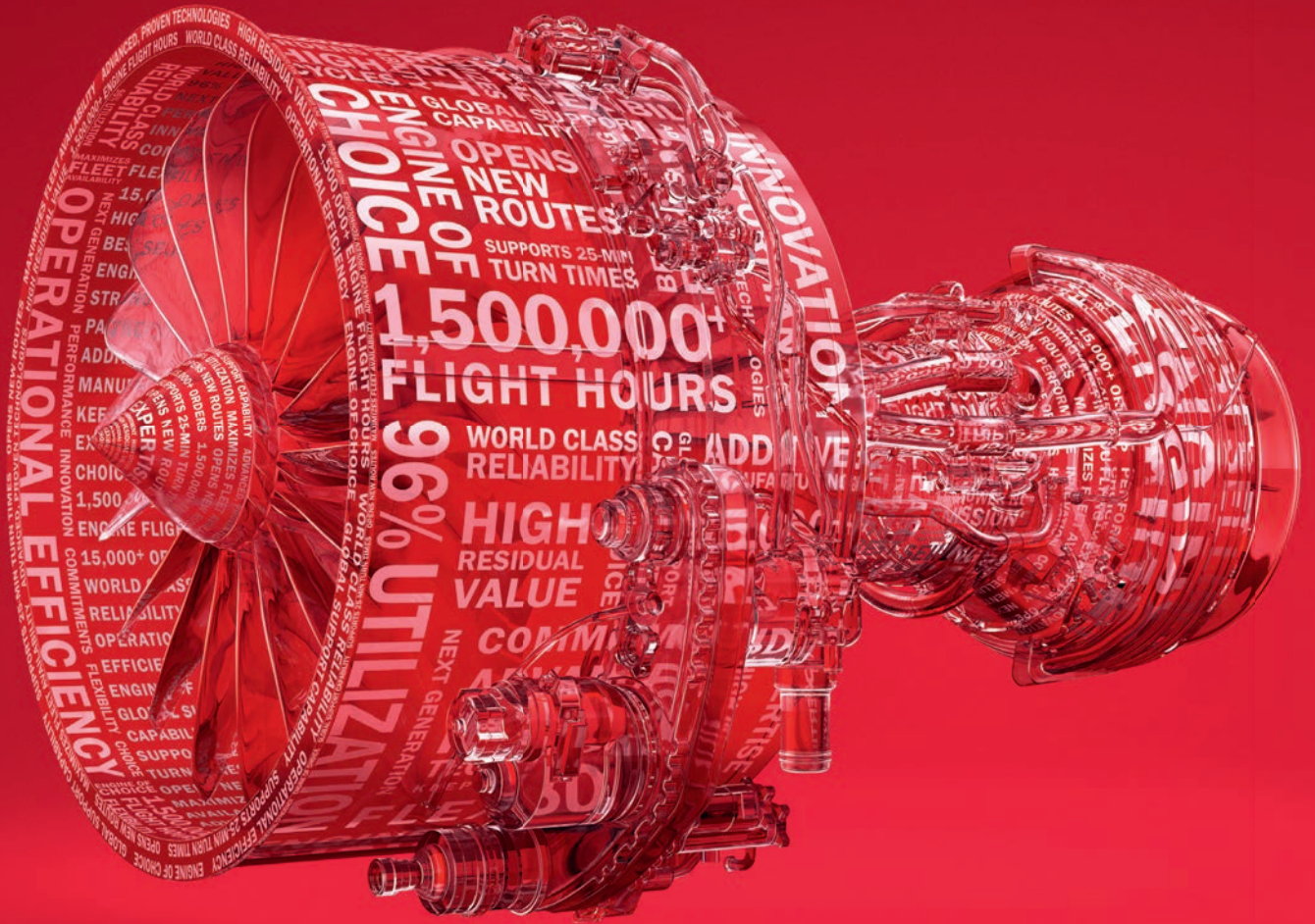


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## Humanitarian launch

Etiha Cargo launched its first humanitarian freighter mission in May.

The initiatives are part of the group's extensive Year of Zayed programme, which will take place throughout 2018.

The specially branded Year of Zayed Boeing 777 freighter aircraft departed Abu Dhabi – first to Almaty in Kazakhstan and then to Hyderabad in India – carrying special provisions to be distributed to those in need during the holy month of Ramadan.

## AJW wins award

AJW Group, which has offices in Dubai, won the 'Aviation 100' award for 'parts supplier of the year' for the sixth consecutive year, following a vote by industry professionals.

The criteria for the award included parts stocked – with AJW recognised for its significant inventory of modern, commercial, Airbus and Boeing aircraft spare parts valued at around \$500 million, located strategically across the globe.

## Trent 700 reaches milestone

Rolls-Royce celebrated in June after the first member of the Trent family, the Trent 700, completed 50 million flying hours.

The achievement, equivalent to flying around the world more than a



## First ACJ320neo enters final assembly

The first ACJ320neo has entered final assembly in Hamburg.

The ACJ320neo is due to be delivered to Acropolis Aviation of the UK in the last quarter, together with a second aircraft, for Comlux of Switzerland.

More than 300 A320neo family airliners are already flying with carriers around the world, but deliveries of corporate jet versions are only just beginning.

Like the airliner versions, the ACJ320neo family features new-generation engines and sharklets, which save around 15% in fuel and deliver a leap forward in range.

The resulting ACJ320neo can fly 25 passengers 6,000nm/11,100km or 13 hours, while the ACJ319neo can fly eight passengers 6,700nm/12,500km or 15 hours.

Orders for the ACJ320neo family now total nine aircraft, comprising three ACJ319neos and six ACJ320neos.

million times, occurred while around 380 Trent 700-powered Airbus A330 aircraft were in flight around the world.

## Honeywell expands GoDirect services

Honeywell is expanding its range of GoDirect connected services to deliver improved flight support within its signature programme, GoDirect Flight.

Using the new integrated services, business aviation operators will benefit from improved flight planning and in-flight communications through

Honeywell's flight planning, flight tracker and weather applications.

## DAE secures funding boost

Dubai Aerospace Enterprise (DAE) has signed a landmark unsecured four-year revolving credit deal with an initial commitment of \$480 million and a feature that allows the facility to be increased to up to \$800 million at any time after the initial closing.

The facility, undertaken with the help of Al Ahli Bank of Kuwait, the First

Abu Dhabi Bank, and the Noor Bank, includes both conventional and Islamic tranches and will support the future financing needs of the business.

## Pegasus codeshare with Nile Air

Pegasus has signed a codeshare agreement with Nile Air, Egypt's largest private airline.

Through the partnership, Pegasus guests can now purchase flights from Pegasus channels for the Nile Air flights between Istanbul Sabiha Gökçen Airport and Cairo.

## Saudi homes in on Thales

The Saudi Air Navigation Service has selected Thales to support a programme for the modernisation of all surveillance radars in the kingdom.

The programme comes under the auspices of Vision 2030, which aims to reduce Saudi Arabia's dependence on oil through the diversification of its economy and development of public service sectors.

Thales will supply monopulse secondary surveillance radars (MSSR) mode S for King Abdulaziz International Airport in Jeddah, King Khaled International Airport in Riyadh, King Fahd International Airport in Dammam and Jazan Airport.

These radars will provide full coverage across a dense traffic area.

## BBJ boasts new sales

Boeing Business Jets (BBJ) won four new orders recently.

"We continue to see a lot of customer interest in Boeing's family of business jets and that is translating into new orders and a growing backlog," said Greg Laxton, leader of Boeing Business Jets.

"Customers seek more space and greater range, which is driving significant growth in the large cabin segment."

Two of the new orders are for the BBJ MAX aircraft, adding to a backlog of 19 aircraft.



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## Etihad Cargo helps cars go

Etihad Cargo has launched 'FlightValet', a new product aiming to ease the process of moving motor vehicles across the globe.

"FlightValet is available to those who wish to transport their luxury vehicles immediately," said Abdulla Mohamed Shadid, Etihad Airways managing director cargo and logistics.

"We are delighted to introduce this new tailored product to the marketplace. Demand from our customers has grown significantly in recent years and, in an effort to improve our service offering, we have introduced vehicle-handling capability at key new stations in 2018.

## A Pearl of a lounge

National Aviation Services (NAS) has inaugurated its Pearl Lounge at the Cairo International Airport.

The development follows a five-year agreement between the national logistics services and Cairo Airport Authority to develop and operate the lounge.

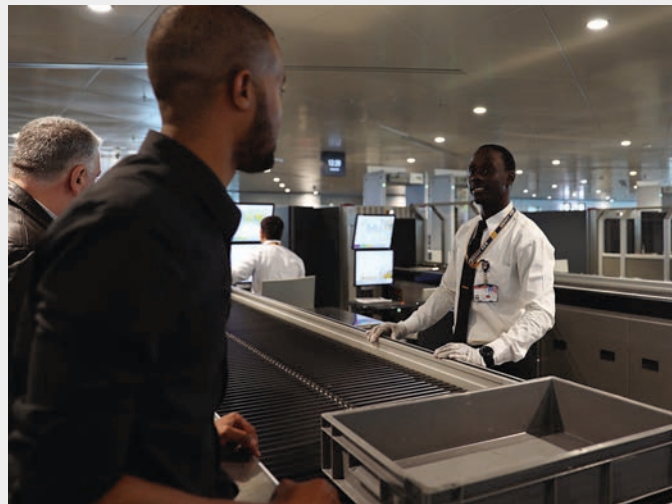
The facility, located at terminal 2 departures, covers an area of 540sqm and offers the ultimate in comfort and luxury. This includes complementary Wi-Fi, tablets, charging power points, food, and a kids' entertainment area.

## Lower in-flight mobile charges

AeroMobile and UAE telecommunications operator, Etisalat, have partnered to simplify and reduce the cost of mobile phone use in flight.

AeroMobile's in-flight mobile phone service is now available in Etisalat's mainstream roaming packages, allowing its subscribers to stay online, make and receive calls, and listen to voicemail at no extra cost.

## Hamad International enhances security screening



Hamad International Airport (HIA) has increased security screening capacity and reduced queuing time in its transfer areas.

The Qatar airport recently opened two additional transfer points, bringing the total to four separate transfer areas spread across the north and south nodes of the terminal, reducing walking times to transfer areas for passengers and increasing its overall security screening capacity.

HIA can now ensure that at least 95% of its transfer passengers queue for less than five minutes.

Brigadier Essa Arar, director of the airport security department, said: "This is a great combined effort by HIA, the Qatar Civil Aviation Authority and the Ministry of Interior to improve the experience of passengers travelling through Qatar. We will continue to work together to achieve excellence in security in Qatar's award-winning airport."



## Saudi ATC students graduate in New Zealand

A group of 29 Saudi Arabian students have graduated from Airways New Zealand's air traffic control training programme.

The students graduated at a ceremony at Airways' purpose-built training facility at Massey University in Palmerston North, marking the completion of a successful two-year scholarship sponsored by the General Authority of Civil Aviation of Saudi Arabia (GACA) – and helping to fill a critical gap in the Middle East for the training of air traffic controllers.

Airways Training CEO, Sharon Cooke, said: "The success of the programme is testament to the high standard of training we provide – students are learning in a highly supportive environment with a low instructor-to-student ratio, and they've got access to very experienced instructors and world-class simulation technologies."

## DC Aviation grows fleet

DC Aviation Group (DCA), the German joint venture partner of DC Aviation Al-Futtaim (DCAF), continues to grow its aircraft

management fleet with the addition of a Dassault Falcon 7X.

The new aircraft is also available for charter flights for DCAF clients in the region through DCA's subsidiary – DC Aviation Malta.

## Gulf Air pilots earn their stripes

Gulf Air graduated 14 Bahraini senior first officers in June, who successfully earned their fourth stripe after qualifying to become captains.

Captain Waleed Abdulhameed AlAlawi, Gulf Air deputy chief executive, said: "These accomplishments are a reflection of the hard work, exceptional skill and tireless determination.

"We, the Gulf Air family, are incredibly proud to see these Bahraini captains graduate from our ranks and we look forward to their contributions in bringing Gulf Air even closer to achieving our goals."

## New leases for Onur

Vallair, the aircraft trading, leasing and specialist MRO organisation, has completed lease transactions for three Airbus A321 aircraft with Onur Air in Turkey.

The first of these aircraft, purchased from AerCap together with its engines, was delivered in May with a lease term of 18 months.

The second, also purchased from AerCap, is being leased as an airframe only and was delivered to Turkey at the start of June.

The final aircraft, purchased from Aviation Capital Group (ACG), was also leased to Onur Air as an airframe only and is part of an acquisition release novation contract completed in April, with a short-term lease of six months.

## Jetex's Irish eye

Jetex is to open a new FBO adjacent to the main terminal at Dublin Airport in Ireland.

"Ireland is preparing for a surge in air traffic," said Adel Mardini, Jetex CEO and president. "We're excited to expand our FBO network to include Dublin."

More than 80,000 passengers pass through Dublin Airport every day. It has an extensive short- and medium-haul network and significant long-haul traffic focused on North America, the Middle East, and East Asia.

Private jet traffic is around 3,500 departures a year and is expected to grow at a steady pace, Mardini said.





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## Boeing and Embraer in partnership

Boeing has signed a memorandum of understanding (MoU) for an 80-20 commercial aviation joint venture with Embraer worth \$4.75 billion.

The move for Boeing to have a stake in the regional jet business is seen as a reaction to Airbus investment in the Bombardier CSeries programme.

Dennis Muilenburg, Boeing's chairman, said: "This important partnership clearly aligns with Boeing's long-term strategy of investing in organic growth and returning value to shareholders, complemented by strategic arrangements that enhance and accelerate our growth plans."

"The agreement will create the most important strategic partnership in the aerospace industry, strengthening both companies' leadership in the global market," added Embraer CEO, Paulo Cesar de Souza e Silva.

## Etihad's new medical move

Etihad Airways has launched two specialised services for air travellers with pre-existing medical conditions, ensuring continuity of care and in-flight safety.

The first in the region to be offered by an airline, the services will be carried out



## Sky Lounge completes Beirut FBO

**Lebanese private and business aviation provider, Sky Lounge Services, is now providing full-fledged ground-handling services at Rafic Hariri International Airport in Beirut.**

**The company offers flight operations, aircraft charter, management, sales and acquisition services and VIP lounge.**

**"As business grew and client partiality increased, Sky Lounge Services decided to add ground-handling services to adopt a full FBO profile and to be able to tend to clients' needs from A to Z without any third-party complication or error," said sales manager Nour Oueida.**

**"Sky Lounge Services was chosen based on strict criteria with regard to the quality and commitment to hospitality and reception that we are aiming to provide at Rafic Hariri International Airport. We hope that this step will boost the level of VIP services in Beirut, which, in turn, will take us closer to our strategic goal of becoming one of the top FBOs within our region by 2021."**

by members of the Etihad medical team.

The first service allows guests, who require medical clearance prior to travel, the opportunity to request an Etihad aviation doctor to visit them and conduct an evaluation in consultation with their attending physician.

All medical forms and assessments will be completed by the Etihad doctor on-site, leading to a recommendation about their "fit-to-fly" status within one day.

The second service is the introduction of an in-flight

nurse, who can accompany guests during their trip and provide medical support.

## Passenger fleet set to double

The world's passenger fleet will more than double to 48,000 aircraft in 20 years, according to Airbus' new Global Market Forecast 2018-2037.

It predicts traffic growing at a resilient 4.4% per year, driving a need for 37,390 new passenger and freighter aircraft.

"There is a growing trend to use aircraft across a

broader range of operations, with today's more capable aircraft blurring the boundaries between market segments," said Eric Schulz, Airbus chief commercial officer. "These realities made us develop a new segmentation with small, medium, large and extra-large categories, reflecting more closely the way airlines operate aircraft.

"The top end of our single-aisles, the A321neos, fly efficiently on long-haul routes and our wide-bodies, like the A330neo, equally serve regional operations."

## Freighter order

Boeing and FedEx Express have announced a new order for 12 767 freighters and 12 777 freighters.

David L Cunningham, president and CEO of FedEx Express said: "The Boeing 767 and 777 freighters have brought greater efficiency and reliability to our air operations. The 777, with its tremendous range characteristics, has allowed us to provide faster transit times around the globe. We are excited to add more of these aircraft to our fleet."

The new aircraft, valued at \$6.6 billion at list prices, will appear on Boeing's orders and deliveries webpage once contingencies have been met.

## Surveying training needs

Spatial, a provider of cabin crew training simulators, is carrying out a survey to determine the next generation of training needs.

The survey is open to anyone involved in the airline cabin crew training industry and covers virtual and augmented-reality training equipment and computer and mobile-based training, as well as enhancements to traditional simulators such as door trainers, cabin service trainers and cabin emergency evacuation trainers.

## L3 cadets to train at EAT

**L3 Commercial Training Solutions (CTS) and Etihad Aviation Training (EAT) have signed an agreement enabling cadets enrolled on the L3 Airline Academy Integrated air transport pilot license (ATPL) course to undertake foundation flight-training at EAT's training facility in Al Ain.**

**The agreement will increase L3's capacity for flight-training, enabling it to meet the demand for its industry-leading ATPL commercial pilot career programme.**

**Captain Paolo La Cava, director and accountable manager, EAT, said: "There is a growing requirement for high-quality pilots across the aviation industry and we are ideally placed to provide this world-class training. We are pleased to be working with L3 and look forward to welcoming their cadets to foundation flight-training."**



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**Abdulaziz Al Raisi: "We are trying to make Oman Air a destination airline, focusing more on point-to-point traffic."**

# Oman and SuperOman

*Oman Air's new chief executive, Abdulaziz Al Raisi, tells **Martin Rivers** the Gulf carrier is stepping up its expansion plans, while reducing its reliance on sixth-freedom traffic.*

**L**ike the Gulf super-connectors, Oman Air carries more than two-thirds of its passengers on transfer flights over its hub.

This sixth-freedom model allows the flag-carrier to surpass the limitations of its home market, unlocking routes and frequencies that could never be sustained by Oman's population of just 4.8 million.

Unlike its better-known neighbours in the UAE and Qatar, however, the Muscat-based airline is now rolling back its reliance on transfer traffic.

New chief executive, Abdulaziz Al Raisi, is targeting a 50/50 split between connecting flows

and point-to-point flows within a couple of years, and he wants to achieve this even as Oman Air accelerates the growth of its fleet and network.

"With sixth-freedom traffic, you are going into competition with a lot of giant airlines, big players. It's very hard for us as a small airline to survive in that market," Al Raisi explained.

"So we are trying to make Oman Air as a destination airline, focusing more on point-to-point traffic. We all know Oman is a country that gives a lot of things to tourists, or to any visitor. Considering our neighbouring countries, I think

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Oman has more to give than anybody else. It is easy for us to promote Oman, and that will help us to increase our point-to-point traffic.”

Cutting losses at the airline is a top priority for its government owner. Oman Air has been consistently in the red since 2008 – the year after Muscat withdrew from Gulf Air, the post-colonial, pan-national carrier that brought together the aviation interests of Bahrain, Oman, Qatar and Abu Dhabi. With the latter two emirates also pulling out in favour of their own flag-carriers, all four governments are now funding single-hub operations at home. None is profitable.

Yet, whereas Qatar Airways and Abu Dhabi's Etihad Airways followed the example of Dubai's Emirates Airline by creating mega-hubs – giant airports that suck in traffic from six continents – Oman Air grew more slowly as a niche carrier.

The result is that it deploys just 49 aircraft today, versus Qatar's 210 and Abu Dhabi's 110-strong fleet.

Its losses are also correspondingly lower, albeit still significant at 161 million Omani Rial (\$418 million) for 2017. By shifting the focus to origin-and-destination markets, Al Raisi believes the company can at last break even in the middle of the next decade.

“Point-to-point traffic is better yield and I'm sure that will help us to improve our numbers here,” he said. “So the Government, the ministry of tourism and Oman Air, together are trying to promote Oman as a destination.”

#### Current network

The flag-carrier's current network reflects its grudging reliance on sixth-freedom traffic. Seven destinations are served in western Europe (Frankfurt, London, Manchester, Milan, Munich, Paris and Zurich) and five in the Far East (Bangkok, Guangzhou, Jakarta, Kuala Lumpur and Manila).

The Indian subcontinent also features prominently – providing both feeder traffic to Europe and labour traffic for the Omani economy – with 11 destinations in India, three in Pakistan, and one each in Sri Lanka and Nepal.

Transfer flows on these European and Asian services are a double-edged sword.

By exploiting Oman's geographical location at the crossroads of east and west, they give rise to a powerful network effect that strengthens overall demand for tickets.

Without onward bookings to Bangkok, for example, London would almost certainly not be served twice daily.

However, sixth-freedom operators need to dangle cheap fares in order to entice passengers away from nonstop routings. And Oman Air's low economies of scale – at least when compared with the Gulf super-connectors – mean its discounts are typically loss-making.

The airline's Middle Eastern footprint is less exposed to this financial pressure because most regional customers travel point-to-point. Oman



## Al Raisi: From apprentice to CEO

**Abdulaziz Al Raisi started his career with Oman Aviation Services (OAS) in 1983 – a full decade before Oman Air was founded – initially as an apprentice engineer before working his way up to senior manager of base maintenance.**

**When Oman withdrew from Gulf Air in 2007, OAS was absorbed into Oman Air and Al Raisi reported directly to Ziad Al Haremi, the then chief executive.**

**Al Haremi's tragic death in 2008 unleashed a turbulent time at the company, with three foreign CEOs taking the reins in just seven years. Al Raisi worked closely with all of them – Peter Hill, Wayne Pearce and Paul Gregorowitsch – again climbing the ladder from chief officer of management affairs to executive vice-president of products and brand development.**

**The board appointed him acting CEO last year after Gregorowitsch stepped down, and decided to make the position permanent in April.**

**“If I look at my career, I have been almost everywhere in the company – from the operations side to supply chain to training – so I know the company upside down. I know every nut and bolt,” Al Raisi recalled. “I feel, still, every day, when I come to work it's more interesting to me, it's more challenging to me. And I still feel that I can give a lot to this company.”**

Air currently serves four destinations in neighbouring Saudi Arabia (Dammam, Jeddah, Medina and Riyadh), two in Iran (Tehran and Mashhad), two in the UAE (Dubai and Abu Dhabi), and one each in Turkey, Egypt, Jordan, Iraq, Kuwait, Bahrain and Qatar.

Its network is completed by three sub-Saharan African cities (Dar es Salaam, Zanzibar and Nairobi), plus three domestic points: Salalah in the south of Oman, Duqm in the centre, and Khasab in the northern exclave of Musandam.

Four route launches have already been announced for 2018. Flights to Istanbul began in June and a new service to Casablanca was due to start as this article went to press. Moscow and the Maldives will then join the network in October.

Al Raisi conceded that expansion comes at a price. “That's common in the start-up [phase]. Whenever you open a new destination it takes some time for the route to start making money,” he said. “So there will be some significant effect on my 2018 results. However, I think it will help me on the network side. And I'm hoping all four new routes will show some positive results by 2019.”

#### New markets

Insisting that further growth will put the flag-carrier on a sustainable footing, the chief executive said a dozen new markets are now under evaluation.

Either Beijing or Shanghai should join the network in the first quarter of 2019, he revealed, adding: “The Chinese Government promised us they will give us something by end of this year. We will open one of them – whichever we get first.”

Elsewhere in the Far East, Hong Kong and Bali are currently being considered. In India, network planners are looking at Ahmedabad, Kolkata, Mangalore and Coimbatore. In Africa, Tunis is being targeted, along with either Johannesburg or Cape Town. And in Europe, Amsterdam is seen as the next logical addition.

“I've got a very long wish-list, but it depends on the numbers,” Al Raisi stressed. “Oman Air is very well known for its steady growth. We don't want to grow really fast. We are doing it very wisely.”

Asked what steps the Government has taken to boost inbound demand, he noted that visa requirements were recently eased for tourists from China, Russia and Iran. Citizens of those countries can now obtain an entry visa online in just 15 minutes, without needing to nominate a local sponsor for their trip.

However, although progress has been made on several fronts, bilateral restrictions remain a bugbear for management.

As well as facing hurdles in traditionally illiberal markets like China and India, the flag-carrier has struggled to secure more traffic rights in western Europe. “We have issues with the French

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Government and the Italian Government,” Al Raisi admitted. “The French Government thinks we are a threat to Air France, but we are not. Our business model is totally different. I think it will give them a bit of comfort once we show them our strategy, once we show that we are not trying to steal traffic from their national carriers.”

With talks under way at an ambassadorial level, he voiced optimism that Oman Air could soon raise frequencies to both Paris and Milan from seven to ten times weekly. The airline’s daily flights to Frankfurt and Munich are also earmarked for possible growth, while Guangzhou is expected to rise from four times weekly to daily this winter.

Hinting at the difficult balancing act that Oman Air faces in its current stage of development, Al Raisi, nonetheless, said transfer traffic remains an important part of the equation.

Deeper expansion into Africa will almost certainly depend on greater feed from Beijing, for example, while Shanghai has the potential to strengthen flows to and from Europe. Longer-term, any push into North America is unlikely until access to the Indian market improves.

“My [traffic-rights] quota from India is not enough whereby I can take enough passengers to the US,” the chief executive noted. “If I manage to increase my quota, maybe that will help me a little bit. By 2021, 2022 maybe I will think of New York.”

**Route launch**

Enhanced access to India would also boost the case for a Cape Town or Johannesburg route launch. “The Indian market is a perfect feeder for those destinations,” Al Raisi affirmed. “But we are still in dialogue with the Indian Government. We are [asking for] exactly what they have given our neighbouring countries. And we are very optimistic that we will get it.”

Turning to the fleet, he said Oman Air will receive three Boeing 787-9 Dreamliners and five 737 MAX 8s between June and December.

The deliveries will be drawn from an outstanding order book of five 787-9s, four 787-8s and 25 MAX 8s.

This year’s new Dreamliners will be configured in a three-cabin layout featuring Oman Air’s new first-class suites and deployed on the London and Manchester routes. The three A330s they replace will, in turn, be reconfigured in a high-density layout – up from 230 to 312 seats – before being put to work serving Jakarta and Manila.

Another three Dreamliners and “five to six” MAX 8s will then arrive in 2019, by which time the next phase of the fleet programme should be clear.

“After a couple of years, some of our A330s will reach an age of 12 years old,” Al Raisi noted. “Usually, we keep the wide-bodies for not more than 12-13 years.

“So we are looking at replacements for those



This year’s new Dreamliners will be configured in a three-cabin layout featuring Oman Air’s new first-class suites and deployed on the London and Manchester routes.

A330s. We are doing a study and we are working very closely with Boeing and Airbus. With Boeing we are looking at the 787-10, and with Airbus we are looking at A350-900 or -1000. We are hoping by the end of this year we could finalise the whole deal.”

The stretched variants of the 787 and A350 that he alluded to typically seat between 315 and 366 passengers. That compares with seating capacities of between 226 and 289 on the existing Dreamliners and A330s.

**Demand across the network**

Maturing demand across the network has convinced Al Raisi to pursue fleet-wide up-gauging, also including the disposal of Oman Air’s last regional jets. “Our Embraers only take 71 passengers,” he noted. “We used to operate them to Doha and Abu Dhabi and Bahrain. Now we need an aircraft with bigger capacity.”

As of May, Oman Air deployed a 49-strong fleet of 21 737-800s, five 737-900ERs, two 737 MAX 8s, four 787-8s, three 787-9s, six A330-300s, four A330-200s and four Embraer E175s. It is aiming to reach 70 aircraft by 2024.

Though the entire fleet is based in Muscat, Al Raisi is mindful of the need to boost connectivity with Oman’s smaller cities.

Salalah is now served about eight times daily by the flag-carrier, while Khasab benefits from

nine flights a week and Duqm six. Salam Air, the state-owned low-cost carrier launched in 2017, also flies between Muscat and Salalah up to five times daily, as well as linking Salalah and Sohar twice a week.

Oman Air’s flights from Salalah to India were axed within months of launching last year. But the flag-carrier still connects the city with Dubai, while Salam Air links it with Jeddah and Medina.

The rapid pace of airport development across Oman leaves no doubt about the government’s long-term ambitions. This year’s opening of a new terminal in Muscat lifted the hub’s annual capacity to 20 million people – well above the 14 million it processed last year – and plans are in place to eventually handle up to 56 million. Salalah also gained a new terminal in 2015, while the airports in Duqm and Sohar were opened in 2014.

Yet, even with a growing passenger base and enviable new infrastructure, Al Raisi is reluctant to over-promise on behalf of a company that has always relied heavily on state support.

“My focus is purely to reduce the losses and to reduce the burden on the government,” he concluded. “I’m hoping to break even by 2024. However, saying that, there are a lot of external factors. The airline business is very dynamic and no-one knows what’s going to happen.”





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# Emirates adds third London airport to line-up

*Emirates Airline is making further efforts to tap into the seemingly inexhaustible source of passengers in the UK by flying into a third London airport.*

**Alan Dron reports.**

**Flanked by Emirates' cabin crew, (from left): Richard Jewsbury, Emirates Divisional Vice President, UK; Hubert Frach, Emirates Divisional Senior Vice President, Commercial Operations West; and Ken O'Toole, Stansted Airport CEO.**

It's not unknown for an airline to fly into two airports serving the same city: American Airlines uses Tokyo's Haneda and Narita, for example, while UK low-cost carrier, EasyJet, goes to both Milan's Malpensa and Linate.

But there must be few cities around the globe where an airline considers it is worthwhile to fly into three.

That, however, is the situation with Emirates Airline, which, in June, complemented its services to London Heathrow and Gatwick with the launch of a daily flight to London Stansted.

Stansted, some 30 miles (50km) northeast of London, is not well known outside Europe, and for good reason. It primarily serves the low-cost and charter market and the vast majority of services using it are short-haul. (Irish low-cost giant Ryanair operates close to 80% of the airport's services, for example.)

Heathrow, the UK's main long-haul hub airport, is only about 50 miles away from Stansted. However, following the arrival of the inaugural Emirates flight, operated by a Boeing 777-300ER, Hubert Frach, the carrier's divisional senior vice-president, commercial operations west, explained the rationale behind the new service.

"Previously, London's north east and the wider 7.5 million people that live within Stansted's catchment areas had to travel into the city [London] or further, to access airports with global reach. Now, this daily flight to Dubai connects passengers seamlessly to Emirates points across the Middle East, Africa, Asia and Australasia."

Although many of Stansted's flights head for destinations such as Mediterranean holiday resorts, the corridor stretching northeast from London's Canary Wharf financial district through the famous university city of Cambridge to the city of Peterborough is classed as one of

the world's top five 'knowledge corridors', alongside better-known names such as California's Silicon Valley and the expanse of New England through Connecticut and Massachusetts.

This is partly because of the increasing commercialisation of science; many Cambridge University spin-off enterprises have set up businesses in the area and the region is booming.

This means that the popular image of Stansted as a 'bucket-and-spade' leisure destination airport is increasingly outdated, said Stansted's chief executive, Ken O'Toole. Answering questions after the arrival of the first flight, he said Stansted now had as high a percentage of business travellers as Heathrow or Gatwick. "From an airport perspective, we're expecting strong fill throughout the [aircraft's] cabins."

## Room to grow

He also expects Stansted to account for 50% of all growth in London's airports in the coming years. This is partly because Heathrow and Gatwick are close to their maximum runway capacity, whereas Stansted still has room to grow.

Emirates also expects to take useful loads under the cabin; the 777-300ER has 20 tonnes of belly hold capacity, which the airline believes will be invaluable for industries around Stansted – such as the pharmaceutical sector – to export their products more swiftly than at present.

The daily 777 flight will spend seven hours on the ground at Stansted, arriving in the early afternoon and departing for Dubai in mid-evening.

This, said Frach, was linked to the availability of slots at Dubai International Airport and to ensure that the incoming service could connect with the morning bank of flights going eastward out of Dubai.

Around 60% of the airline's UK passengers fly onward from Dubai, with 40% choosing the emirate as their destination.

Stansted is Emirates' seventh UK destination, with Edinburgh due to become the eighth later this autumn. The airline has tapped into a reservoir of passengers who now no longer have to travel to London to connect with long-haul services, always a bugbear for passengers from the UK regions.

Emirates' routes from UK regional airports "operate in the high 80% load factor [range] around the year", said Frach. "We have no indication it will be any different from Stansted."

The airport, which has recently refurbished the area where Emirates will operate, has already reserved space in the pier for a lounge for the airline and O'Toole jokingly told Frach at the inaugural event that he promised to wait "for at least three weeks" before starting to nag him about making the service double-daily. ■



*Air Arabia has stepped up its Egyptian operations as Middle East low-cost carriers continue to grow. Alan Dron finds out more from airline CEO, Adel Ali.*

## Air Arabia builds a growing pyramid from its Egyptian hubs

**S**harjah-based low-cost carrier (LCC) Air Arabia is now stationing four Airbus A320s at its Egyptian hub at Alexandria's Borg El Arab Airport as it expands its operations. Growth across the carrier's network is replicated at its Egyptian subsidiary.

"Our Egypt base continues to witness growth with our expanding operations," said Air Arabia CEO, Adel Ali. "With both domestic air travel continuing to grow and international tourists seeking value-for-money travel experiences, we see strong demand for point-to-point destinations, especially from Alexandria to other popular touristic cities across the region.

"More specifically, eastern European holiday destinations are gaining interest among Levant travellers, which also contributes to an increase in passenger traffic."

There are clear reasons for this continuing growth, said Ali: "Our policy has been to expand in underserved markets, and maximise operational efficiency.

"We look at destinations that are within 4-5 hours' flying radius from our hubs. This strategy and product offering enables us to deliver more value to our passengers. We recently started a new route connecting Alexandria with Milan-Bergamo and, in June, we launched a direct flight connecting Sharm El Sheikh with Beirut. In addition, we began our first domestic route in Egypt connecting Alexandria with Sharm El Sheikh."

### International destinations

As well as Milan Bergamo, Air Arabia serves five international destinations directly from Alexandria – Amman in Jordan; Dammam, Jeddah and Riyadh in Saudi Arabia; and Kuwait. The airline's first domestic Egyptian route to Sharm El Sheikh will be joined by other Egyptian destinations and the portfolio of international sectors served from Alexandria will also grow, said Ali.

"We will continue this to expand our operation from our hubs in the UAE, Morocco and Egypt to add to our 150 routes that we currently serve. We will leverage the emerging travel trends and deliver even more value to our customers through affordable and quality



**Adel Ali: "We look at destinations that are within 4-5 hours' flying radius from our hubs. This strategy and product offering enables us to deliver more value to our passengers."**

experiences."

Air Arabia's fleet currently consists of 53 Airbus A320s and Ali said the company expected to add more aircraft this year to help handle the growth of its network.

Air Arabia's growth is a reflection of the overall increase of low-cost and hybrid carriers in the Middle East in recent years. A previously-held belief among local populations that low-cost was equated with poor quality has been completely overturned in the past decade, with carriers such as Flynas, Flyadeal, Jazeera Airways, Flydubai and SalamAir now providing competition for legacy carriers in the region.

Evidence suggests that the LCCs increase the overall size of the market by encouraging people who have not previously flown to take to the air and by allowing existing customers to fly more often.

### Profit figures

The strength of the low-cost market in the Middle East is reflected in Air Arabia's profit figures. Earlier this year, it announced a net profit of AED662 million (\$180 million) for 2017, a 30% increase on the 2016 figure of AED509 million.

It achieved the higher profit figure despite its turnover being fractionally lower at AED5.7 billion.

It carried slightly more than 8.5 million passengers in 2017, with a load factor that remained steady at 79% over the preceding year.

The company reported consistent and sustained growth throughout 2017, a result of its network expansion strategy and cost control measures. Chairman, Abdullah Bin Mohammad Al Thani, noted that the results had been achieved despite political and economic challenges.

These have included the substantial rise in fuel prices over the past year, rising airport charges and currency fluctuations plus the region's geopolitical tensions.

"We are extremely confident about the long-term fundamentals of the aviation sector in the region, which is driven by the underlying demand for air travel and major investments undertaken in the region, as well as the region's hub position on the global map," he said.

The company's economic situation continued to improve in the first quarter of 2018, with yields seeing an upturn after having been under pressure for some time. ■

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As Saudi low-cost carrier, Flyadeal, approaches its first birthday, it is about to embark on a huge expansion programme, with a major order for new aircraft imminent. **Alan Dron reports.**



Flyadeal has expanded the Saudi domestic market, says CEO Con Korfiatis (left), seen here with Saudi Airlines Group director-general Saleh bin Nasser Al-Jasser during the handover of the carrier's first Airbus A320.

# BABY BOOMING...

It will be, by any standards, a leap to a new league in terms of size. Jeddah-based low-cost carrier (LCC) Flyadeal is on the verge of placing an order for around 50 aircraft, which will dwarf its current fleet size of eight machines.

The new aircraft are being acquired to cope with rapid growth that the airline has already experienced and for future expansion. "There's been tremendous growth," said CEO Con Korfiatis.

The airline has not yet decided how it will finance the new aircraft. However, a combination of methods, including sale and leaseback, is likely.

Although the airline started its operational life with Airbus A320s, there is no guarantee that the European airliner will win the new order, said Korfiatis: "It's a true competition between the manufacturers, which is exactly what we wanted to see. We're hoping to have it done by the end of the summer."

Before the new aircraft start to arrive, however, Flyadeal is planning to acquire an interim batch of new aircraft. This is partly because the carrier, which has until now

operated purely within Saudi Arabia, is considering the launch of international services. The airline has previously said that it anticipates that "a significant proportion" of its route network will be international.

While not disclosing detailed figures, load factors, said Korfiatis, have been very high. "All I can say is that they have been better than even we anticipated, probably the highest in the kingdom."

At the time of writing, the airline's routes covered seven cities: Riyadh, Jeddah, Jazan, Abha, Dammam, Qassim and Tabuk.

The strongest traffic is on the traditionally-heavily travelled Jeddah-Riyadh route. Flyadeal, which is a sister company of national carrier Saudia, operates up to eight services a day on the route.

Saudi Arabia has seen a huge increase in competition over the past two years with the liberalisation of its domestic market. Whereas, previously, only Saudia and hybrid carrier Flynas contested the airways, they have been joined by Saudi-Egyptian carrier Nesma Airlines, and premium carrier SaudiGulf Airlines, as well as Flyadeal.

It had been feared that newcomers such as Flyadeal would only prosper by stealing market share from existing carriers, "but that's a no-win game at the end of the day", said Korfiatis. "We feel we're growing the market. From what we can see, it's holding up for everybody." That, he added, reflects global experience. When LCCs appear in a new market their low fares encourage people who have never flown before to buy tickets, and existing travellers tend to fly more frequently.

## Very positive feedback

Flyadeal has received "very positive feedback" from its users, said Korfiatis. "We launched the airline entirely through social media. As far as we know, it's a global first and we haven't had to move away from that [method]."

Flyadeal's A320s have a seat pitch of 29 inches. But, although this may seem rather tight, Korfiatis said there had been no feedback on them from passengers: "I think seat manufacturers these days have done such a fantastic job on design. I sit very comfortably and I put that down to the seat design."

"For those who do want to have extra pitch, we have a number of rows [with more room]. We sell those as rows for additional comfort."

The first row and window emergency exit rows have 38in pitch, while rows two to four have 30-inch pitch. Each seat has a USB charging port for electronic devices and a seatback holder for mobile phones or tablets to be positioned at a comfortable height for passengers who want to watch content.

Recent new facilities for Flyadeal passengers include a mobile app that allows them to make bookings, manage them and check-in online. In an effort to improve the initial app, the company has offered members of the public free tickets for the best ideas to enhance it.

Expect to see a lot more of Flyadeal's purple-and-lime colour scheme in the region's skies in coming years. ■



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*Pegasus Airlines is giving wings to Turkey's economic recovery after a difficult period for the country.*

**Martin Rivers** talked to chief executive, Mehmet Nane, about the opportunities ahead and the obstacles in his way.

# Pegasus clears one hurdle at a time

**P**egasus Airlines strengthened its recovery in the first quarter of this year, lifting passenger numbers by 18% as holidaymakers in western Europe and Russia rekindled their love affair with Turkish resorts.

The positive result comes just two years after the low-cost carrier sunk to a rare loss amid a perfect storm of Daesh terror attacks, a failed military coup, and a diplomatic row with Russia. Fears of a lengthy downturn were dispelled by last year's profit and, with demand still growing, chief executive, Mehmet Nane, is in bullish mood about the airline's prospects.

Despite his newfound optimism, however, the challenges facing developing nations in general and Turkey in particular loom large at Pegasus.

"When we look at 2018 in general, the number of tourists will be much better than 2017," Nane said. "But when we look at the income side, the per capita spending is going to be less because of the devaluation [of the Turkish lira] – it's down about 30% [since summer 2017]."

Even if the lira stabilises after this year's general election, there is no shortage of headwinds buffeting Nane's business plan.

"What is the challenge for any developing-country businessman? Those are valid for us," he shrugged. "Liquidity, hard currency, geopolitical issues, and how are we going to be affected by the developed countries' actions? For example, if the United States decides to increase interest rates, it will attract more [asset managers to hold] dollars, and there will be less flow of hard currency to the developing countries.

"This is why they call us developing countries. There is huge potential but there are certain risks attached. As long as we can remove those hurdles

or make them palatable, then there is success."

Turkey's burgeoning opportunities are well understood in the business world.

With a population of 80 million and a balanced economy combining services, industrial and agricultural sectors, the country's investment potential has earned it a place – alongside Mexico, Indonesia and Nigeria – in the MINT grouping of emerging economies. Its geography at the crossroads of three continents and President Recep Tayyip Erdogan's heavy investment in Africa only strengthens its appeal.

Government officials believe that air transport is an essential catalyst for economic growth, and major development projects are now gathering pace on both sides of the Bosphorus, the strait that divides Istanbul.

## **Metro link**

On the Asian side of the city, Sabiha Gokcen Airport, Pegasus' home base, will gain a new metro link this year and a second runway in 2019. Although scheduled maintenance work means that the two runways will not be operated in tandem until 2020, Nane believes the expansion will be transformational.

"When we have two runways it will increase the capacity at least 50%," he beamed. "It is very congested at the moment. This capacity increase will give a huge breath for the airport and the passengers."

More landing slots will allow Pegasus to boost frequencies and add new routes, particularly to under-served but heavily protected markets in the CIS and MENA region.

The airline's international network currently focuses heavily on western and central Europe, home to most of Turkey's foreign visitors. Just 16

cities are served in the Middle East and the Caucasus, four in Russia and two in central Asia.

"We are flying to almost all major European destinations," Nane said. "Which part is missing when we look in our flight peninsula? It is the CIS countries, Middle East countries and northern Africa."

He cited this summer's addition of Muscat, Oman and Dammam, Saudi Arabia as proof that bilateral negotiations over traffic rights are bearing fruit. But Pegasus still has a list of destinations it would "fly to next day" if given the chance, including major cities in Saudi Arabia, Iran, Algeria, Morocco and Tunisia.

In the west of Istanbul, meanwhile, an even bigger airport project is under way.

Ataturk Airport, the home base of Turkish Airlines, will this year be replaced by the Istanbul New Airport. Its parallel runways will immediately boost capacity for the flag-carrier – itself no stranger to congestion – and by 2030 the hub should be the biggest in the world, with six runways accommodating up to 200 million passengers a year.

Even without basing aircraft at the New Airport, Nane expects to benefit indirectly from the city-wide increase in landing slots. As foreign countries gain improved access to Istanbul for their own carriers, they are likely to ease traffic restrictions on Turkish operators like Pegasus.

But the low-cost carrier is also evaluating more direct involvement in the new gateway.

"After the third runway opens in 2019 it will be a new game. We are making ourselves ready for operations," Nane confirmed.

"Our main hub is going to be Sabiha, but according to the availability it [the New Airport]





**Mehmet Nane: "After the third runway opens in 2019 it will be a new game. We are making ourselves ready for operations."**

can be a point-to-point or it can be a transit [base] for certain routes. We made a feasibility study. We even made [an estimate of] the additional number of aircraft we need if we totally fulfil our expectations in the third airport."

Further expansion is also on the cards at Antalya Airport on the Mediterranean coast and Ankara Esenboga Airport in central Anatolia – the country's third and fourth busiest gateways – with Nane predicting that "in time, they are going to be sub-hubs for us".

Tourism will be the main driver of growth in Antalya, while in Ankara it is transfer traffic between Europe and eastern Anatolia that has caught Pegasus' eye.

"We have lots of flights from the Anatolian cities to Europe because there is a huge demand for ethnic traffic," Nane noted. "The Turkish workers are coming back to their home towns during the summer time. Instead of bringing them from Istanbul as transfer passengers, Ankara is a place to divest this traffic."

Pegasus also bases seven aircraft in Izmir on the Aegean coast through 99%-owned subsidiary IZair.

Though he is cagey when asked about upcoming route launches, Nane stressed that new markets are continually evaluated and the fleet plan factors-in steady growth of the network.

Pegasus snubbed longstanding partner Boeing in 2012 when it agreed to buy 75 Airbus A320-family neos – at the time Turkey's largest single aircraft order.

Firmed-up options subsequently lifted the deal to 100 units, of which 18 will be A321neos and 25 A321 neo aircraft cabin flexes (ACFs).

The 239-seat ACF variant is described as a "game-changer" by Nane, because of its higher capacity and lower unit costs.

#### **Long-term requirements**

To date, 20 A320neos have been delivered, joining 12 A320ceos, 45 Boeing 737-800s and one 737-400. The 78-strong fleet will rise to 91 units by the end of next year and the last Boeing is currently due to be withdrawn in 2024.

However, having already switched suppliers once, Nane stressed that all options are on the table and Pegasus continues talking to both manufacturers about its long-term requirements.

"We don't know what will happen," he admitted. "With the additional capacity coming from the second runway at Sabiha Gokcen and the establishment of the third and the fourth runways in the third airport, we will definitely need additional orders."

Asked whether it would be too costly to deploy a mixed fleet of Airbuses and Boeings,

he hinted that anything is viable at the right price: "Of course, cost-wise, having a single aircraft is always effective. But the contract you make with the vendors is also important in that effectiveness. So we cannot say anything today. It will be much clearer when we see the offers."

This pragmatic, open-minded approach is also evident in Nane's stance on subsidiaries.

Alongside IZair, Pegasus owns 49% of Air Manas, an airline based in Kyrgyzstan, and management have repeatedly talked up their appetite for further joint ventures.

Opening a subsidiary in the EU or UK is not considered prudent, with Nane insisting he "would like to find our blue oceans instead of going to the red ocean" – a reference to fierce competition and over-capacity in Europe. But almost anywhere else within narrow-body range of Turkey could be evaluated in future.

"We consider ourselves logical businessmen," the chief executive concluded. "As long as there is logic and there is potential for expansion and feeding our traffic to Turkey, we look at every single opportunity.

"Currently, in our target range there is no such study.

"But it doesn't mean that is going to be the same tomorrow. If any occurrence comes through we will definitely look at it seriously." ■

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*Just a year into its life as one of the Gulf's newest low-cost carriers, Oman's SalamAir has plans for major expansions of both its fleet and route network.*

## Something in the Air at Salam

Oman's first low-cost carrier (LCC) SalamAir is on the move. The airline plans to have five Airbus A320s in service by the end of this year and, by the time this issue of *Arabian Aerospace* appears, should have announced an order for five more aircraft – probably A320neos.

The airline plans to add four aircraft a year to its fleet and to have 20 in service in the next five years.

“The good news is that Oman is putting a lot of emphasis into the tourism sector and has a vision of diversifying its income,” said SalamAir CEO, Captain Mohamed Ahmed. “We have a fantastic new airport at Muscat, plus a couple of domestic airports they have revamped. We would like to utilise that to bring in more tourists.”

This combination of a steadily-growing fleet and Oman's bid to tap into the tourism market will translate into a considerable expansion of the carrier's route network: “What we're doing right now is scanning the market around us within five hours flying time, the typical range of an A320,” said Ahmed, who was appointed CEO in November 2017 from his previous position as LCC Air Arabia's group director of operations & maintenance.

“We will have the Gulf Cooperation Council market, which of course is very important to us. We will be adding places like Kuwait and Bahrain in the near future. We've started Shiraz, which is a very popular destination around here for medical and general tourism.”

Mashhad is planned in for services by the end of the year, followed by Tehran. The Iranian destinations are testimony to the cordial relations that exist between Oman and Iran, partly due to historical reasons and partly because Oman has succeeded in creating a profile for itself as an honest broker between Iran and the states on the western shores of the Gulf.

Continued  
on Page 34



“This year, I reckon we will carry more than 1 million passengers.”

CAPTAIN MOHAMED AHMED



#### CONTINUED FROM PAGE 33

Oman Air also has flights across the Straits of Hormuz, but “we think there’s room for more”, said Ahmed. “We will be expanding in Iran and within two years I reckon we will have at least four destinations there.”

In early June, SalamAir opened up new services to Baku and Tbilisi, the capitals of Azerbaijan and Georgia respectively. The Indian sub-continent is also of great interest to SalamAir and flights to Dhaka are underway, while any available destinations in India would be of interest and talks are underway with the Indian authorities. Also in SalamAir’s sights are destinations that have not previously been served from Oman, such as Khartoum and Alexandria.

In its first year of operation, SalamAir carried more than 500,000 passengers: “This year, I reckon we will carry more than 1 million.” Load factors vary due to seasonality, but the average load has been 70%, with that figure rising. Oman’s main domestic route between the capital, Muscat and the country’s second city, Salalah, close to the Yemeni border, last year saw load factors exceeding 95% - a level generally only achieved by major Western LCCs such as Ireland’s Ryanair and UK-based easyJet.

#### Ticket income

Like most LCCs, SalamAir augments its ticket income with ancillary revenues on items such as food and drink, but this is an area where the company can do better as its infrastructure matures. There is an educational process to be followed, to make potential passengers who have not used LCCs before aware of the various ‘add-ons’ that they have the option of including with their basic fare.

For example, Oman Air has a fixed price on its Muscat-Salalah route and SalamAir is trying to change the perception that prices are static, especially as local passengers tend to book tickets at the last minute. Ahmed and his colleagues are trying to educate new customers that they will get cheaper tickets if they book early.

Oman Air’s former CEO Paul Gregorowitsch talked of the national carrier co-operating, rather than competing, with SalamAir and this policy runs both ways. “That’s the way we would like to

do it. We would like to complement Oman Air, although they have a totally different business model – theirs is a more premium product.” Despite this, “We meet on a very regular basis and talk to each other on any issues that crop up. We would like to synchronise our efforts with them.”

Ahmed believes that SalamAir’s arrival has increased the total market for air travel in Oman: “Yesterday I was told by the Salalah airport authorities that their ranking in the category of airports serving less than 2 million passengers a year has gone from number 11 to number four; that’s entirely because of our activities.

“Low-cost carriers create the demand and encourage more people to travel more often. That has been very obvious with some of the destinations that Oman Airways doesn’t fly to, such as Multan [in Pakistan] and Shiraz. Shiraz has seen load factors above 90%.”

#### Fleet expansion

SalamAir operates its existing A320s in a single-class, 174-seat configuration with a seat pitch of 30in – 31in. If the company does decide to go with the A320neo for its fleet expansion, the European manufacturer’s new Flex cabin and new-generation slim Recaro seats will give passengers the feeling of an extra 1in of space between seat rows, he added.

A further factor in SalamAir’s success has been the opening of Muscat International Airport’s new terminal. Oman Air had complained for some years that the old terminal’s limited capacity was hampering its operations and SalamAir quickly ran into the same problems. Although it had a design capacity of 8 million passengers a year, by 2016 it was handling 12 million.

“We were restricted by the old airport,” said Ahmed. “We couldn’t add more flights, we couldn’t expand.” The opening of the new terminal earlier this year, with its 12 million passenger annual capacity had “definitely made a big difference.

“It’s a state-of-the-art, amazing building. It’s something we’ve been waiting for, for a long time. The feedback we get from passengers is amazing. The design is very rooted in the culture

of Oman but, at the same time, it’s very modern and easy to use.” Meanwhile, the old terminal will be refurbished and brought back into use and three new phases of the airport will be constructed as demand materialises, allowing an eventual rise to 48 million passengers.

In its efforts to maximise the number of Omani nationals in its workforce (currently around 63%), SalamAir earlier this year advertised for Omani women to apply for cabin crew positions. It is still relatively unusual for women from the Gulf nations to take up such posts, mainly because of the male-dominated nature of local society.

#### Very successful

“Yes, this was unusual,” agreed Ahmed. “Internally, a lot of our management thought that this is not going to work, but we thought we would give it a try. It’s been very successful.”

The first batch of cabin crew graduated in May, a second group is going through the training course and the company is recruiting a third contingent.

The airline has been at pains to reassure the community that it is aware of the sensitivities regarding this type of employment.

“As a home-grown airline, we understand the cultural reservations that may impact women pursuing cabin crew careers,” said Salam Al Kindi, director of corporate support.

“We have therefore adapted the traditional role to suit these cultural sensitivities and facilitate the contribution of women in this burgeoning sector. For instance, our flexible selection criteria welcomed both experienced cabin crew, as well as fresh graduates, to apply for the opportunity.

“Additionally, we have also adapted the female cabin crew attire to provide our flight attendants with the choice to wear the hijab as part of their official uniform.”

Another major reservation with local families is female family members staying away from home, especially in foreign countries, for extended periods. However, SalamAir’s short to medium-haul flights mean that female crew members are not required to stay outside Oman for extended periods. ■



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*Nouvelair, a Tunisian private company operating charter and scheduled flights, will celebrate its 30th anniversary in 2019. Deputy general manager, Chokri Zarrad, shared his ambition for the company with Vincent Chappard.*

Chokri Zarrad: "We had to change our strategy in terms of distribution and communication."



## Nouvelair pace of change accelerates

**N**ouvelair opened its first agency in the Tunis business district in 1989. Other cities soon followed, with an increased presence at airports served by the company.

Since its creation, Nouvelair has transported more than 30 million passengers.

Last year alone, it exceeded one million passengers (its 2011 level before the political crisis), and double-digit growth is estimated for 2018 due to two major factors: the recovery of tourism activity on the Tunisian market and the consolidation of regular routes.

Other encouraging factors include pilgrimage flights to Saudi Arabia and charter flights for travel agencies.

Nouvelair will also expand its fleet by the end of the year and negotiations are under way to lease new aircraft. Strengthening the current fleet with eight A320s is seen as vital to respond efficiently to the increase in traffic.

Big changes occurred with a strategic development in 2015, when Nouvelair launched scheduled flights

alongside its charter work to respond effectively to the changing air transport and tourism needs.

The company now serves destinations in France, Germany, Denmark, Sweden, Russia and Algeria.

In fact, Nouvelair has eight destinations in France, with daily flights to Paris, Nice, Nantes, Toulouse and Marseille. It added Mulhouse and Deauville to its network in May 2011.

Operating from Tunis-Carthage, Enfidha, Monastir and Djerba, the airline also boasts scheduled flights to Germany, Vienna, Italy and Russia.

For Nouvelair, the major objectives are to be both closer to the customer and also running a multi-channel operation.

"We will pursue charter flights, the historical activity of our company," said deputy general manager Chokri Zarrad. "With the launch of scheduled flights, we also had to change our strategy in terms of distribution and communication. Nouvelair has been working a lot on proximity by creating a digital platform, a website and a mobile application."

### Distribution network

The airline felt the need to expand its distribution network and go beyond the direct channels via its own agencies and the web. Last June, it unveiled a new fare offer for its passengers and the opportunity to personalise their journey on the web thanks to three service and fare offers – light, easy and flex.

Although the digital channel is not yet very developed, the trend is on the rise. "Tunisian customers love direct contact and having people able to listen," said Zarrad, who underlined that the company has continued to be "a vector of development of tourism activity", which is necessary for the country.

By the end of the year, Nouvelair will launch a route to Istanbul. "The country has enormous potential. It is the first tourist destination of Tunisians," explained Zarrad.

Nouvelair, which has been serving Algeria for two years, will consolidate its position on the local market, North Africa, Europe, the Middle East and the African continent, especially with the gradual opening of its skies.

Zarrad remains optimistic and open to any partnership and participates in discussions on the liberalisation of air traffic in Tunisia in the wake of the single African air transport market (SAATM), initiated by the African Union.

The new outreach strategy comes at a significant time in the company's development. In the face of an industry that is fast-changing and modernising, charter companies are expected to diversify their operations to survive in an increasingly competitive environment. ■

**6 Air Algérie  
wants to recover  
and preserve  
international  
market shares  
and conquer  
new markets.**

YAHIA HASSENAOUI



## Air Algérie starts to punch its weight again

*Faced with the opening up of air freight to national private operators as part of the government's new economic orientation, Air Algérie has taken measures to adapt to the new environment.*

*Report by Anuradha Deenapanray and Vincent Chappard.*

According to Abdelghani Zaalane, the Algerian Minister of Public Works and Transport, Air Algérie cannot fully respond to all the demands of economic operators willing to export their products.

Addressing the finance committee of the National Assembly, he justified the decision to accelerate the development of the national economy by opening up the air freight market by saying that the national carrier had "limited capacity".

Opening the air freight market has become essential with the significant increase in non-hydrocarbon exports (3.4% in 2017) and the strong demand from certain African countries.

The measure will raise Algeria's quota in the world freight market, encourage public and private investment. This will, according to the minister, boost the national economy and create new jobs.

"To date, transportation costs represent 35% of the value of commercial products. We want to bring the figure to 15% by 2025," explained Zaalane.

Air Algérie must now react quickly and efficiently to be competitive against private operators who can acquire or charter aircraft for their export operations.

The national carrier started to put more emphasis on the freight sector back in 2016, when it created Air Algérie Cargo. Figures for 2017 show an increase of 13% compared to the same period in 2016.

"The opening of the air freight market to competition will be a challenge for us," admitted Yahia Hassenaoui, CEO of Air Algérie Cargo. "However, it will encourage us to ensure a good level of skills and human resources and maintain efficient equipment."

The company is convinced that it could "support and benefit these new operators through eventual win-win partnerships and deploy its expertise to boost the expectations of exporters in line with government guidelines".

Air Algérie Cargo has two aircraft, a Lockheed Hercules

HL-382 and a B737-700 QC, entirely dedicated to freight activity. It operates from its Algiers hub for Algeria and Paris Charles de Gaulle and Lyon airports for Europe. There are also plans to add Marseille as a hub.

A B737-800 with a payload capacity of about 22 tonnes will be in service next July. It is part of the company's action plan to adequately meet the growing demand.

"Air Algérie wants to recover and preserve international market shares and conquer new markets through authorised general sales & service agents (GSSA)," said Hassenaoui.

The sales networks covered by GSSA are: Canada and North America, United Kingdom, Eastern Europe, Spain and Portugal, Asia (China and Korea).

### National production and export

Air Algérie wants to fully participate in the promotion of national production and export. It will also offer international freight-forwarding opportunities from El-Oued, Biskra, Oran, Constantine, Annaba and Hassi Messaoud, in accordance with international regulatory and security standards and requirements.

The carrier is very interested in African and Asian markets. Volumes to these destinations have risen sharply, mainly because of government support to develop the export of Algerian products, an increase in the range of products and the number of exporters, and incentives given to set up logistics platforms.

The company will, furthermore, invest in training, while developing the transit market between Africa, Europe and the Middle East, modernising the operations centre at its hub in Algiers and introducing electronic freight (E-freight) systems.

Despite strong competition, Air Algérie wants "to preserve its position as a historic leader in Algeria" by repositioning itself on the African market and maintaining or even increasing its share of the world market. ■



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*In a thought-provoking personal article, Wolfgang Meier, president, Silkway West Airlines, says the outlook for global cargo aviation demand remains strong. However, there are other factors at play.*



## GEO-COMMERCE, TECHNOLOGY, AND THE FUTURE OF CARGO AVIATION

Our industry is watching several key variables, which may have major implications for the near future. These include an escalating tariff battle between the US and China affecting shipping patterns or, indeed, disruptive technologies integrating into daily practice, such as artificial intelligence (AI) predictive maintenance, which is being embraced and deployed in the Middle East.

The forecast for the industry has never seen such constant shift and yet perpetual growth.

Cargo aviation is directly intertwined with geo-commerce and the ebbs and flows that go along with that. For example, while *Arabian Aerospace* readers may recognise the escalating trade battle between the US and China from afar, I, similarly, can discuss Africa moving towards a single air market, more commonly referred to as an open skies framework. This is understood as the continent's liberalisation from antiquated commercial aviation regulation to create a free-market environment.

Partnerships reshaping globalisation within the Middle East are also taking place, despite rising protectionisms. Elsewhere, and perhaps conversely, an Indian express industry body has favoured a re-evaluation of policy so as to allow domestic cargo airlines to offer operations in foreign countries.

These variables shift minutely or seismically. However, intrepid businessmen and women foresee these trends ahead of squall or splendour and plan accordingly.

Globalisation can and should mean greater liberalisation

and competition within an interconnected marketplace. Silkway predicts terrific and continued growth in this environment, with carried on benefits to our clients and colleagues around the world.

However, such predications would not be possible to speak of with confidence unless we, ourselves, also continue to adhere to the tenets of the 'fourth industrial revolution' and embrace technology within our corporate DNA, celebrating its role in enhancing cargo aviation service to meet rising demand.

Last year was noted as being one of the safest, most efficient years in the history of both cargo and commercial air transit on a global scale. While demand increases, technology allows us to match it with efficacy and continue this steady ascendance in development and security.

As recently noted in *Forbes Magazine*, we've introduced next-generation CHAMP cargo management technology and logistics support within our day-to-day operations, helping our global team optimise and reduce costs and time, which is of particular assistance during multi-leg operations.

CHAMP's 'cargospot handling' as an example, is a comprehensive operations and terminal management system solution we deploy; one that's efficient for ground-handlers and terminal operators alike to utilise.

We must always keep a close eye on the boons in technological achievement to ensure our service to clients is not merely one of continuance, but one dedicated to perpetual enhancement and return on investment.

Technology also plays a great role in our humanitarian efforts, such as those we carry out alongside the US military. Over the course of this year, the Global Humanitarian Overview predicts that more than 135 million people will need humanitarian assistance and protection and, in the face of any crisis, our response efforts must be effective.

We have proudly held long-standing contractor status with the US military, due to our deep understanding, willingness and preparedness to advance in perhaps challenging regions.

We look forward to continuing to excel in the all-encompassing aspects of the cargo aviation supply chain and maintaining a professionalism in service not so unlike our partners within the United States military.

Now, geopolitics and technology will, no doubt, each play a factor within both developing and would-be 'developed' economies, and the opportunities and challenges therein will always require focus and often diplomacy to ensure lasting growth. This said, it is our dedication, alongside our partners' trust in our service, that has allowed us to work side-by-side with our clients around the world.

The International Air Transport Association (IATA) has forecast a rise in cargo carried to 62.5 million tonnes in 2018 (up by 4.5% from the 59.9 million tonnes in 2017). We, accordingly, foresee expanded service (proudly re-launching transit operations, most recently to Budapest) and continued development of our partnership network globally, to the benefit of our clients.

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# ELEVATING THE LIFT

**Alan Warnes** takes a look at the changes in lead-in fighter training (LIFT) taking place throughout the Middle East.

**P**ilots don't just step into fighters and start flying; they need hundreds of hours of preparation before that day finally comes. Millions of dollars will have been spent before any pilot has the skill set to fly a tactical jet that can operate at the speed of sound.

Consequently, LIFT is extremely important, and it has never been more so than now in the Middle East, with so many countries bolstering their combat capabilities against possible threats from likes of Iran or terrorist extremists.

Yemen, a country where a proxy war between Saudi Arabia and Iran is on-going, is a fine example of what needs to be avoided.

So, exactly what is happening among the various GCC countries?

Well, firstly, Bahrain has ordered 19 F-16Vs, as well as the upgrade of its 20 F-16C/Ds to the same configuration.

Kuwait has purchased 28 Eurofighter Typhoons, as well as 28 Boeing F/A-18E/F Super Hornets and will also keep 12 of its original F/A-18C/D Hornets.

Qatar has ordered 36 F-15QA Strike Eagles, 36 Rafales and 24 Eurofighter Typhoons, with deliveries commencing within the next two years.

Saudi Arabia has signed a memorandum of

intent with the British Government to add another 48 Eurofighter Typhoons to the 53 it already operates. It is also taking delivery of 84 brand new F-15SAs, as well as upgrading 68 F-15S to the same equivalent.

With all this activity, it is vital these countries get their training options in order before the bulk of the aircraft arrive.

None of the GCC countries, or their allies, uses a central flying training academy. Like most countries, they prefer to carry out their own schooling, even if the UAE and Saudi Arabia do train pilots from other allied forces.

## Serving the GCC

The Hawk has been the principal LIFT in the region, serving the GCC for many years, with Bahrain (6), Kuwait (12), Oman (25), Saudi Arabia (72 plus 22 on order), and UAE (61) all taking deliveries of new aircraft over the past 30 years.

That number is set to increase when Qatar signs a deal for up to nine aircraft.

LIFTs are all now used in conjunction with ground-based training systems. CAE, for example, provided the simulators for the Royal Saudi Air Force (RSAF) Hawks.

Some of the earlier Hawk versions

Continued  
on Page 44

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have been retired. Oman, for example, has replaced some of its Mk103/103A/203s with new generation Mk166 versions.

The UAE, however, looks to have abandoned the jet as a LIFT in favour of the Pilatus PC-21. BAE sees the Hawk continuing to play a major role in the region, preparing pilots for life in the cockpit of frontline combat jets.

A BAE Systems spokesman said: "Countries who have, or are soon to refresh their frontline aircraft are the main focus of our current activities. The Hawk's technology enables it to closely emulate all of the most popular frontline aircraft in current or future service in the region, including the Eurofighter Typhoon, F-16, and F/A-18 Hornet and Super Hornet.

"We are also seeing a real desire in the region to embrace interoperability. Air forces utilising the same aircraft and similar training programmes and pipelines as each other in the Gulf will extract even more benefits from collaboration and efficiencies than they would by working alone.

"We hope air forces currently operating previous models of the Hawk would look to the new generation of the aircraft as part of the natural development of their training programmes.

"Keeping costs down is another area in which we wish to support our customers. We are also leading the way, in partnership with the UK Royal Air Force (RAF), in introducing more simulation to the fast-jet training programmes. This allows our customers to save money by conducting more training in realistic simulated environments, and less time flying in aircraft."

**Biggest challenge**

The tiny state of Qatar faces the biggest challenge. The Qatar Emiri Air Force (QEAF) currently operates 12 Mirage 2000-5DDA/EDAs. However, they are to be replaced by a mix of 96 cutting-edge fighters spanning three different types from three different nations.

How will they cope, particularly with such a small population?

Like the UAE and Saudi Arabia, Qatar looks set to contract huge swathes of foreign pilots from the likes of the US Air Force, French Air Force and the RAF.

A British-Qatari cooperation package will also see Qatari pilots and ground crew being trained in the UK. It is unclear if QEAF pilots will go through the RAF training syllabus because, right now, the military flying training system (MFTS) is focused on the RAF input.

The newly-built Qatar air academy, founded in 2011 and officially known as the Al Zaeem Mohammed bin Abdullah Al Attiyah Air Academy, is based at Al Udeid/Dohar Air Base. The brand new facility, built by France's Defense Conseil International (DCI), took delivery of 24 Pilatus PC-21s and a suite of ground-based training system assets during 2014/15.

In January 2017, the academy was employing

110 staff spanning 11 different nationalities and had trained 49 student pilots, although the bulk of them were for helicopters.

The single-engine Pilatus PC-21 turboprop trainer has been extremely successful in the Middle East. As well as Qatar, the RSAF purchased 55, which were delivered between June 2014 and April 2016. These are operated by 9, 22 and 77 Squadrons at the King Faisal Air Academy.

The UAE Air Force received 25 in 2011/12, flown by 2 Squadron at Al Ain's Sheikh Kalifa bin Zayed Air College, while the Royal Jordanian Air Force took delivery of 10 in 2017 that were delivered to 10 Squadron at King Hussein Air College to replace the Casa 101s.

The PC-21, powered by the reliable 1,600shp PT-6 turboprop engine, has proved to be a highly cost-effective and efficient training solution.

With a considerably expanded design and

spokesman at BAE Systems said: "The contract is subject to financing conditions and receipt of first payment, and discussions are on-going. We welcome the agreement between the UK and Qatari governments stating their clear intention to proceed with the purchase of Hawk aircraft. At this stage we cannot comment further on the specific requirements of the customer."

While Saudi Arabia flies the PC-21, the Hawk there has a more certain future.

Having taken delivery of 30 Hawk Mk 65s in 1987/88 and 25 Hawk Mk 65As for LIFT and a light attack role, they are being replaced by the newer more modern Hawk Mk 165.

An initial batch of 22 Hawk advanced jet trainers were delivered between April 2015 and December 2016. These aircraft are similar to the Hawk T2s operated by the RAF for LIFT, and the PC-21s will act as a lead-in to the new Hawks.

In a second order for 22 aircraft, the major



In recent years, the Grob G120TP has also been taken on as a LIFT aircraft. The Royal Jordan Air Force works it in tandem with the PC-21, but Grob believe it can cover an air force's needs all the way from elementary to LIFT, with the help of its computerised training systems.

performance envelope compared to most other turboprops, the aircraft's speed and climb rate pushes it into a domain previously reserved for jets. A Pilatus spokesman said: "Used in conjunction with ground-based training systems, it can delay the transition to the more expensive jets, thus reducing costs and the training time."

Having taken delivery of the PC-21, the UAE retired its Hawk Mk 61 and Mk 63/63As it had previously used for LIFT and passed 13 of them to the Royal Jordanian Air Force (RJAF) in 2015. They were only used for a year by 17 Squadron at Prince Hassan Air Base/H4 to bridge the gap caused by the unserviceability of the Casa 101s flying in the LIFT role and the introduction of the PC-21.

Qatar, however, seems intent on adding the new Hawks to its inventory to fly alongside the PC-21.

A requirement for six was announced when the Eurofighter deal was unveiled in September 2017. This was later increased to nine.

However, while the contract for Typhoons has been agreed, no Hawk deal has been signed. A

parts of the Hawks, which are manufactured at three BAE Systems sites in the UK – Brough, Samlesbury and Warton – are being built up to the 'cigar shape' of the front, centre and rear fuselage at Warton. Then, the wings are being airfreighted to Riyadh, Saudi Arabia, where they undergo final assembly and final check-out. In a bid to acquire more technical skills and change the way they do things, the Saudi Government, through Saudi Arabia Military Industries (SAMI), is striving to bring more work to the local population.

Oman took delivery of eight Hawk advanced jet trainers in 2017 as part of its Eurofighter deal signed in 2012, which it will use for LIFT for the Typhoons and F-16s.

In Kuwait, the nine Hawk Mk 64s used for LIFT, have been grounded for many years. However, at last year's Dubai Air Show, the Kuwait Air Force (KAF) chief, Major General Abdullah Al-Foudri, said: "We intend to get the Hawks and Tucanos flying again once funding becomes available."

In 2013, BAE Systems submitted a proposal to

The UAEAF&AD has replaced its Hawks in the LIFT role with the Pilatus PC-21, which is now also being flown by Jordan, Qatar and Saudi Arabia.



PICTURES: ALAN WARNES

Leonardo is marketing the T-346A as a LIFT, and has been training Kuwait Air Force pilots on this and the older MB339 (seen behind) with the Italian Air Force's 61 Stormo at Lecce-Galatina.



get the jets back in the air by 2015. However, it never happened. The chief said: "We told BAE we need support for the Hawks. They can do the overhaul and then we will fly them for around four years until we receive a new LIFT."

Kuwait has, in the past, also sent pilots for LIFT training to 61 Stormo at Lecce-Galatina in Italy to train on the MB 339 and, more recently, the M346.

The KAF chief confirmed that the BAE Systems Hawk T2, Leonardo M346, Korea Aerospace Industries T-50 and Hongdu L-15, had been evaluated. He was keen to look at the Aero Vodochody L-39NG, which, he said, "was a good aircraft for a reasonable price".

The L-39 is the most successful jet trainer aircraft. Nearly 3,000 have been sold worldwide. Aero Vodochody has now launched a new generation aircraft, the L-39NG, featuring a new Williams FJ-44M powerplant and GENESYS glass cockpit.

The company's chief business officer, Massimo Ghione, recently discussed the L-39NG and the interim L-39CW. "We are willing

to work with any country that wants to operate the L-39NG, even if it is independent of our support," he said. "In such a case we would talk about a strategic partnership, transfer of technologies and production. We could create a joint venture with a minority share and provide logistics support.

"We are transparent to our customer needs. If they want to grow the aerospace sector and have the final assembly, it is not a problem for us. The aircraft is quite simple to maintain and overhaul, so it would not be difficult for them to work on.

"It's the capabilities of the new NG that our customers will want. This flexibility is unlikely to be matched by any other manufacturer."

While the Pilatus PC-21 has been taking a piece of the BAE Hawk's action in the Middle East, another new kid on the block is the Grob G120TP, powered by a 456hp Rolls-Royce M250-B17F engine.

Weighing only 96kg, it has an impressive power-to-weight ratio. But, as Grob president and chief sales officer, Karl Suernrohr, explained,

it isn't just that which has attracted 16 customers to date. "It works with a computerised training system," he pointed out.

Suernrohr added: "Grob developed a cost-effective high-performance training platform with a high g-load, a powerful engine and a digital cockpit that you won't find in any other class of turboprop trainer.

"You can now start flying an aircraft that is very powerful and so easy to handle that you can basically combine basic and advanced training in one platform, unlike previous generations where you would use three different aircraft for these roles."

He was ready to sell 16 G120TPs to Qatar in a deal he had been working on for many years. However, possibly for political reasons, the government there opted for eight Pakistan Aeronautical Complex (PAC) Super Mushshaks.

The G120TPs instead found their way to Jordan and now serve with 4 Squadron at King Hussein Air College alongside the PC-21s.

#### Real quandary

The real quandary facing most of these air forces is the manpower.

You have to look no further than Bahrain to see the situation when a new jet is ordered. It currently has 19 F-16s, but manpower levels are thought to be quite low, so not all of them are flying.

However, with the order of the 19 upgraded F-16Vs and subsequent delivery, it seems likely the F-5s will be retired, allowing their pilots to convert to the 'new' F-16s.

It is believed that each F-16 in Bahrain requires 3.5 pilots per cockpit because the jet can easily perform five combat sorties per day. It will mean the Bahrain Air Force's six Hawk Mk 209s are likely to be working overtime, unless some of the work can be outsourced. Similar scenarios will be acted out right across the region as more new fighters are delivered and the war effort in Yemen is making the situation even worse. ■

**David Oliver** looks at how the small Royal Bahraini Air Force is big on using new technology.

# Bahrain's Blockbusters

In September 2017, the US State Department approved a possible foreign military sale (FMS) to the Government of Bahrain for the latest variant of the Lockheed Martin F-16 aircraft, with a support package worth an estimated cost of \$2.785 billion.

The island-state of Bahrain is the smallest member of the Gulf Cooperation Council (GCC). Along with Kuwait, Oman, Qatar, Saudi Arabia and the UAE, it has signed a defence pact to consider an attack on one of them is an attack on all.

The belt of cooperation (HAT) aircraft identification and tracking system links the respective national air defence systems of the six GCC members.

The Royal Bahraini Air Force (RBAF) was originally the Bahrain Defence Force (BDF) Air Wing and then the Bahrain Amiri Air Force (BAAF) from 1987 until 2002. Although small in numbers, it has a record being one of the first Middle East nations to introduce new types of aircraft into its inventory.

## First operator

In 1990, it became the first operator of the Lockheed Martin F-16C/D Block 40 fighter aircraft, when an order for eight single-seat F-16Cs and four two-seat F-16D Fighting Falcons was placed under the Peace Crown I programme.

Deliveries began in May 1990, just before the country became involved in the Gulf War, and the F-16s flew their first offensive Gulf War missions in January 1991.

The F-16 units, the 1st and 2nd Fighter Squadrons, were based at the newly constructed Shaikh Isa Air Base.

A second batch of 10 F-16Cs, with upgraded AN/APG 68(V)8 radar and AIM-120 AMRAAM capability, commenced delivery in 2000 under the Peace Crown II programme.

One F-16C was lost in September 2003 when it crashed into the Persian Gulf following the pilot's loss of control while, on December 30 2015, an RBAF F-16C crashed in Jizan Province, Saudi Arabia, while supporting the Saudi Arabian-led Operation Decisive Storm



The F-15V aircraft will replace the RBAF's fleet of F-5 Tiger II aircraft and supplement its F-16C/D, which will be upgraded to Block 70 configuration.

PICTURE: PETER FOSTER.

intervention in Yemen. The pilot was recovered safely and the crash was attributed to technical issues.

The RBAF F-16s have also been involved in anti-ISIL operations in Syria.

Bahrain had planned to replace its F-5E/F Tiger II fighter fleet with additional F-16 orders in the short term, while looking for a more capable aircraft to be acquired to add to or replace the F-16 fleet.

Eight F-5E and four two-seat F-5Fs were delivered in 1985, assigned to the 6th Fighter Squadron at Shaikh Isa Air Base. They are now used as lead-in fighter trainers (LIFT) and air adversary trainers for the F-16s.

However, in September 2016, it was announced that an FMS request for up to 19 late model F-16s had been submitted to the US Congress for approval. At that time, the White House advised that it would not complete the approval unless progress was shown on human rights issues arising from the Bahraini protests of 2011.

BAE Systems then had high hopes of selling the Eurofighter Typhoon to Bahrain, which had acquired Avro RJ85 and RJ100 transport aircraft and Hawk Mk. 129 jet trainers. Bahrain's close ally, Saudi Arabia, had already chosen of the Typhoon.

Six Hawk Mk. 129s were delivered in 2006

and assigned to 5 Squadron, also at the renamed Isa Air Base. They form part of the RBAF's Training Wing, which was established in 2002. Additional training is carried out at the King Faisal Air Academy in Riyadh on Royal Saudi Air Force (RSAF) Pilatus PC-9s, while basic training is also conducted at the Etihad Flight College at Al Ain in the United Arab Emirates.

Former RBAF fighter pilots have also been training at the Barcelona Flight School in Spain to obtain civil EASA licences to fly the Bahrain Royal Flight's Boeing 737-800.

## Sale contract

In the meantime, Lockheed Martin received a direct commercial sale contract from the BDF in July 2017 to provide Sniper advanced targeting pods (ATP) for its existing F-16C fleet. Under the \$22.45 million contract, Lockheed Martin will deliver ATPs, spares and support equipment for integration with deliveries beginning in early 2018.

Under the Trump administration, the US Defense Security Cooperation Agency approved the sale of up to 22 F-16V Block 70 aircraft to Bahrain in September 2017, as well as the sale of 20 upgrade kits for Bahrain's existing F-16 fleet to F-16V Block 70 configuration.

The sale of a total of 16 new aircraft was confirmed in October 2017 at the Bahrain International Defence Exhibition and



The Lockheed Martin F-16V Block 70, ordered by the RBAF, is the most advanced variant of the multirole fighter and the first in the region.

PICTURE: LOCKHEED MARTIN.



Conference (BIDEC) by the Commander of the Royal Bahraini Air Force, Major General Hamad bin Abdullah Al Khalifa. He said that Bahrain had made a wise choice with what he considered to be a fourth-plus generation aircraft and that the decision was influenced by the excellent record of the F-16C/Ds that the RBAF has operated for more than 25 years.

The FMS contract, worth \$3.8 billion, covers weapons, sensors and training with first deliveries scheduled for 2021.

The F-16V Block 70, the latest variant that has been offered to India, features Northrop Grumman's advanced APG-83 scalable agile beam radar (SABR) active electronically scanned array (AESA) radar with a new avionics architecture, and structural upgrades to extend the life of the aircraft by more than 50% beyond that of previous production F-16 aircraft.

Operational capabilities are enhanced through an advanced datalink, targeting pod and weapons, precision GPS navigation and the automatic ground collision avoidance system (Auto GCAS). New cockpit displays and avionics are based on F-35 technologies.

Also included are General Electric F-110-GE-129 engines, improved programmable display generators, modular mission computers (MMC), embedded global navigation systems, ITT AN/ALQ-211 advanced integrated

defensive electronic warfare system (AIDEWS) self-protection pods and jamming suites, UTA Aerospace Systems DB-110 reconnaissance pods, and AN/APX-126 advanced identification friend or foe (AIFF) systems.

In addition to M61 Vulcan 20mm gun systems and LAU-129 launchers, Bahrain also requested Lockheed Martin AN/AAQ-33 Sniper ATPs, DB-110 advanced reconnaissance systems, Raytheon AIM-9X Sidewinder air-to-air missiles (AAMs) and AIM-120C advanced medium-range air-to-air missiles (AMRAAMs), AGM-88 high-speed anti-radiation missiles (HARMs), and kits for small numbers of various other air-to-surface munitions, among them the GBU-24 Paveway III laser-guided bombs (LGB) and Boeing GBU-38 joint direct attack munitions (JDAM).

#### **New cockpit and avionics**

The extant fleet of RBAF's Block 40 F-16C/D aircraft to be upgraded to F-16V configuration will include the AN/APG-83 AESA radar, new MMC, cockpit and avionics.

The first aircraft are planned to be upgraded by Lockheed Martin in the United States with the remaining F-16C/Ds to be worked on by RBAF technicians in Bahrain, although no delivery date has yet been confirmed.

It is not only combat aircraft that the RBAF has bought into the region for the first time; it

was also the first international customer for the Sikorsky UH-60M Black Hawk multirole medium helicopter in 2007.

Nine UH-60Ms were procured by an FMS contract worth \$252 million that included spares, support equipment, technical support and personnel training.

Entering service with the 3rd Helicopter Squadron at Riffa Air Base in 2010, the RBAF Black Hawks are used for search-and-rescue and anti-smuggling operations, as well as supporting the Bahrain Royal Guard Special Forces, who have recently participated in Decisive Storm and Restoring Hope operations in Yemen, with high-altitude-low opening (HALO) free-fall parachute training.

The RBAF has also had a requirement to replace its aging fleet of Bell AH-1E/F Cobra combat helicopters, operated by 8th and 9th Squadrons, also based at Riffa.

On April 27 2018, the Defense Security Cooperation Agency (DSCA) announced that the US Government had approved the sale of 12 AH-1Z Viper attack helicopters to Bahrain with AGM-114 Hellfire missiles and advanced precision kill weapons system II (APKWS-II) WGU-59B precision-guided rockets, worth an estimated \$911.4 million.

Once again, Bahrain will be the first country to operate the AH-1Z in the region. ■

*The United States has approved the potential sale to Bahrain of 12 Bell AH-1Z Viper attack helicopters at an estimated cost of \$911.4 million, including spares, support, weapons and training. Jon Lake reports.*

## Cobra strikes in the Middle East

**T**he AH-1Z Viper is the latest in a long line of Cobra variants and was the result of an H-1 helicopter upgrade programme for the US Marine Corps, launched in 1996. It has 85% commonality with the upgraded UH-1Y utility helicopter. The US Marine Corps ordered 189 AH-1Zs and deliveries will continue until 2022.

The Royal Bahraini Air Force (RBAF) is undertaking a two-step recapitalisation of its attack/intelligence, surveillance, and reconnaissance (ISR) helicopter force, which presently consists of 22 Bell AH-1E/F Cobras, eight AH-1Ps and four surviving Bolkow BO-105 scout helicopters that were first delivered in 1978.

Bahrain commissioned Turkish Aerospace Industries (TAI) and Turkey's avionics/mission computer manufacturer institute, Aselsan, to upgrade the Cobras, integrating the



**The AH-1Z's marinisation provides useful protection in desert environments.**

mission computer and some avionics from Turkey's T129 Atak helicopter, and to integrate some Roketsan weapons, including the Cirit 2.75inch rocket.

New attack helicopters will augment the upgraded Cobras and the BO-105s will be retired under the second phase of the programme.

Initially, it looked likely that Bahrain would select the TAI T129 as its new attack helicopter. However, the kingdom submitted a request for information (RFI) for the Bell AH-1Z Cobra Viper in 2016.

On April 27 2018, the US Defense Security Cooperation Agency (DSCA) announced that the State Department had approved the Bahraini purchase of 12 AH-1Z helicopters.

Bahrain's selection of the Bell AH-1Z is believed to have been influenced by the effectiveness of the aircraft's target sight system, which is claimed to provide the longest range and highest accuracy of any helicopter weapons sight. The Viper also features a fully integrated air-to-air missile capability.

The AH-1Z's marinisation provides useful protection in desert environments and the type provides obvious interoperability benefits with Bahrain's US ally.

Bahrain's aircraft will be supplied with 26 Thales TopOwl

helmet-mounted display systems, 26 T-700 GE 401C engines (24 installed and 2 spares), 12 M197 20mm gun systems, 14 AN/AAQ-30 target sight systems, 15 embedded global positioning/inertial navigation systems (EGIs), 30 tech refresh mission computers, 15 APX-117 identification friend or foe (IFF) systems, 15 AN/AAR-47 missile warning systems, 15 AN/ALE-47 countermeasure dispenser sets, and 15 APR-39C(V)2 radar warning receivers.

The proposed package also includes 12 joint mission planning systems, plus various spares, training and support packages, technical data and publications.

Weapons include Lockheed Martin AGM-114 Hellfire air-to-surface missiles and BAE Systems advance precision kill weapon system (APKWS) II guided rockets.

Not everyone was happy about the proposed attack helicopter sale. The human rights group, Americans for Democracy & Human Rights in Bahrain, called upon the US Congress to block the sale in the wake of the regime's heavy-handed suppression of political dissidents and pro-democracy campaigners, noting the US State Department's report of "a widespread human rights crisis in Bahrain". The group said that the Trump administration was effectively rewarding the Bahraini military for violating international law.

If and when concluded, the Bahraini Cobra deal will mark the second export sale of the AH-1Z Viper, with Pakistan having committed to acquire 12 examples.

### Potential customer

At one time, Jordan seemed to be a potential AH-1Z customer, but is instead upgrading 12 older, single-engined AH-1Fs to what has been referred to as an "AH-1Z Lite" gunship configuration.

Northrop Grumman is overseeing the design and integration of the avionics solution, while Science & Engineering Services (SES) is rewiring and reconditioning the aircraft for 20 more years in service.

The upgraded aircraft will feature a new L3 Wescam MX-15D sensor turret in place of the original telescopic sight unit, with electro-optical and infrared cameras, and a laser designator.

The aircraft will incorporate the same Northrop Grumman integrated mission equipment package (iMEP) avionics system as the AH-1Z, incorporating a FlightPro Gen III mission computer, and large flat panel liquid-crystal display (LCD) multifunction displays, as well as new weapons and defensive systems.

The Royal Jordanian Air Force has taken delivery of two of the updated gunships from SES for weapons testing and final acceptance checks.

The programme office has reported interest in the AH-1Z from the UAE, Australia, Brazil, Croatia, the Czech Republic, Japan, Malaysia, Poland and Thailand, as well as Bahrain. ■

# GAME-CHANGING ISR CAPABILITIES AND **APERTURE-TO-ENTERPRISE SOLUTIONS.**



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*Having taken delivery of the last four Embraer EMB 313/A-29 Super Tucano light-attack and reconnaissance aircraft, Lebanon has now announced a further \$120 million defence aid package from the United States. Jon Lake reports.*

**S**ix A-29s were originally ordered as part of a \$340 million US assistance package intended to improve the Lebanese Armed Forces (LAF) counter insurgency capabilities.

The aircraft will augment the air force's small fleet of three AGM-114 Hellfire-armed Cessna AC-208 Combat Caravans, which serve with the Fourth Squadron.

The US aid package also included 32 surplus M2 Bradley infantry fighting vehicles, which are still being delivered.

The new agreement will see the LAF receiving six MD 530G light attack helicopters, six ScanEagle unmanned air vehicle (UAV) systems and a \$16 million package of communications and electronics equipment, night vision devices, and associated training.

The latter elements are intended to enable Lebanese Army ground troops to call in air strikes more quickly and effectively.

#### **\$1.5 billion in assistance**

The US Embassy in Beirut confirmed that the US has now given the LAF more than \$1.5 billion in assistance over the past decade.

The first two A-29s were delivered to Hamat Air Base, in Lebanon's northern city of Batroun, north of Beirut, in October 2017.

The final four followed on Tuesday June 12 this year. They now form the Seventh Squadron at Hamat.

US Ambassador, Elizabeth Richard, described the delivery as "a game-changing acquisition that takes the Lebanese Armed Forces to the next level of combat capability".

LAF commander, Joseph Aoun, hailed the arrival of the four new aircraft, pointing out that it "endorsed the USA's constant support for the Lebanese army in the fight against terrorism as well as its commitment and eagerness to preserve the stability of Lebanon".

The helicopter and UAV acquisitions were first announced on December 13 2017 by General Joseph Votel, commander of the US Central



## US deal takes LAF to a new level



Unguided or laser-guided rockets can be employed by the MD530G.  
Below: The ScanEagle UAV catapult launcher.



Command (Centcom), during a visit to Beirut. Procurement of the three systems was discussed during a meeting between himself, Richard and Lebanese Prime Minister, Saad Hariri.

US aid to Lebanon has been focused on reviving the Lebanese army, equipping it to reassert control over the south of the country from the Shia Hezbollah militia. The Lebanese army effectively disintegrated during the civil war (1975-90), sidelined by various religious-based militias.

Since then, the army has been resurrected and has conducted limited operations against Hezbollah and against Israeli incursions. More recently, it has been involved in operations against Islamic State and Jabhat al-Nusra

US Ambassador, Elizabeth Richard, described delivery of the A-29s as “a game-changing acquisition that takes the Lebanese Armed Forces to the next level of combat capability”.



terrorist groups, trying to stop the spread of violence from neighbouring Syria.

US aid is primarily intended to boost Lebanese border security and counter-terrorist capabilities, and to help the army become the sole military force defending the country and the people of Lebanon.

The latest aid package will include six MD530G helicopters, equipped with an L-3 Wescam electro-optical sensor turret (probably incorporating a laser designator) and a Moog stores management system.

The helicopters will be armed with two 7.62mm or 12.7mm machine-gun pods, or two 70mm rocket pods (seven or 12 rockets each) or four Hellfire missiles. The MD530G can also carry six troops externally on fore-and-aft plank seats.

#### Ground control station

The US will also supply the LAF with six further Boeing Insitu ScanEagle UAV systems at an approximate cost of \$11 million, augmenting four earlier deliveries. A complete ScanEagle system consists of four air vehicles, a ground control station with a remote video terminal, a SuperWedge pneumatic catapult launch system and a Skyhook recovery system.

The ScanEagle vehicle carries a stabilised electro-optical and/or infrared camera on a lightweight inertial stabilised turret system, and an integrated communications system. It has a range of more than 62 miles and an endurance in excess of 20 hours, flying as high as 20,000 feet and cruising at 48 knots (with a maximum speed of 80 knots).

The ScanEagles are expected to be delivered to Rayak Air Base in the Bekaa Valley. ■

Jon Lake reveals that it's good news and bad news for Egypt's Rafales.

## EGYPT DOGGED BY DELAYS TO WILD WOLVES PROGRESS

The first Egyptian Rafale squadron (34 'Wild Wolves') is now fully operational and remaining aircraft will equip a new unit within the 203rd Tactical Fighter Wing 'Storm' at Gebel El Basur Air Base, about 85km north-west of Cairo.

However, Egypt's plans for the wing have been thrown into disarray by delays to a planned follow-on buy of 12 more aircraft.

It was expected that the new batch would allow the formation of three squadrons each with 12 aircraft, or of two larger 18-aircraft units.

Despite this uncertainty, the Egyptian Rafales are in full operational service, and flew their first combat mission on May 26/27 last year, providing air cover for strikes against Daesh targets.

Egypt placed an order for 16 two-seat Rafale Bs and eight single-seat Rafale Cs in February 2015, though the Egyptian aircraft soon received their own designations; the two-seaters becoming Rafale DMs and the single-seaters Rafale EMs.

□□□□

Deliveries began on July 20 2015, when the first three Egyptian Rafale DMs were delivered, allowing them to take part in the opening ceremonies for a new side channel of the Suez Canal, located at the northern side of the east extension.

These first three Rafales were originally built for the French Air Force as Rafale Bs, but were diverted to Egypt instead, following the removal of some French equipment.

The first two-seat Rafale DM built from scratch for Egypt left Dassault Aviation's assembly line in mid-December 2016 ahead of delivery on January 28 last year, with two further aircraft built as Rafale DMs.

Dassault delivered only a single Rafale to France in 2017, but sent eight single-seat Rafale EMs to Egypt. Three went from Bordeaux-Merignac to Gebel El

Basur on April 4 2017, with two more following on July 26 and three on November 28, all staged via the French Air Force's Base Aérienne 125 at Istres-Le Tube.

Dassault had flown the first Egyptian Air Force Rafale EM single-seater on July 1 2016. Initial flight-testing was undertaken from Bordeaux-Merignac and then transferred to Istres.

By the end of 2017, the Egyptian Air Force operated 14 Rafales, of the 24 originally ordered. These were armed with Mica air-to-air missiles, and AASM Hammer guided missiles and were expected to receive MBDA SCALP cruise missiles.

□□□□

Egypt has long planned to acquire 12 further Rafales and a contract aimed at converting Egypt's 12 options into firm orders is believed to have been drawn up during Egyptian leader, Abdel Fattah al-Sisi's, visit to Paris in October 2017. French Finance Minister, Bruno Le Maire, was initially reported to have been reluctant to agree to the sale because of the payment terms asked for by Egypt.

But, in the event, the order was held up by another, rather different problem, with the US refusing to clear the export of a key (but unspecified) component for the SCALP cruise missile.

In the meantime, Egypt is preparing to introduce 48-50 MiG-29M2 fighters into service. These lack the long-range strike capabilities of the Rafale, but if the SCALP issue cannot be resolved, the usefulness of the more expensive Rafale may be limited, and the need for 12 further aircraft will be hard to justify, despite the Egyptian Air Force's long-standing links with Dassault (having flown the Mirage 5, and the Mirage 2000, as well as the Falcon 7X). The Rafale was procured precisely because it has strike capabilities lacking in Egypt's other fighter aircraft types.

Another Rafale customer, Qatar, has successfully decided to buy 12 extra Rafale fighter jets as part of an existing contractual option, Dassault Aviation has confirmed. Qatar has provided a down-payment for the 12 aircraft, allowing Dassault to record the deal in its 2018 order book. The order came into effect on March 27.

Qatar's original €6.3 billion (\$7.8 billion) order for 24 Rafales was signed on May 4 2015, and included weapons and some training provision.

Dassault is increasing its production rate to two Rafales per month, double the recent rate, in response to recent sales to India, Egypt, and Qatar. The assembly line will, of course, still shut down for a traditional French one-month summer holiday in August. ■



Egyptian Rafales fly over the pyramids.



The Bayraktar will be Qatar's first tactical UAV system.

## RSC orders first export Turkish Bayraktar TB2 UAVs

Qatar's Reconnaissance and Surveillance Centre (RSC) has signed a contract for the procurement of six Bayraktar armed unmanned aerial vehicles (UAVs) from the Turkish company Baykar Makina.

The order was placed during the Doha International Maritime Defence Exhibition and Conference (DIMDEX) show in March.

Along with the six Bayraktar TB2 vehicles, Baykar will supply three ground control stations and a simulator for operator training.

Qatar has previously ordered mini UAVs from Baykar, but the Bayraktar will be its first tactical UAV system.

Brigadier General Mohammed Al-Ramazani, commander of the RSC, said: "The Bayraktar UAVs are capable of carrying different kinds of weapons and ammunition."

The Bayraktar TB2 is fitted with an unidentified electro optical/infrared (EO/IR) turret and can be armed with two Roketsan UMTAS air-to-ground missiles or four Roketsan MAM-L smart micro munitions.

Firings of the MAM-L and UMTAS were



successfully demonstrated in December 2015, and a TB2 achieved its first combat kill (against a PKK target) in September 2016.

Powered by a 100hp Rotax 912 piston engine driving a variable pitch two-blade pusher propeller, the Bayraktar has a wingspan of 12 metres and a length of 6.5 metres.

The aircraft has a maximum take-off weight of 650kg and a maximum payload of 55kg. It can cruise at 70 knots and at a maximum operating altitude of 24,000ft. The 300litre fuel tank gives a 24-hour endurance, though the range of the communications link limits the 150km radius of action.

The Bayraktar features a modular blended wing design with a twin boom inverted V-tail and a tricycle undercarriage with fixed main gear and a retractable nosewheel. The fuselage and wings are primarily constructed from carbon fibre and Kevlar.

The Bayraktar has fully automatic triple redundant flight controls, with automatic take-off and landing.

The Qatari deal marks the first export order for the UAV, which is operational with Turkish Armed Forces, with 34 Bayraktars on charge, of a planned total of 151.

The Turkish Armed Forces describe the Bayraktar as a 'tactical UAV' to differentiate it from the TAI Anka UAV, though both would be more correctly categorised as being medium altitude and long endurance (MALE) UAVs. ■

## Qatar air arm powers up

Qatar's dramatic air force expansion programme continues apace. The tiny state has ordered up to 96 fighters to replace just 12 Mirage 2000s, and is continuing to expand its rotorcraft arm, writes *Jon Lake*.

The force of 25 Sea Kings and Gazelles in three squadrons has already been virtually doubled by the addition of 21 AW139s, and more helicopters are on order.

Qatar's 13 ageing Gazelles, the survivors of 14 delivered, serve with No6 Close Support Squadron. These are to be replaced by 24 AH-64D Block III Longbow Apache attack helicopters, which will equip two squadrons, one to be newly formed. Qatar's 11 surviving Westland Commando Sea Kings (of 12 delivered) are being augmented by 21 newly delivered AgustaWestland AW139s, which form the new No20 Squadron.

Initially, plans called for the two squadrons of Commandos to be replaced by 22 Sikorsky MH-60 Seahawks.

Ten MH-60R Seahawks were to join No8 Anti-Surface Vessel Squadron for ASW and anti-surface warfare (ASuW) duties, with 12 MH-60S Knighthawks going to No9 Multi-Role Squadron for tactical transport, assault and mine detection. Under these



Qatar has ordered 28 NH Industries NH90s.

plans 12 UH-60 Black Hawks would equip another new squadron.

Instead, Qatar has ordered 28 NH Industries NH90s, consisting of 12 naval frigate helicopter (NFH) variants for No8 Squadron, and 16 tactical transport helicopter (TTH) types for No9 Squadron, for delivery between June 2022 and late 2025. Also, 16 H125 training helicopters have been ordered.

Qatar's NH90 NFH helicopters will be equipped for ASW and ASuW, with a European Navy radar, a Safran electro-optical (EO) system, and an Eletttronica electronic surveillance measure (ESM) system.

A comprehensive NH90 helicopter training solution will be provided by CAE, including a training centre facility, a suite of simulators and training devices. These include integrated procedures trainers and full-mission simulators for both variants, plus an NFH rear-crew trainer for training tactical coordinators (TACCO) and sensor operators.

This will be networked with the NFH full-mission simulator to allow rear crew and pilots to train together.

The centre will include an NH90 winch and door gunner trainer, and an advanced NH90 virtual maintenance training system (VMT). ■



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*As Saudi Arabia targets an aerospace and defence manufacturing revolution, Lockheed Martin looks to play its part.* **Beth Stevenson reports**

## Lockheed's jobs plan as part of 2030 vision

**S**audi Arabia has long been a key importer of advanced aircraft and weapon systems from western nations, such as the USA and the UK.

Now, however, it is now aiming to rely less on its oil resources while, at the same time, bolstering its defence and aerospace industries. Thus, it is targeting localisation of manufacture via its 'vision 2030' initiative.

Despite being the third largest military spender worldwide, currently only 2% of that spend is localised in Saudi. There are now plans to increase this to 50% by 2030, moving from low-tier spare part and ammunition provision to the manufacturing of entire aircraft.

One company that has experience in working with Saudi industry and is looking to help play a part in vision 2030 is Lockheed Martin.

The company formed a joint venture (JV) with Taqnia Aeronautics – the rotary aircraft manufacturing Saudi Arabia JV – in May 2017 during US President Donald Trump's inaugural visit to the kingdom, through which Saudi localises the manufacture of the Black Hawk rotorcraft.

It also has an agreement with Saudi Arabian Military Industries (SAMI) that covers the local manufacture of aerostats and vessels.

Lockheed is aiming to create jobs for thousands of Saudis through these ventures as it adheres to the requirements of vision 2030.

Rick Edwards, executive vice-president of Lockheed Martin International, claims that localising 50% of the work by 2030 is an ambitious aim, but the company is willing to work with the domestic industrial base to hit this target.

"We have a large number of contracts that were announced between the king and president Trump on his visit," said Edwards. "We are collaborating with SAMI [to determine] as to what each one of those will look like because each one will be different.

"For a programme like terminal high altitude area defense (THAAD) – an air defence system – there is not much content that can be released outside of the US, so that puts more pressure on other projects to have a higher percentage. But, overall, we are committed to supporting that growth – the 50% – and this is a very ambitious programme."

In April 2018, Mohammed bin Salman, the crown prince of Saudi Arabia, visited Lockheed's Silicon Valley facility to see where the THAAD system for Riyadh is being manufactured, as well as two communications satellites – one for Arabsat and one for the King Abdulaziz City for Science and Technology.

Edwards used the satellite programmes as examples of where Saudi engineers are involved, demonstrating the capability that is already in the country and which could be leveraged further into the aerospace and defence system manufacture domains.

"We've had a good experience with them on the Arabsat satellite programme, where we have certified Saudi Lockheed test engineers," he

added. "It is a capability that very few countries in the world have, to do the pre-life, pre-test launch profiling on satellites.

"That's been a great experience for us and for those Saudi engineers, and I think it's indicative of the fact that there's a very talented workforce available within the kingdom."

Edwards noted that Lockheed's relationship with Turkey is an example of a technology and skill transfer that is a success, which has included Turkish industry learning to test, assemble and

build parts of the F-16 fighter, as well as develop missiles.

"All of that has evolved over the past 30 years and, if you look, Turkey has capability across the spectrum. That is what the [Saudi] kingdom wants. They want to be able to, in the future, design, build and sell products on the international market stage."

He reiterated that while some programmes will not allow for 50% of localisation due to export laws, Lockheed will aim to balance it to this level by providing more in-country content for other programmes where this is possible.

"We've had a relationship in the kingdom for 50 years and we do work with some of the offset companies right now," Edwards said. "They have been successful with collaborations, but the Saudi content is going to grow incrementally. By 2030, whether or not that will be 50%, only time will tell, but I think there is a path to get pretty close to it." ■



**Rick Edwards:** "This is a very ambitious programme."

Mohammed bin Salman, the crown prince of Saudi Arabia, visited Lockheed's Silicon Valley facility to see where the THAAD system for Riyadh is being manufactured.







One of a pair of Royal Saudi Air Force (RSAF) RE-3 signals intelligence (SIGINT) aircraft has recently been upgraded. **Jon Lake** discovers more.

## EVERY PICTURE TELLS A STORY: PHOTO REVEALS RE-3A REVAMP

Photographs taken during a flypast marking the end of the multi-national Gulf Shield military exercise in April 2018 were pretty revealing.

They showed that the RSAF's RE-3A tactical airborne surveillance system (TASS) SIGINT platform now more closely resembles the current Baseline 11 standard RC-135V/W Rivet Joint, as flown by the US Air Force and British Royal Air Force.

The RSAF originally received eight Boeing KE-3A air-to-air refuelling tankers in 1986, augmenting five E-3A airborne warning and control system (AWACS) aircraft. All 13 aircraft were delivered as part of the Peace Sentinel programme.

In 1998, the penultimate Saudi tanker was delivered to Raytheon Intelligence, Information and Services (the former E-Systems) at Majors Field, Greenville, Texas, where it was converted to become an RE-3A SIGINT platform, equipped with the Raytheon TASS.

Subsequent to its conversion to RE-3A standards, the aircraft returned to the USA for maintenance and/or further upgrade during December 2001. It was finally re-delivered to the RSAF on January 9 2004.

The aircraft had distinctive 'cheek' fairings similar to those fitted to the RC-135, and had a ventral antenna farm similar to contemporary Block VI Rivet Joint aircraft, but lacked the extended 'hog nose' of most US RC-135 variants.

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The antenna farm included a multi-element, multiple communications emitter location system (MUCELS) aerial array below the centre fuselage, with another multi-element blade aerial array below the rear fuselage. The aircraft also had a dorsal array that included at least seven blade antennas.

A second aircraft, a former Boeing E-6A/YE-8B trials jet, sold to E-Systems in 1996, was then resold to Saudi Arabia for conversion to a similar standard, albeit with an improved TASS (ITASS) systems architecture, as the sole RE-3B.

The design, development, integration and ground and flight-testing of a TASS on board an RSAF E-6 aircraft was the subject of a US Defense Security Cooperation Agency (DSCA) notification to Congress, announced on September 5 1996. The project was

valued at \$350 million and included the provision of an associated ground station, an initial spares holding, classroom and 'on-aircraft' training services and overseas system support.

Modification of the E-6A/YE-8B to RE-3B configuration was understood to have been undertaken by E-Systems/Raytheon Intelligence, Information and Services (which became the L3 Mission Integration Division when L3 acquired Raytheon Aircraft Integration Systems in 2002).

The configuration of the RE-3B remains unknown, as the only known photo of the aircraft did not clearly show the antenna arrays or forward fuselage. It does seem to have retained E-6 type wingtip pods, which included high frequency satcom and electronic surveillance measure (ESM) antennas on the E-6.

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The RSAF RE-3A and RE-3B aircraft are assigned to the 19th Squadron at Prince Sultan Air Base at Al Kharj in central Saudi Arabia. They operate alongside a pair of King Air 350 surveillance platforms.

In August 2009, the US Government approved the sale of upgrades for the Saudi RE-3s, valued at \$530 million. These focused on upgrading the aircraft's ability to transmit information reliably and securely to suitably equipped ground stations.

The systems installed included AN/ARC-230, AN/ARC-210(V) or AN/ARC-231 high frequency and very/ultra high frequency secure voice/data systems, multifunction information distribution system low-volume terminals, and various cryptographic systems, together with logistics, training and infrastructure packages.

The aircraft were also included in a communication and navigation surveillance/air traffic management (CNS/ATM) upgrade package that was applied to the RSAF's E-3s and KE-3s.

The more recent upgrade is believed to enhance interoperability with US Air Force and other coalition forces, while providing flexible options for future growth.

It is believed that the on-board sensor suite will allow the mission crew to detect, identify and geolocate signals throughout the electromagnetic spectrum up to 130 nautical miles (240km) away. ■

## KUWAIT ORDERS KING AIR 350 SPYPLANES



The US State Department has approved a possible foreign military sale (FMS) for four Beechcraft King Air 350ER intelligence, surveillance and reconnaissance (ISR) aircraft to Kuwait at an estimated cost of \$259 million, writes Jon Lake.

Textron Aviation's Beechcraft (formerly Raytheon) King Air 350, 350i and 350ER have become a popular basis for ISR and intelligence, surveillance, target acquisition, and reconnaissance (ISTAR) conversions.

These conversions range from aircraft with a single sensor – usually an electro optical/infrared (EO/IR) turret or a full-motion video (FMV) camera – to more sophisticated platforms with a range of sensors, encompassing communications intelligence (COMINT), electronic intelligence (ELINT) or electronic surveillance measure (ESM) capabilities, maritime or overland search or surveillance radars, sideways-looking airborne radars (SLARs), light detection and ranging (LIDAR) and even laser designators.

ISR/ISTAR King Airs have been produced by Beechcraft (and Raytheon), but also by Boeing, L-3, Raytheon UK's airborne solutions division, and by Sierra Nevada.

Once seen as a budget alternative to larger ISR aircraft, for smaller, more financially constrained operators, light ISR aircraft like the King Air have found a niche with larger, more prosperous air arms,

complementing unmanned air vehicles (UAVs), and offering greater situational awareness on-scene.

The Kuwaiti King Airs will be based on the heavier-weight, longer-range model 350ER, with enhanced PT6A-67A engines. The aircraft will be equipped with both radar and EO/IR sensors, as well as comprehensive defensive aids.

One of the aircraft will be modified to allow it to undertake VIP or senior leadership transport, medical evacuation or command and control missions. This presumably means that on this aircraft, at least, ISR mission systems will be supplied in modular, roll-on/roll-off form.

The mission equipment specified for the aircraft includes a belly-mounted Selex Seaspray 7500E active electronically scanned array (AESA) radar, previously used on the US Customs and Border Protection (US CBP) King Air 350ER multi-role enforcement aircraft (MEA). The aircraft will also be fitted with an L3 WESCAM AN/AAQ-35 EO/IR turret – better known as the MX-15HDi.

The Kuwaiti King Airs will be fitted with secure communications, cryptographic, and precision navigation equipment, identification friend or foe (IFF) systems and will feature AN/AAR-47 missile warning systems (MWS) and AN/ALE-47 countermeasure dispenser systems.

## KUWAIT H225 DELIVERIES BEGIN

The Kuwaiti Ministry of Interior announced the arrival of two Airbus H225 long-range helicopters from France on February 20. Newly trained Kuwaiti pilots flew them on their five-day delivery journey.

The ministry's undersecretary, Lieutenant General Mahmoud Al-Dousari, formally welcomed the aircraft during an official reception ceremony at Kuwait International Airport.

The aircraft will serve with the Kuwait Police Rotary Wing, and are reportedly to be based at the Kuwait City Heliport, though the unit was previously based at Kuwait International Airport/AI Mubarak Air Base.

They join a pair of Airbus AS365N3+ Dauphin III medium helicopters, delivered last November, and one more AS365N3s, delivered back in 2005.

Another AS365N3 was written off in a hangar fire on May 24 this year.

The police also operate an ex-air force Puma and a Gazelle (which are expected to be withdrawn from use imminently, if, indeed, they have not already been retired), and two EC135T1s, delivered in 2001.

Specialist Aviation Services has supported the Kuwait Police Flying Wing with engineering services since 2006.

The newly delivered rotorcraft are expected to be augmented by two more H225s. The helicopters represent just one element in a wider plan to develop and enhance the provision of security services in Kuwait.

One of the H225s delivered in February was painted



in gloss blue and was configured as a VVIP transport helicopter. The other was in a black and yellow colour scheme similar to that applied to the AS365N3+ helicopters. It was equipped for intelligence, surveillance, and reconnaissance (ISR) and search and rescue (SAR) duties.

The Airbus H225, previously known as the Eurocopter EC225 Super Puma, is also being acquired for the Kuwait Air Force (KAF) and the National Guard under the terms of a 2016 contract.

Twenty-four are due to be delivered to the KAF with six going to the National Guard. However, the deal, for 30 militarised H225Ms, has been referred to the country's National Anti-Corruption Commission (NAZHA) and State Audit Bureau (SAB) at the request of Kuwait's Prime Minister, Sheikh Jaber al-Mubarak al-Hamad al-Sabah.

*Kuwait has finally confirmed its long-awaited order for the Boeing Super Hornet, the US Department of Defense has announced. Jon Lake reports.*

The US Navy's Naval Air Systems Command (the contracting authority) has placed a potential \$1.17 billion contract with Boeing to develop Kuwait's Super Hornet baseline configuration.

It has also commissioned some long-lead items for the 22 Kuwaiti F/A-18E single-seater and six F/A-18F two-seat trainer variants that are due for delivery by 2022.

These items, valued at \$275.9 million, are understood to include radar warning receivers and some weapons.

Work on the Kuwaiti Super Hornets will be divided mostly between St Louis, Missouri; Goleta, California; and El Segundo, California.

The US Navy's Naval Air Warfare Center weapons division at China Lake has also placed a contract with Boeing to procure an H12K system configuration set for software development, modification, integration and testing of the F/A-18E/F aircraft configured for the Kuwait Air Force (KAF).

At much the same time, Harris Corporation secured a contract for 30 digital video map computers for the Kuwaiti Super Hornets.

### Train pilots

To train pilots for the Block III F/A-18E/F Super Hornet multirole fighters, Kuwait has ordered two tactical operational flight-trainers (TOFTs), according to a notice released on the US Federal Business Opportunities website on June 18 2018.

Boeing will supply one legacy TOFT that has been modified for the Super Hornet and one new Super Hornet TOFT, and will provide training for an initial batch of 26 pilots.

The first TOFT will be delivered to a US location – probably NAS New Orleans – to support initial aircrew training, which is scheduled to begin in the first quarter of 2021.

The sale of F/A-18 Super Hornets to Kuwait was originally announced in November 2016 but was held up by a delay in obtaining US State Department approval. By then, Kuwait had ordered 28 Typhoons (in April 2016), with the same mix of 22 single-seat and six two-seat aircraft. This led to some confusion as to whether Super Hornets or Typhoons would replace Kuwait's fleet of 34 legacy F/A-18C/D Hornets, some 40 of which had been delivered from October 1991.

The Kuwaiti order was originally expected to

Kuwait's Super Hornets will be to full Block III standards.



# Kuwait buzzing as Super Hornet deal is confirmed

be for a total of 40 Super Hornets, including an initial batch of 28 aircraft, and with options on 12 more.

The approved order also included 12 Lockheed Martin AAQ-33 Sniper and 14 Raytheon ASQ-228 ATFLIR targeting pods.

In the event, it soon became clear that Kuwait would order 28 examples of the Typhoon and 28 Super Hornets, expanding its fighter force and re-establishing a two-type frontline force.

Before the introduction of the original Hornet, Kuwait had operated a mixed fleet of Dassault Mirage F1CKs and Douglas A-4KU Skyhawks.

With an expected delivery date in the early-2020s, Kuwait's new Super Hornets are likely to be to the new US Navy Block 3 standard.

Before its fiscal year 2019 budget release, when the US Navy decided to buy 110 Block III

Super Hornets over the next five years, the Kuwaiti deal was seen as a potential lifeline for Boeing's Super Hornet production line, which might otherwise have been forced to close.

For many years, Kuwait did little to update or upgrade its legacy Hornets, whose air-to-ground capability was largely limited to the delivery of 'dumb' iron bombs, but this has changed in recent years.

#### Arab coalition

The aircraft were used extensively during coalition air policing duties over southern Iraq on Operation Southern Watch, and, more recently, they have operated as part of the Arab coalition combating Houthi and Al Qaeda forces in Yemen.

About 12 Kuwaiti F/A-18Cs have been

rotationally deployed to Saudi Arabia for this operation, which has reinforced the need for greater air-to-ground capabilities, enhanced interoperability and modernised air-to-air capabilities.

As a result, the Kuwaiti Hornets have been modernised in recent years, and have gained new capabilities.

Kuwait ordered 43 joint helmet-mounted cueing systems for its legacy Hornets in 2012.

In January 2017, Congress approved a sale to Kuwait of the AIM-120C7 AMRAAM air-to-air missile, while 14 Lockheed Martin Sniper ATP targeting pods were ordered in May 2017.

These are both expected to be used by the F/A-18C/D 'heritage Hornets' initially, before then being transferred to the new Super Hornets and Typhoons. ■



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## ENOUGH EAGLES HAVE LANDED FOR OPS TO BEGIN

The Iraqi Air Force has now received sufficient Korea Aerospace Industries (KAI) T-50IQ Golden Eagle advanced trainer/light combat aircraft to start operations with the type.

A third batch of six aircraft arrived at the Martyr Mohammed Alaa Air Base at Baghdad International Airport on June 6, joining four aircraft delivered in two batches by March 2018.

Iraq is due to acquire a total of 24 T-50IQs to equip two squadrons.

The KAI Golden Eagle is a South Korean supersonic advanced trainer and light combat aircraft, developed by the company in partnership with Lockheed Martin.

The Golden Eagle was South Korea's first indigenous supersonic aircraft and is available in several versions. The basic T-50 is a supersonic advanced trainer, while the T-50B is used by the Republic of Korea Air Force (ROKAF) Black Eagles aerobatic team.

The TA-50 variant is an armed derivative, fitted with wingtip missile launch rails and an internal gun – a three-barrelled version of the M61 Vulcan. It also has Elta EL/M-2032 fire control radar and is optimised for lead-in fighter training and light attack.

The TA-50 formed the basis of the further enhanced FA-50 – the most advanced version of the T-50, with a longer radome housing a longer-range version of the Elta radar, enhanced avionics, increased internal fuel capacity, and a tactical datalink.

Meanwhile, the T-50A is an FA-50 derivative developed to meet the US Air Force's TX trainer requirement, with a dorsal hump for an aerial refuelling receptacle and extra internal fuel, as well as a large area display, and embedded training systems.

Despite its 'T-' designation prefix, the Iraqi T-50IQ is



Iraqi Air Force now readying to start operations with training in the hangar and on the apron.



understood to be a derivative of the FA-50.

Iraq first expressed interest in the T-50 in 2009, but initially selected the Czech L-159T to meet its requirement for a lead-in fighter trainer. The deal fell through, however, and Iraq ordered 24 T-50IQs in December 2013, becoming the first export customer for the Golden Eagle. This was said to be the largest single South Korean arms sale to date.

The contract stipulated that Iraqi pilot and ground crew training was to have begun in 2014, with aircraft deliveries due to take place between April 2016 and March 2017, though the ISIL uprising interrupted these plans and single-seat L159s were procured as an interim light attack aircraft.

## IRAN CONTINUES TO RETURN GROUNDED JETS TO AIRWORTHY STATUS

It is now 39 years since the revolution that removed the Shah of Iran, Mohammad Reza Pahlavi, from his throne.

The removal of US support and the imposition of sanctions made it hard for the new Islamic Republic to maintain and operate the high-tech US-supplied aircraft and equipment that had been used by the old Imperial Iranian Air Force, and the number of US aircraft in service dwindled rapidly.

Remarkably, however, Iran's defence industry has gained sufficient capabilities to keep a surprising number of these now venerable warplanes operational, and has even managed to return many long-grounded aircraft to service, using a combination of reverse-engineered and clandestinely acquired parts and components, and sometimes by integrating new and non-US systems and weapons.

In April 2018, the Islamic Republic Air Force announced that it had successfully overhauled a US-made fighter aircraft, returning the F-4E Phantom to service after having been grounded "for several years" at Mehrabad's Shahid Lashkari Air Force Base.

The aircraft was returned to service after an 18-month, 18,000 man-hour overhaul.

As a result, the sharp end of the Islamic Republic of Iran Air Force continues to rely on some of the very same aircraft that provided the vanguard of the old Imperial Iranian Air Force in the days before the revolution.

The F-14A Tomcat remains arguably the most



Phantom II flying with the Iran Air Force.

important frontline fighter type, and is still augmented by McDonnell Douglas F-4 Phantoms (the most numerous fighter type in service), as well as by more recently acquired fighters from China and Russia. The P-3 Orion still serves as Iran's primary antisubmarine warfare (ASW) and maritime patrol aircraft, and SH-3 (AS-61D) Sea Kings continue to provide an inshore and littoral ASW capability.

C-130 Hercules form the backbone of the Iranian transport fleet, while Chinooks and Bell 212s and 214s

and Cobras account for the bulk of the army and air force rotary wing fleets.

In 2013, there were reports that Iran had signed a contract with the Russian Rosoboronexport arms company to buy 250 Su-30MKM tactical fighters and 20 Il-78 MKI air-to-air refuelling tankers, but the deal was not completed. Eventually, however, a similar procurement is bound to see the Islamic Republic of Iran Air Force finally replacing its ageing US combat aircraft.



# HIGH SPY

## But will the UAE spy-planes be up to the challenge?

**Alan Warnes** *has been finding out.*

**S**pecial mission aircraft are no stranger to Middle East skies, where spy-planes have helped to dowse the terrorist threat, notably from Daesh and al Qaeda.

The ability to monitor, either visually or by signal, and then download to the ground commander is a great asset. Interpreting what the aircraft can see then converts into allied troops and their aircraft taking action.

Aircraft are fitted with all kinds of sensors and usually it will take more than one type to cover differing roles. However, as some air forces, like Algeria, have found to their cost, you can't just put lots of equipment in a proposed spy-plane without the necessary power. Having the power is the name of the game; so most countries are now going for bigger business jets or fully fledged airliners so they can gather more information, and not trying to have one aircraft to cover all roles.

The UAE, along with Saudi Arabia, feels it is one of the most threatened among the Middle East countries, so has a mix of special mission aircraft to monitor their enemies.

It has two special mission aircraft programmes being developed in Europe, both involving the Global 6000 airframe.

In Sweden, there is the GlobalEye airborne

early warning and control (AEW&C), which was unveiled earlier this year, with the first of three aircraft on order making its debut flight from Saab's Linköping facility on March 14.

At Cambridge, UK, there are two Global 6000s being developed under Project Dolphin by Marshalls and QinetiQ. There has been much intrigue over these aircraft because they arrived at Cambridge in late-2012 and nothing happened with the communication intelligence (COMINT) conversion until 2015. And, unlike Saab, neither Marshalls nor QinetiQ will talk about the project.

The main reason for the delay in the conversion was because the system initially being worked on by an interim contractor allegedly would not work. In a bid to save the deal, QinetiQ got involved.

Under Project Dolphin, the Global 6000s are being fitted out with electronic intelligence/signals intelligence (ELINT/SIGINT) systems and, so far, one has been test-flown from Cambridge Airport.

They are believed to have cost the AED \$120 million (\$32.7m) for the two jets and an additional \$98 million for the systems, acquired through a shell company, known as Advanced Integrated Systems (AIS).

That's expensive, but still considerably less than the \$1.2 billion the UAE has paid Saab, which is providing three Erieye airborne electronically scanned array (AESA) radars and significant transfer of technology. Undoubtedly, both the Saab and Marshall/QinetiQ systems will have to work together.

### Inaugural flight

It has been more than a year since the first aircraft (1326) made its inaugural flight on June 21 2017 and, just a few days short of that first anniversary – from June 11-14 – the aircraft spent four days at Boscombe Down, where QinetiQ has one of its key sites. The other aircraft (1327) has been seen ground-running but, so far, has not flown.

While Marshalls has carried out much of the Project Dolphin engineering work, it is QinetiQ that is integrating the AS-5 surveillance system, which will form the spine of the aircraft. Sensors from other companies being fitted on to the jets will feed the information into a sophisticated computer system. This can then be monitored by image analysts or airborne electronic warfare officers and will fit into the UAE's bigger air defence system. Most of the interpretation will take place in the UAE's Air Warfare Centre.

The AS-5 system, which is integrated on the UK



The UAE Global 6000 lifts off.

PICTURE: ALAN WARNES

Royal Air Force RC-135 Rivet Joint aircraft, is part of Cobham's ASX airborne communications electronic surveillance set-up. According to QinetiQ, its ASX series of COMINT/direction-finding systems support all airborne electronic surveillance platforms. These include the AS-3 for smaller unmanned air vehicles (UAVs), which was displayed at the Farnborough International Airshow in 2014 on a DA42, and the bigger AS-4, which utilises an array of high-accuracy antennas for UAVs and other manned applications.

Then there is the AS-5, which QinetiQ claims is "a full specification for strategic airborne applications that can be fitted to business jets".

While no one at QinetiQ would talk about Project Dolphin, the company's website says that AS-5 "is able to intercept high volumes of signals traffic over a vast operational area with very high accuracy direction finding for geolocation at stand-off ranges".

It adds: "All ASX systems can be remotely operated by datalink using our innovative bandwidth management technology."

These ELINT aircraft can accommodate more aerials and have high levels of energy to geo-locate the signals, then overlay the position on a tactical map so the exact location can be determined.

However, one wonders how sophisticated this system really is.

It was probably defined several years ago, when the political and geospatial situation was so different from how it is now.

Today, most developed countries' air defence focus has changed massively, with anti-access area denial (A2AD) a top priority. This means the targeting of sophisticated surface-to-air missiles (SAMs), like the Russian S-300s populating the Iranian coastlines in the northern Persian Gulf, has to be a top priority (even more so if they acquire the S-400).

#### Electronic warfare expert

However, as an electronic warfare expert said: "Chinese, Russian and Iranian systems have super complex radars that are software waveform defined but the UAE Global 6000s set-up is likely to focus on old-fashioned ways of collecting signals data.

"In the old times, you were collecting data and collating the signatures of the radar frequencies (RF) through sensors. You were able to characterise them and put them into an electronic signature warfare library, as well as include them in a fighter's radar warning receiver (RWR).

However, the new modern SAM radars boast sophisticated wave forms generated by algorithms, meaning that the frequencies are

consistently changing and morphing all the time. So the threat library will be out-dated!"

The UAE is not believed to have the electronic warfare expertise required and, according to one source, does not understand the complexity of the hostile environment to carry out a modern concept of operations. So, these aircraft, primarily used for air defence, may be packed with an airborne radar, sensors, antennae farms and look impressive, but are they doing things the old way.

Plotting the threats of the enemy's systems and trying to stop them has changed dramatically in recent years because of the new waveform radar. The source continued: "When working in such a complex environment, you need to integrate artificial intelligence that can process the complex signals and transmit them in a form which could lead to a strike suppression of enemy air defence (SEAD) package."

As it is, the UAE Air Force & Air Defence may be one of the most modern air forces in the world, but it doesn't work the sensor-to-shooter way yet, so airborne early warning and control aircraft currently operating do not datalink the recognised air picture to the fighters.

Maybe the Global 6000s will resolve this, but it is very likely the on-board systems are already out-dated. ■

LEGACY® 500  
BY EMBRAER



## LEGACY 500: LEAPS AND BOUNDS BETTER THAN OTHERS

"The cockpit design in the Legacy 500 is clean, dark and quiet, which is very nice. Everything's at 12 o'clock. The flight deck is efficient in layout, very easy for a pilot to get the airplane started and avionics loaded. As far as using the sidestick and flying the Legacy 500, it really is amazing. You can have the airplane go to a certain position and it'll hold that position in flight. It's really neat.

In most airplanes, you have the yoke in the middle; it can be very confining. We had a long trip, about five hours and 45 minutes, and I remember that trip, in the cockpit, I was able to cross my legs. I looked over at the other pilot and said 'Boy, this is nice. When was the last time you were able to cross your legs in the cockpit?' And you're able to do that in the Legacy 500.

The passengers are really taken aback, especially on takeoff. And they're shocked at how quickly we get to altitude and also how steep of a climb we're doing. They're really impressed by that. They're like 'Wow, that's pretty amazing.'"



- Brad Knaack, Legacy 500 Pilot  
Watch Brad's story and request more information at  
[EmbraerExecutiveJets.com/Brad](http://EmbraerExecutiveJets.com/Brad)

The game-changing Legacy 500, with its exclusive full fly-by-wire controls – previously available only in modern airliners and much larger business jets – is the benchmark for the future in performance, comfort and passenger experience. On the flight deck, the advanced Rockwell Collins Pro Line Fusion™ platform puts pilots in complete control in a cockpit environment that provides superior ergonomics. With seating for up to 12 passengers, the Legacy 500 features a spacious stand-up cabin with a flat floor, fully equipped galley, state-of-the-art in-flight entertainment system, elegant seating that converts into fully flat berths and the lowest cabin altitude of any medium-cabin aircraft. Its extensive main baggage compartment is complemented by a generous in-flight-accessible cabin stowage space. Boasting enviable speed, the clean-sheet design Legacy 500 delivers a high-speed cruise of Mach 0.82 and excellent runway performance.



CHALLENGE.  
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OUTPERFORM.



*EBACE – Europe’s biggest business aviation event – becomes increasingly important to the Middle East every year with many exhibitors and visitors from the region.*

**Alan Peaford** was in Geneva to pick out the highlights.



**Surprise: Bombardier president, David Coleal, unveils the new Global 6500.**

**A**lthough the business aviation industry has been in a slump for the past decade, there are clear signs of movement.

The Middle East and North Africa Business Aviation Association (MEBAA) – was at EBACE in force to promote its shows in Dubai (December) and Marrakech, (September 2019), as well as its regional conferences.

There was a glimmer of optimism that the market improvements detected in the US and Europe will follow suit across the Middle East.

The big manufacturers certainly appear to be backing a reversal in fortunes for the super-large and long-range business jet category.

#### Performance expectations

Ahead of the show, the expectation among the pundits was that the Gulfstream G500 and G600 would make the headlines approaching certification, breaking records and adding to their performance expectations, having already upgraded the range of the G500 to 6,200nm and the G600 to 6,500nm at the end of last year.

Dassault, still reeling from the Silvercrest engine body blow and the cancellation of its 5X programme, was predicted to be emphasising the joy of its 8X trijet and also to add more detail on its 5X successor, the 6X.

## Bombardier’s pearl shines a light...

Bombardier, having suffered several years of capital starvation as the business focused on the delivery to market of its commercial division’s CSeries passenger aircraft, seemed likely to focus on a new package of customer service offerings.

Instead, the Canadian manufacturer stole the show with the incredible unveiling of a new competitor to entirely shake up the class – the Global 5500 and 6500 models.

This wasn’t just a paper launch kept secret in a drawing office and boardroom. This was an entire aircraft that was flown across the Atlantic from Montreal to Geneva, hidden in the TAG Aviation hangar and unveiled to a stunned audience of media and customers.

Bombardier now has two reinvigorated product lines nearing first delivery, even as the Global 7000 approaches a long-awaited entry-into-service milestone later this year.

Boasting ranges of 5,700nm and 6,600nm, respectively, the Global 5500 and 6500 now exceed the promised range performance of each of their direct Gulfstream competitors.

Probably the biggest secret element of the new aircraft is the engine. That, too, is brand new... and has already been certified.

The ‘Pearl’ engine was purpose-built and will be the sole engine for both the Global 5500 and the Global 6500 aircraft.

The Pearl 15 is the first of the planned state-of-the-art Pearl engine family for business aviation and combines innovative technologies derived from Rolls-Royce’s Advance2 technology demonstrator programmes, with proven features from the Rolls-Royce BR700.

The engine will deliver up to 15,125lb of thrust thanks to what the

Continued  
on Page 64

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UK company described as “the most efficient engine core available across the business aviation sector”.

Despite delivering up to 9% more thrust during take-off than the BR700, the engine will be two decibels quieter and operators will benefit from a 7% improvement in specific fuel consumption, Bombardier Business Aviation president, David Coleal, told the stunned audience.

The engine will also deliver world-leading emissions performance, including best-in-class NOx emissions, despite propelling customers at levels approaching the speed of sound (Mach 0.90).

Rolls-Royce’s civil aviation president, Chris Cholerton, said: “Our teams have worked hard behind the scenes to develop this new engine and we are proud, once again, to lead the way in business aviation. The Pearl engine is a pioneering product, bringing together the most eco-friendly and efficient technologies available today.”

The new engine was developed at Rolls-Royce’s Dahlewitz, Germany plant and quietly received European Aviation Safety Agency (EASA) certification on February 28 2018.

It is currently undergoing flight tests at Bombardier’s Flight Test Centre in Wichita, Kansas, supporting the planned entry into service at the end of 2019.

**Rare feat**

The newly certificated Rolls-Royce engines achieve the rare feat of increasing thrust and reducing fuel burn, yet fit into the same aerodynamic installation as the BR.710 powerplants they replace.

Neither the aft fuselage-mounted pylons and nacelles, nor the engine mounts, are altered for the Global 5500 and 6500, despite the addition of the more powerful and efficient Pearl 15 engines.

By keeping the aerodynamic profile unchanged, Bombardier reduces the impact of the re-engining on aircraft-handling qualities and other certification requirements.

The Global 5500 and 6500 jets will both enter service with redesigned wings.

The 35-degree leading-edge sweep of the original Global Express is unchanged, but Bombardier’s designers re-profiled the trailing edge. The change allows the aircraft to fly slightly faster than the previous limit of Mach 0.88 without a dramatic increase in drag, Bombardier said.

In the cockpit, pilots will experience the familiar layout of the Rockwell Collins ProLine Fusion-based Vision flight deck – with one extra feature.

The Global 5500 and 6500 will become the first new business jets to feature a true combined vision system (CVS), with an infrared video image overlaid on a synthetic graphic (the current Vision flight deck offers both images on separate displays). ■



**SWEET HARMONY CABIN HAS A WIDE RANGE**

Airbus Corporate Jets (ACJ) has created a new cabin design concept called Harmony.

It is initially proposed for the new ACJ330neo family, which features new-generation engines and sharklets.

But, according to marketing director, David Vellupillai, Harmony can be adapted to other Airbus wide-bodies, such as the ACJ350 XWB.

“Harmony is a timeless and elegant design concept, because we dare to break the conventions that are traditionally imposed on us as cabin designers,” said ACJ head of creative design Sylvain Mariat.

“Our creativity has to be unique to fit the needs of our customers, as befits a host receiving their guests in their ‘world above the world’.”



Light fantastic: HondaJet’s Michimasa Fujino with Adel Mardini of Jetex.

**HONDAJET JOINS THE JETEX SET**

The revolutionary HondaJet light jet is now to be available in the Middle East, thanks to a deal between the automaker’s aviation arm and Jetex Flight Support, with the Dubai-based company being named at EBACE as the authorised sales representative.

The agreement came as Honda Aircraft revealed the first major upgrade for its HA-420 HondaJet only 30 months after the entry-level jet entered service.

The first HondaJet Elite will be delivered this month (August) with a 17% range increase, a shorter take-off roll and several avionics improvements, said chief executive, Michimasa Fujino.

“The HondaJet Elite takes passengers further, faster, higher and in greater comfort than any other business jet in its class,” Fujino said.

The arrival of the \$5.2 million HondaJet Elite comes early by industry standards. Most manufacturers wait at least six or seven years after a type is introduced before they roll out the first major performance improvements.

But Honda Aircraft has taken its cue from its parent company, a giant in the automotive industry, where performance upgrades are rolled out sometimes on a yearly schedule.

The HondaJet Elite adds an auxiliary fuel tank that increases range by 231nm to 1,437nm.

The original HondaJet already boasts class-leading speed, and the Elite upgrade reduces the advantages of rival Textron Aviation’s Cessna M2 in the areas of range and take-off performance.

The HondaJet Elite also brings new upgrades for the cabin. A new noise-attenuating engine inlet is added to reduce vibration and sound inside the four-seat cabin. The cabin itself is now augmented by a lavatory with a belted seat, allowing a fifth passenger to be accommodated, even with a galley.

Jetex will represent Honda Aircraft’s sales in the UAE, Saudi Arabia, Bahrain, Oman, Qatar, Lebanon, Pakistan, Jordan, Turkey and Kuwait.



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## PIAGGIO TAKES MOMENTUM INTO ITS SECOND CENTURY

Piaggio Aerospace – the Italian aircraft manufacturer, which is a subsidiary of Abu Dhabi’s Mubadala – outlined its growth strategy during the EBACE event.

The company was exhibiting its upgraded turboprop corporate aircraft – the Avanti EVO – at the show.

“We secured four new orders of the Avanti EVO in the first few months of 2018 and the sales momentum is continuing,” said Renato Vaghi, Piaggio’s CEO.

“Reinforced by a new financial stability, we intend to focus on aircraft, leveraging our revamped production and a new commercialisation strategy for the P.180 Avanti EVO.”

The company, celebrating its centenary, has been through a major restructuring and has targeted break-even in 2019 and moving into profit by 2021.

The new strategic route is already leading to an increase in the production rate and new orders, with 20 aircraft in the pipeline, of which 12 are Avanti EVOs.

In the first quarter of 2018, Piaggio Aerospace secured additional orders for four units of the third generation of the legendary P.180, and expects to deliver in total eight aircraft by the end of 2018.

The ambition of the company is to better position the Avanti EVO globally, to relaunch its special mission version, and to further invest in customer service, to support the fleet worldwide.



Renato Vaghi: “Our primary goal is continuing to put our global existing and future customers first.”

Meanwhile, the company also unveiled a suite of new customer service solutions for its classic P.180 Avanti aircraft fleet.

“Customer service is of paramount importance to Piaggio Aerospace and, in line with our long-term growth plans, our primary goal is continuing to put our global existing and future customers first,” said Vaghi.

□□□□□

Piaggio announced a Magnaghi landing gear retrofit installation for P.180 Avanti I and ADS-B Out capability (the continuous transmission of aircraft data such as airspeed, altitude, and location to ADS-B ground stations) for Avanti II.

The new Magnaghi Aeronautica main and nose landing gears feature a state-of-the-art digital steering system with an enhanced rack and pinion actuation mechanism. They provide improved reliability, extended time between overhaul (TBO) up to 15 years or 15,000 landings, and lower overhaul costs compared to the current gear arrangement.

A factory option for the retrofit of the ADS-B Out capability to the Avanti II aircraft, integrated within the ProLine 21 avionics suite is now available, the company said.

## Another step forward for King Air

The Beechcraft King Air family has achieved its longevity by constant reinvention.

At EBACE, latest owners of the brand, Textron, announced that an integrated terrain awareness and warning system (iTAWS) will now be fitted as standard with aircraft equipped with the Rockwell Collins ProLine Fusion’s high-resolution Synthetic Vision System (SVS).

The iTAWS system brings aural and visual warnings to the primary flight display and multi-function displays, and it eliminates the standalone TAWS line-replaceable unit along with all related wiring and complexity.

Also newly standard for the King Air 350i is multi-scan radar with turbulence detection that automatically detects short, mid and long-range weather.

This provides an optimised weather picture regardless of the aircraft altitude or the range selected.

Additionally, mobile enablement is now available as an option that allows wireless chart and flight plan uploads from an iPad via the ARINCdirect app, in addition to allowing the avionics to wirelessly receive and upload v-speeds.



## FALCON FOCUSES ON DUBAI MRO

The UAE’s business aviation services, charter, MRO and aircraft management company, Falcon Aviation, returned to EBACE to highlight its new business jet MRO facility at Dubai South.

Built on a total 24,000sqm plot size capable of accommodating up to four Boeing BBJ/Airbus ACJ-sized narrow-bodied aircraft for base maintenance, it includes workshops, interior solutions, a wash bay, and landside office space, plus 13,000sqm of apron.

Although Falcon supports its own and managed fleet of business jets and helicopters at its Al Bateen

Executive Abu Dhabi Airport facilities, its new Dubai base has been built primarily for third-party customers.

“Our goal at EBACE is to meet with the OEMs to see how we can support them and their operators by adding other aircraft types to our capabilities,” said Falcon Aviation COO, Captain Raman Oberoi.

The facility has been under construction for 12 months and is pivotal to Falcon’s overall long-term strategy to bring a ‘one-stop MRO shop’ to the region.

The new DWC facility will also offer 24/7 aircraft-on-ground (AOG) support and aircraft parking.



## SHOW TRIBUTE TO SERGE DASSAULT

The 2018 EBACE was dedicated to the memory of Serge Dassault, the entrepreneur, politician, and, of course, head of the Dassault Group and its Falcon jet family, who died on the eve of the show at his office in Paris, aged 93.

Tributes poured in from all over the world and a moment of silence was held at the show’s official opening.

Serge was one of France’s great industrialists, building the aviation firm that his father Marcel had founded in 1929 into one of the world’s leading aviation businesses.

# Luxivair looks good to MENA clients

**L**uxivair SBD, southern California's premier fixed-based operator (FBO) located at San Bernardino International Airport, is quickly becoming the terminal of choice for private jet passengers from the MENA region.

"Passengers arriving through Luxivair avoid the congested airspace at other overcrowded airports yet enjoy access to most southern California attractions within an hour's drive," explained the FBO's business development manager Kimberly Benson, while attending the recent Aviation Africa Conference and Exhibition in Cairo.

Located just 96 kilometres from downtown Los Angeles, Luxivair's FBO offers its clientele a broad range of world-class services, including on-site 24/7 US Customs clearance.

The FBO is celebrating five years of service and recently announced a 62% increase in customer activity in 2017 compared to the previous year.

"Our exquisite facility has a thriving business complex designed to support the complete needs of corporate, charter and general aviation pilots," said Benson.



"Our cooperative agreement with Abu Dhabi Airports Company, announced in February, together with our strategic partnership with Dubai-based Jetex Flight Support, announced in March, underscore our deep commitment to MENA. We recognise that the MENA region plays an increasingly important role in private jet aviation and we are focused on serving as a trusted partner in support of its continued growth."

Michael Burrows, executive director, San Bernardino International Airport, added:

"Luxivair SBD is also a key supply chain partner for MENA-based air cargo companies shipping to southern California.

"The recent decision by UPS to begin daily flights into our airport highlights the fact that we are providing much-needed relief for air cargo companies of all sizes from the MENA region and beyond, who have been experiencing significant delays at other southern California airports. Our very competitive cost structure, together with the fact that aircraft of any size can land here, provides significant advantages to our clients." ■



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*Virgin Galactic will soon launch its commercial space flights for paying passengers. Although the company says it can't announce an official launch date until it has completed its current step-by-step test flight programme, it is widely believed space flights may occur later this year. Steve Nichols reports.*

## Verging on the ultimate passenger experience



**Adam Wells: "We've created a cabin that will work in all orientations and is optimised to really celebrate this unique situation."**

**O**n May 29, Virgin Galactic completed the second successful rocket-powered flight of its spaceship VSS Unity.

Following the inaugural rocket-powered flight in April, this was a next-step as the aerospace company moves through a sequence of incremental tests toward achieving its goal to reach space.

In an accident in October 2014, the VSS Enterprise, SpaceShipTwo, suffered a catastrophic in-flight break-up and crashed in the Mojave Desert, killing co-pilot Michael Alsbury and seriously injuring pilot Peter Siebold.

While customers patiently await their flights and the ability to connect globally as a future astronaut community, the company says it is prioritising safety and systematic testing as it prepares to make history in commercial spaceflight.

For \$250,000 you will be able to climb aboard the VSS Unity at New Mexico's Spaceport America for the ride of a lifetime, flying to an altitude of 110km and at a top speed of 4,000km/h.

But the flight is just part of the overall package. Speaking at the Passenger Experience Conference in Hamburg in April, Adam Wells, head of design, Virgin Galactic, said a lot of thought has been given to every single element, citing parallels between Virgin's work to improve commercial airline customer experience and a vision for optimal comfort in spaceflight.

"Virgin Galactic's unique in-flight experience has led us

to develop new and original products for our seating and cabin systems that will support and enhance our customers' spaceflights," Wells said.

"This will include a variety of 'g' scenarios that customers will experience – initially high g under rocket power on the way up and again high g when SpaceShipTwo re-enters Earth's atmosphere on its return – and for the cabin itself, during the microgravity phase in space."

Wells added: "We've created a cabin that will work in all orientations and is optimised to really celebrate this unique situation, delivering plenty of room to enjoy microgravity and to absorb the amazing views back towards Earth from space."

Somewhere between 600-700 customers are waiting patiently to fly with Virgin Galactic from Spaceport America in New Mexico.

### What will it be like?

So what will the flight experience be like?

Customers will be taken out to the VSS Unity spaceship, board and fly attached to the White Knight 2 mothership to around 50,000ft where Unity will be released. Then there will be a countdown; the rocket motor will fire, pushing them back into their seats.

The g forces will then start to load as the vehicle goes straight upwards, faster than the speed of sound.

Customers will be aware that the air outside is getting thinner, and then the rocket will shut down, after which they will be weightless and able to get out of their seats, float around in the cabin and look back at Earth, all whilst the vehicle continues to move upwards.

But what about the return journey?

When the wing is feathered and the ship starts to re-enter the Earth's atmosphere, customers will get another interesting experience. They will start to hear pings as air molecules hit the spaceship. Unity will then de-feather its wings and glide in to land.

Long-term we might see Virgin Galactic setting up a spaceport in the Middle East, possibly Abu Dhabi as originally planned.

Virgin Galactic is backed by Abu Dhabi-based Aabar Investments, which bought a 31.8% stake (initially \$280 million) in Virgin Galactic in 2010, increased to 37.8% in 2011. The overall investment is now believed to be around \$580 million.

In October 2017, news also broke that Saudi Arabia's Public Investment Fund plans to invest about \$1 billion (Dh3.67 billion) in Richard Branson's three commercial space companies, including Virgin Galactic.

According to the agreement, the kingdom's fund also has an option to invest an additional \$480 million in "space services".

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## 3 EVENTS TO INSPIRE CHANGE IN THE MIDDLE EAST AVIATION INDUSTRY



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Virgin Galactic's Sir Richard Branson (right) signed a major investment agreement partnership with Mohamed Badawy Al-Husseiny, CEO of Aabar Investments of Abu Dhabi, in July 2009.



## Al Maktoum International to become a 'cosmic super-port'

*Al Maktoum Airport is to be reinvented as an aviation hub that can handle supersonic, hypersonic and even space planes in addition to aircraft.*

**Steve Nichols** reports.

The announcement, made in June, is part of the Dubai 10X initiative, with Dubai Aviation Engineering Projects working on the project in partnership with Dubai Future Foundation (DFF).

This means DWC is to become a "multi-mode super-port" with the hub set to become the region's first spaceport, with the surrounding aviation infrastructure being known as a "cosmotropolis".

It will become the first of its kind in the world to provide an integrated travel outlet for both air and space travel.

According to the Government of Dubai's website, the initiative, part of a total of 26, was approved by His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, crown prince of Dubai and chairman of the board of trustees of the DFF.

Khalifa Suhail Al Zaffin, executive chairman of Dubai Aviation Engineering Projects, said: "The advent of new travel technologies, such as supersonic aircraft and space travel, have raised questions about the ability of existing airports to accommodate these modes of travel in an integrated way.

### Most ambitious

"As the most ambitious country in the field of exploratory space missions, we believe the time is right to develop a new comprehensive plan for an integrated airport that offers both air and space travel."

Al Zaffin added: "The Dubai 10X initiative has helped us make great strides. Dubai has always pioneered change and has a strong track record of innovative projects.

"Our Dubai 10X projects provide real opportunities for us to set new and innovative standards in the aviation industry and add unique value to the passenger experience.

"Dubai Aviation Enterprise Projects has developed a comprehensive project plan to implement its initiatives in

partnership with the aviation industry, both local and international. The plan also provides a framework for establishing close partnerships with the UAE Space Agency, the Mohammed Bin Rashid Space Centre (MBRSC) and the Supreme Legislation Committee, in addition to international organisations, agencies and companies."

Al Maktoum Airport was initially planned to have six runways, but this number was reduced to five 4,500 metres (14,800ft) parallel runways in April 2009, with a large passenger complex in the middle.

But this isn't the first time that a spaceport has been envisaged for the UAE.

### Future success

Back in 2009, Virgin Galactic proposed building one in Abu Dhabi, the home of backer Aabar Investments.

The support from Aabar, which is run by the Abu Dhabi Government, was seen as crucial to Virgin Galactic's future success.

Abu Dhabi was set to gain exclusive regional rights, subject to regulatory clearances, to host Virgin Galactic's tourism and scientific research space flights.

At the time of the announcement in 2009, Virgin Galactic's then president, Will Whitehorn, said: "What marked Aabar out as a potential investor was that they were extremely committed to the conceptual use of the system, well beyond the use of space tourism – they understood our business plans for astronaut training and human space science.

"Abu Dhabi indicated that they are very keen to develop a space port with some sort of science park facility around it and that would be a resource for all the emirates to take advantage of, but that is a decision that has not yet been taken."



## STRATEGIC POSITION DRIVES FUJAIRAH GROWTH

*Fujairah, one of the Gulf's less well-known airports, is improving its facilities as it undergoes a substantial modernisation that will enhance its prospects for years to come.* **Alan Dron reports.**

A major programme to improve facilities is getting under way at Fujairah International Airport (FIA) to help support the economic development of the emirate.

Abu Dhabi Airports (ADAC), in partnership with Egypt's Orascom Construction, and Al Sahraa General Transport & Clearance Abu Dhabi, is pushing forward with the FIA expansion programme in collaboration with Fujairah's Department of Civil Aviation.

Under a 2014 agreement, ADAC takes the lead in FIA's expansion. It lent its resources to Fujairah during the planning stage of the FIA project and will also manage the construction phase.

According to local reports, the project value is AED661 million (\$180 million).

FIA is largely a cargo airport. Fujairah is the only one of the UAE's seven constituent emirates situated on the Indian Ocean coast and has a major seaport close to the airport that allows vessels access to the UAE market without having to transit the busy Straits of Hormuz.

Opened in 1987, FIA has a notably good weather record and is used as a diversionary airport when fog affects operations at larger facilities such as Dubai and Abu Dhabi.

It also has extensive aircraft maintenance facilities and is home to a flying school.

□□□□

The terminal has a 2 million annual passenger capacity but, at the time of writing, there were no scheduled passenger services.

A small number of charter services operate into the airport and it is hoped these will increase as the emirate expands its hotel capacity. The emirate is well known in the scuba-diving world for its offshore waters.

The centrepiece of the expansion programme will be the extension of FIA's sole runway – Rwy 11/29. Currently 3,750 metres, the project will see a 900 metre extension to the runway's eastern end, of which 700 metres will be designated as a runway extension, with 200 metres as a taxiway, said Mohamed Al Salami, chairman of Fujairah's Department of Civil Aviation.

The programme is designed to improve aircraft performance when departing westwards towards the Hajar Mountains, giving them the ability to carry larger payloads.

As part of the expansion, a new parallel taxiway – 3,050 metres long, 45 metres wide and equipped with airfield lighting system – will be constructed. The taxiway will be built to runway standards so that, while the main runway is being improved, the airport will remain operational throughout the works.

Once the main runway enhancement is completed, the shorter strip will revert to service as a parallel taxiway.

□□□□

The addition of a taxiway will mean that aircraft do not have to backtrack along the main runway for take-off or after landing, improving FIA's operational efficiency by maximising runway movements. It will act as a contingency runway for emergencies.

Additional upgrades include the replacement of existing airfield ground and approach lighting systems, a new air traffic control (ATC) tower and air traffic management systems along with other associated infrastructure works.

The new ATC tower and its administrative building is destined to become the iconic image of FIA. The 47 metre-high tower will be constructed in the form of a falcon with its wings folded. The visual control room will face the north, providing excellent visibility over the entire airport, noted Al Salami. Situated in the centre of the airport, its height will make it visible from a considerable distance.

In recognising Fujairah's strategic location and taking into account factors such as its increasing population, tourism growth, air cargo operations and breadth of industrial and commercial development, further improvements on the south side of the airport may include an airport free zone as well as hangars, warehousing, workshops and offices for existing and future service industries. ■

*Saudi Arabia's Eastern Province is being fired into life by ambitious plans for Dammam's international airport, as Alan Peaford reports.*

**F**or many years the airport at Dammam lay virtually dormant. Each year, barely four million passengers – mostly there for the oil and gas and other industrial ventures – passed through its terminal.

But things are changing.

Turki Abdullah Al-Jawini, chief executive of Dammam Airports Company (DACO), is convinced that the changing approach in the kingdom and the Eastern Province suggests that Saudi Arabia's third largest airport is on a roll.

"It wasn't until 2009 that the airport started to show positive trends," Al Jawini said. "Now King Fahd International Airport has grown from 4.7 million passengers to close to 10 million last year, with a double-digit annual growth rate, which is quite positive," he said.

But it is not stopping there. Dammam Airport Company is utilising international contractors and services businesses to capitalise on opportunities to ride the wave of an expected surge in passenger traffic as the kingdom invests in tourism and entertainment projects to transform its oil-reliant economy.

Al-Jawini is anticipating a further 6% growth in 2018 and more to come.

"We expect a great flow of tourist traffic as we are an eastern gateway into the kingdom and we expect to get a good portion of the new traffic," Al-Jawini said.

### State-of-the-art

At the recent Airport Show in Dubai, Al Jawini signed a deal with Vanderlande to introduce a state-of-the-art baggage-handling system to improve the passenger experience.

"We also have the first 'true concept' duty free store in Saudi Arabia, with international standards and recognised global brands," Al Jawini said. "We are recognising the growing number of international business travellers and visitors."

Al Jawini believes that expansion plans for the airport will see a doubling of retail space to around 25,000sqm. He expects passenger numbers to treble by 2025 to an estimated 30 million passengers a year.

DACO also signed an agreement with Serco Middle East to install cutting-edge fire and rescue services at the airport, as well as training services. Dammam is the first Saudi airport to utilise an international service provider's



“We are an eastern gateway into the kingdom and we expect to get a good portion of the new traffic.”

TURKI ABDULLAH AL-JAWINI

# Dammam full of Eastern promise

expertise in fire-fighting systems, and will help raise the airport’s safety standards.

The company is also investing in expanding cargo operations

“The strategic location of Dammam Airport as an eastern gateway means it is perfectly situated to create a logistics hub,” Al Jawini explained.

“Dammam is just a few hours by car to several capitals. Kuwait, Bahrain and Qatar are all within driving distance. The business is there for the region. The largest companies – particularly oil and gas businesses – are close by. There are requirements for travel to many places in the world, and for goods.”

Al Jawini believes tourism could also benefit the airport.

“The region is on the east coast. There are beautiful beaches and easy access to the capital. With government movement towards easing visa requirements, there will be great demand,” he said.

Dammam was recently granted rights to bring Umrah traffic from South East Asia to Saudi Arabia via the airport, with transfers to domestic airlines to Jeddah and Medinah.

International airlines are also seeing the potential in King Fahd and now it has some 37 airlines serving 60 international and domestic destinations.

With Saudi Gulf establishing its main base at KFIA, Al Jawini sees a bright future for domestic growth too.

“About 45% of our passengers are domestic. People commute north to south, east to west for business, pleasure or visiting their families. With more Saudi operators coming in we are seeing increasing frequencies and capacity growth.

#### Serve this region

“We are very happy that Saudi Gulf is based in Dammam and anticipate that it will grow significantly to serve this region.”

More land alongside the existing terminal has already been earmarked for expansion. “With another few projects we will announce this year, we can increase to 15 million. Then comes major expansion. Half the assigned terminal area remains unused; that will be a mega-project. We have to decide when we do require that space and then start construction accordingly.”

One thing is for sure, Dammam will be ready to serve the growth. ■

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*Dubai's Airport Show has developed into one of the largest events of its kind for the airport industry and, as **Mohamed Ali Ahli** reports, it is big business as the MENA region continues to spend on infrastructure projects.*



Jeddah's latest terminal development boosting Middle East airport business.

# TERMINAL VELOCITY

## HOW TO SPEED UP THE TRANSFORMATION OF TRAVEL

**W**ith the growing forecasts for air travel over the next 13 years seeing a doubling of passenger numbers and a global requirement for more air freight, it is no surprise that airports need to be growing too.

And the Airport Show was the place to be.

This year, the 18th edition was the largest annual event of its kind and hosted more than 350 exhibitors from 60 countries, with the largest number of dedicated pavilions ever representing Europe, the US and Asia, along with more than 7,500 visitors. There were 75 airports represented at the event.

The total value of the global airport construction projects pipeline stands at \$721.7 billion, according to the event organisers. The US and China account for the largest shares, with project pipelines valued at \$90.4 billion and \$76.7 billion, respectively.

Asia-Pacific has the highest value pipeline, at \$291.2 billion, followed by the Middle East and Africa (MEA) with \$163.5 billion.

The Global Airport Leaders Forum (GALF), which ran alongside the Airport Show, focused on the development of new technologies that will improve the efficiency of the airport business.

### Two places where you have to queue

"There are only two places in the world where you have to queue these days," said Paul Griffiths, chief executive of Dubai Airports. "That is the Post Office and the airport. I want to give the Post Office the monopoly."

Griffiths explained why there was such a need in investment in airport infrastructure and technology and laid out the impact the industry has on global commerce.

"Currently, the industry supports 298 million jobs globally and, by 2020, the figure will rise to 382 million," he said. Most of the jobs will be created in the Asia Pacific region. Around \$7.6 trillion was contributed by the aviation industry to the global gross domestic product (GDP) during 2016 and it will be \$11.5 trillion by 2027 globally.

"All these numbers show future travel looks very bright," said Griffiths.

Speaking on the topic: 'Travel & tourism – the beacon of hope', Griffiths highlighted the importance of innovative technologies that will change the shape of future travel and tourism.

He said that artificial intelligence (AI) will be a game-changer for future travel and it will ease the life of passengers.

He said the machine will be faster, better and also cheaper for

Continued  
on Page 76

## CONTINUED FROM PAGE 75

most of the things we do today. "Statistics show a decline in employment in most sectors, particularly industries, because of the increasing role of technology. The World Economic Forum study predicts 7.1 million jobs will disappear," he said.

He pointed out that today around 10 million passengers step on board an aircraft every day around the world and, by 2034, the number of passengers would jump to 21 million globally. Again, the majority of growth will come from the Asia Pacific region, with 1.8 billion passengers in the next 15 years.

Ibrahim Ahli, deputy CEO of Dubai Air Navigation Services (DANS), said the air traffic management (ATM) technology also had to keep pace. He emphasised the importance of cutting-edge technologies coupled with research and development.

"DANS, for the first time in the history of the UAE and the entire Middle East region, carried out a complete restructuring of air space in a mission to meet the everyday growing demand in the aviation sector," he said. "This included its capacity enhancement and further efficient utilisation of air space between civil and military departments.

"We deliver an average 1,500 aircraft movement daily in Dubai airspace." He added that this figure is expected to grow significantly.

**Infrastructure projects**

For many of the delegates at the show it was the prospect of the 152 active aviation-related infrastructure projects in the Middle East – currently having reached an identified spend of \$57.7 billion – that most caught their attention.

Saudi Arabia accounted for the largest share of project value, followed by the UAE and Kuwait.

According to the Centre for Aviation (CAPA) data, up to \$1.1 trillion is to be spent on airport construction globally – this is broken down as \$255 billion being invested in new (greenfield) airport projects around the world and \$845 billion in projects such as new runways and terminal buildings, runway and terminal extensions.

In the Arab world, Tunisia will build a new airport that meets international standards by 2030. With an estimated cost of \$840 million, the new civilian airport will be the tenth in the northern African country.

Egypt is spending \$18.5 billion in building three new airports, including the New Administrative Capital Airport, which is expected to be completed in 2019. The Sphinx International Airport is slated to open this year.

In Saudi Arabia, the new Taif International Airport is expected to open in December 2020. The biggest Arabian Gulf state has 27 airports and the Government plans the development of four new airports.

By 2019, Riyadh's King Khalid International Airport plans to increase its total capacity to handle 24 million international passengers yearly.



**“DANS, for the first time in the history of the UAE and the entire Middle East region, carried out a complete restructuring of air space in a mission to meet the everyday growing demand in the aviation sector.”**

IBRAHIM AHLI

The Sultanate of Oman, which earlier this year opened a \$1.8 billion 'silent terminal' with robots directing passengers, hopes it will be among the top 20 airports in the world by 2020. Three development phases are expected to boost the number of passengers at the airport to 24 million, 36 million and finally 48 million.

Three regional airports are also under development in Ad Duqm, Sohar and Ras Al Hadd.

Bahrain is building its second international airport on an artificial island at a cost of \$1.1 billion, with the project's first phase expected to be completed in the third quarter of 2019. The terminal will quadruple the capacity, from four million passengers per year to 14 million. Kuwait is constructing a new \$4.3 billion airport terminal to handle 25 million passengers per year. Spread across 708,000sqm, it will be able to accommodate all aircraft types, with the ability to serve 21 A380s. According to forecasts, passenger traffic is expected to exceed 23 million in 2027.

Terminal 4 and the Al-Jazeera passenger terminal are expected to be completed by mid-2018, while the new Kuwait International Airport will be ready by 2020.

Construction of airport-related projects in the UAE is progressing at a brisk pace. Fujairah International Airport is undergoing a \$180 million expansion programme.

**Revamp programme**

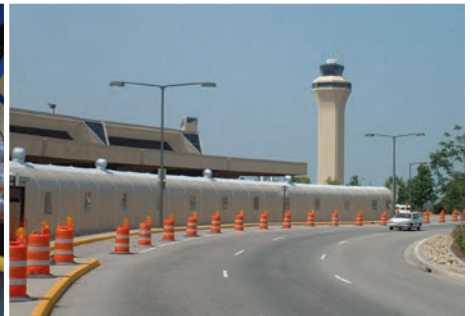
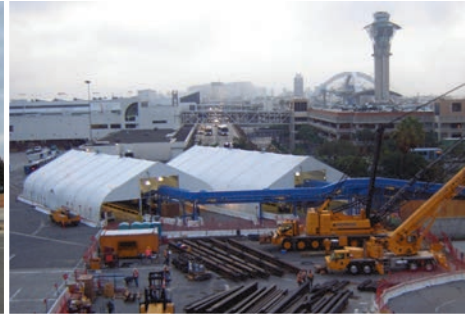
Sharjah International Airport will also be put through a \$410 million revamp programme to help it serve increased passenger traffic. It plans the construction of new terminal in 2019, with first phase to open in 2021 in a move that will increase the airport's capacity to 25 million passengers. The full project is expected to be ready by 2025. It is part of an AED1.5 billion expansion plan.

Abu Dhabi is constructing a mega midfield terminal costing AED10 billion (\$2.7bn) to handle up to 84 million passengers per year when it opens, although it has been delayed. Dubai is continuing to develop its second airport at Dubai South/Dubai World Central/Al Maktoum Airport, or even more recently The Cosmoport.

It will go head-to-head with the New Istanbul Airport, which begins operations later this year, to claim the spot as the world's largest global gateway, with capacity for more than 160 million passengers per year.

The New Istanbul Airport – the biggest infrastructure project in the history of Turkey at \$10 billion – will initially have two runways, expanding to six by 2028. At 67.6 million sqm, the airport would be the largest by size in the world, targeting capacity of 90 million passengers per year.

Further across the region, in Libya, Tripoli has set aside \$2.1 billion for airport construction projects, while Algiers has set aside \$952 million. ■



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The CAPA organised Global Airport Leaders Forum tackled key issues affecting the industry through a series of presentations and panel debates.



## Data drives the airport passenger process faster

The immigration counter process at Dubai International Airport has been reduced to just six seconds, compared to 40 seconds previously, according to Thani Al Zaffin, director general and board member of Emaratech.

Speaking in the panel discussion on airport collaborative decision-making at the Global Airport Leaders' Forum (GALF), running parallel to the Airport Show, Al Zaffin said: "Our goal is to make the customer happy with an enjoyable experience."

He said the immigration procedure improvement had been achieved through data intelligence, as 90% of the passengers were pre-cleared.

He also talked about smart trolleys. "We have invested in intelligent trolleys. You can start shopping with a smart trolley and it will guide you to everything and all the way to the boarding gate. This is what we have done."

Industry experts said smart airports would improve passenger experience and would help diversify airport income streams significantly with the implementation of new technologies.

They said non-aeronautical revenue sources – car parking, land rents, terminal concession, and advertising – contributed significantly to global airport revenues.

Airport Council International (ACI), in its latest report,

mentioned that non-aeronautical revenues of airports account for around 40% of total revenues. In 2016, global airports generated \$152 billion total revenue, according to ACI.

A three-member panel, moderated by PA Consulting partner David Huttner, debated ways to diversify airport income streams as new technology comes in.

Responding to the moderator question, Airport International Group CEO, Kjeld Binger, said: "Size and region matter for digital transformation."

Giving examples of Asia Pacific and America, Binger added: "It's all about knowing your customer. You need to know their needs in order to try to target your efforts in advertising. But, even then, it's not just a straightforward situation. The level of technical expertise in various regions is different."

### Commercial revenue

Another panellist, PS Nair, CEO of India's GMR Group, said: "When we took over Delhi's Indira Gandhi International Airport, the commercial revenue was negligible. Today, the same airport is ranked number 1 in the world in service quality."

BMR Group operates Rajiv Gandhi International Airport, Hyderabad and Mactan Cebu International Airport in the Philippines.

Panellists at the airport privatisation and infrastructure financing forum put the spotlight on airport privatisation, especially Saudi Arabia, where the GCC region's largest country is using the concession process.

The panel moderator, Dr Fethi Chebil, director general of PrivateAir Saudi Arabia, said the kingdom was trying three main models for the privatisation of its country's airports.

The first method was to corporatize the management of the airport, which was done for Dammam and Riyadh, he said, adding that the second model is public-private-partnership and the third one is management contract, which was done in Jeddah recently. ■

## SHARJAH IN MODERNISATION MOVE

One significant announcement at the Airport Show was by Sharjah International Airport, which awarded Frequentis and its UAE partner, Bayanat Engineering UAE, the contract to modernise its voice communication infrastructure and replace the existing Schmid Telecom system.

The tower at Sharjah International Airport will be equipped with the Frequentis VCS3020X, which will ensure the airport benefits from the best-performing air traffic control voice communication solution, together with rapid deployment and the lowest total cost of ownership.

The Frequentis system provides flexible integration of the existing analogue and digital radio infrastructure, which will enable Sharjah to manage all communications between the tower and the cockpit with minimal air-ground delay, while providing the best voice quality.

The fully redundant solution also comprises a multitude of interfaces to external systems. It is ready for future internet protocol (IP) radio and telephone connectivity and is compliant to the European Organisation for Civil Aviation Equipment ED-137B EUROCAE standard.

In 2017, Frequentis and Bayanat completed similar projects at Al Bateen and Delma Airports in the UAE.



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*Honeywell used the Airport Show to unveil a new smart airport technology that helps enhance the safety and efficiency of airside operations.*

## Honeywell gets smart with NAVITAS system



**Honeywell International's Raghu Seelamonthula demonstrated the new system at the Airport Show.**

The new system is set to assist personnel in visualising and routing aircraft movements – from enhancing situational awareness about traffic conditions and more safely expediting aircraft turnaround times, to automating fault diagnostics for airside equipment – all despite the increasing complexity and stress associated with today's airport operations.

It is called the Honeywell NAVITAS software suite and it intelligently integrates air and ground traffic control with maintenance operations, so airports can more easily accommodate growing air traffic while promoting safety and on-time performance.

### Silo operations

According to Honeywell, on many occasions there are silo operations in place on airports, sometimes leading to confusion. The technology giant has worked across the board to gain approvals for the new software and developed it to comply with the latest industry standards set forth by organisations – including the International Civil Aviation Organization (ICAO), European Aviation Safety Agency (EASA), International Electrotechnical Commission (IEC), Federal Aviation Administration (FAA) and European Organisation for Civil Aviation Equipment (EUROCAE).

“Airports around the globe are seeing dramatic increases in traffic and, while that makes the world more connected, it increases complexity to ensure safe and reliable operations,” said Sonja Strand, vice president and general manager for Honeywell's global airports business.

“NAVITAS helps orchestrate these complex

environments like never before through mobile applications, dashboards and heads-up displays that are intuitive. By harnessing the power of the ‘internet of things’, we’re making data user-friendly, and making airports smarter in the process,” she said.

There are four key modules to the NAVITAS system – tower manager, engineering manager, surface manager and performance manager.

According to the company, tower manager helps improve the productivity of air traffic controllers by enhancing situational awareness of airport surface operations. It gives controllers access to rich, real-time information on ground, air traffic and meteorological conditions, presenting the information in a single, easy-to-use interface, and providing visibility into a multitude of traffic events, while reducing the chance for error.

The system helps manage the air traffic controller's responsibilities, while making it easier to issue and track aircraft clearance information to keep landings and take-offs safer and on time.

### Enhanced ground traffic safety

Surface manager helps airports get more out of their existing infrastructure by enhancing ground traffic safety, fluency and throughput in a wide range of weather conditions, while helping to reduce their fuel burn and carbon footprint.

The module also provides the software necessary for airports to use all four levels of an advanced-surface movement guidance and control system (A-SMGCS), including surveillance, routing, guidance and airport safety support, along with enhanced movement conflict detection and resolution, which can include ‘follow-the greens’-based guidance that automatically illuminates lighting on the tarmac to guide aircraft to clear taxiways.

Engineering manager is said to help engineers and technicians manage maintenance by enabling them to more effectively monitor system health, perform fault diagnostics and to streamline workflows, which also often helps reduce operational costs.

It features a mobile interface and automates the diagnostics and failure reporting, while simplifying manual tasks and reducing paperwork, giving personnel better visibility into the availability, reliability and performance of airside systems. Personnel can easily create, manage and issue work orders to resolve issues and keep equipment up and running.

Finally, the performance manager features dashboards that allow airport staff to collaborate and analyse operations in line with key performance indicators. The module, which is accessible both on premise and remotely, provides access to a common base of holistic information and allows for the application of big data analytics for real-time and predictive insights, often enabling more efficient and informed decision-making. ■



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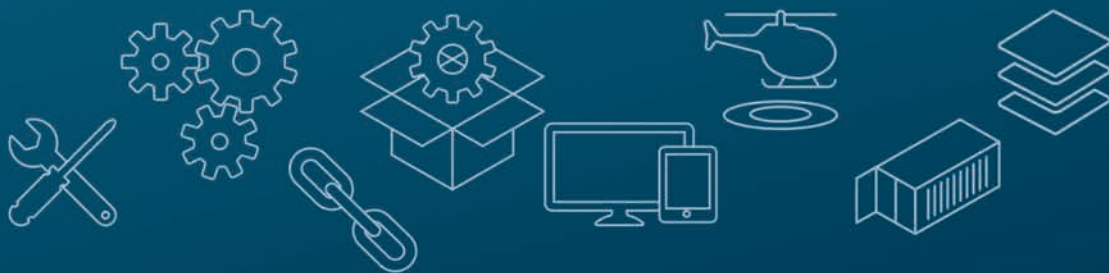
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*Counterfeit parts are a threat to safety, reliability and profitability of operators and MROs alike. Chuck Grieve has been looking at the problem.*

## Fake parts a real threat



The potential for fake parts could spread across the aircraft from landing gear to carbon brakes.

**T**hey're called suspected unapproved parts – SUPs for short. When an industry gives something like that its own acronym, you know there's a problem.

The Federal Aviation Administration (FAA) says 3,000 SUPs have been discovered since 2011, when they were simply called bogus parts.

Whatever the underlying causes – cost control pressures, profiteering, a shortage of genuine original equipment manufacturer (OEM) parts – where a demand exists, someone will act to fill it.

An industry source with links to the Middle East MRO sector said safety is the main issue with SUPs.

"Carbon brakes are typical," he said. "Some countries manufacture their own because of the price of carbon. If an aircraft has unapproved parts installed, it's not as certified, so it can't have type approval. That invalidates its insurance. You can imagine the ramifications in the event of an incident.

### Procurement decisions

"Some people out there want the cheapest part and their organisations use cost as the sole factor for procurement decisions. For us, if it's too cheap, the alarm bells ring."

The FAA is trying to introduce more stringent safety checks to ensure any parts entering the supply chain have the correct paperwork and the technical director does the final sign-off. "Our sales people can't purchase something without technical oversight and approval," he said. "That's how we control it."

A report by the Aerospace Industries Association said the supply chain suffers if counterfeit parts, whether they are electronic, mechanical or other, make their way into stock and on to aircraft. It cites security and safety risks, costs to mitigate risk and replace failed parts, and reputational damage, among others.

Recently the US Department of Transportation's

inspector general criticised the FAA for "ineffective" oversight of industry actions to remove SUPs from the aviation system.

This prompted US Congressman Peter DeFazio, from Oregon, to point a finger of blame at MROs outside the US. "A lot of our airlines have outsourced their heavy maintenance overseas, where one criminal could put in a part that's going to cause a critical failure in that aircraft."

These fears were compounded by a whistleblower, who claimed some parts manufactured in China were made with inferior materials and processes, and then shipped with fabricated documentation to conceal the violation.

With demand for spares on some popular engines predicted to outstrip supply from next year, the pressure to cut corners can be a concern.

Analysing forecasts for CFM56-7B and -5Bs and V2500s, aviation consultancy IBA says the spares problem is exacerbated for MROs and operators because there are so many of these engines flying.

### Limited supply

Spares are currently in very limited supply and unless more are generated by engine retirements and aircraft teardowns, or airline-held spare stock absorbs some of the demand, IBA expects engine inductions and longer turn-around times (TATs) will create an MRO logjam.

However, an IBA spokesman pointed out that the aviation part supply market is highly regulated and controlled. "We are confident that the safeguards in place throughout the supply chain are sufficiently robust to cater for all situations and do not see that parts shortages would result in a risk that standards would be compromised."

Elsewhere, the industry has taken steps to reinforce these controls. In 2015, a cooperative industry effort resulted in the launch of the counterfeit avoidance accreditation program (CAAP). Run by the not-for-profit Performance Review Institute (PRI), it aims to mitigate both the risk of introducing counterfeit parts into the supply chain and the cost of compliance.

The Coalition Against Counterfeiting and Piracy (CACAP), set up by the US Chamber of Commerce, says the long life cycles of aerospace and defence, plus diminishing sources of supply and material shortages, make them attractive targets for counterfeiting. CACAP produces a manual on the subject for industry.

Certification to the AS9100 standard requires organisations to take steps against counterfeit products. These broadly include staff awareness training; selecting and buying only from trusted sources, who guarantee traceability of parts; robust inspection, testing and verification to prevent counterfeits from entering stock; and monitoring the obsolescence of parts to make design decisions appropriate to the service life of the product. ■

**6 If an aircraft has unapproved parts installed, it's not as certified, so it can't have type approval. That invalidates its insurance. You can imagine the ramifications in the event of an incident. 9**

# Engines power MTU's

*MTU Maintenance sees good growth opportunities for MRO in the Middle East. Sami Ben-Kraiem, the company's vice-president marketing and sales, Middle East and Southeast Asia, talks to Chuck Grieve.*

**W**ith Middle East fleet growth forecast by global consulting and technology services company ICF to be around 7% over the next 20 years, MRO operators are looking at their sector developing alongside at a compound annual growth rate (CAGR) of around 5.6%.

This is approaching double the predicted global average CAGR of 3.1% – good news for MROs able to deal with changes such as the influx of original equipment manufacturers (OEMs) into the aftermarket and the growing importance of leasing.

“The largest portion of MRO spend will be on engines, so this is a healthy market to be in,” said Sami Ben-Kraiem. It is “a key region” for MTU Maintenance, part of the MTU Aero Engines Group based in Hannover, Germany.

The MRO, which describes itself as the world's largest independent provider of commercial engine maintenance, repair and overhaul services, plans to expand its regional sales force and on-site support services “to increase our proximity to customers”.

#### Presence in the aftermarket

Ben-Kraiem noted the trend in the Middle East – as with elsewhere in the world – of OEMs increasing their presence in the aftermarket, especially for newer engine types.

The market is currently in a transition period from older and current generation aircraft to next generation. “We expect the majority of the engines in the newest aircraft generation to be under OEM contracts, in particular in the early years of operations.”

As the Middle East fleet has an above-average proportion of wide-bodies, MTU sees most of the expansion in MRO activities on engines such as the GE90 Growth, especially as these engines age and migrate from first to second-tier operators, both within and beyond the region. Ben-Kraiem added: “We have also been seeing strong demand for narrow-body engine services



**Sami Ben-Kraiem:** “The largest portion of MRO spend will be on engines, so this is a healthy market to be in.”

## Competing with OEMs in the aftermarket

**MTU Maintenance has “a multipronged strategy” to adapt to an MRO environment in which OEMs play an increasing role.**

**This includes collaborating with airlines, such as China Southern, and with other MROs, such as Lufthansa Technik, with which MTU launched a joint venture (JV) in December 2017 to service geared turbofans. The two German companies also have a JV in Malaysia that specialises in repairing airfoils.**

**Through MTU Aero Engine's risk and revenue-sharing partnerships, MTU Maintenance is also part of the MRO networks of OEMs on programmes such as the PW1100G-JM and GENx.**

**Ben-Kraiem said the company places continued importance on its portfolio of more than 30 engines, as well as continually adapting its products and integrated solutions, which include leasing, asset management and MRO for customers.**

and are experiencing an increase in CFM56-5B and V2500 shop visits from the region to our facilities in Hannover and Zhuhai.

“Our focus in the coming years will also be on the V2500, CFM56-5B/-7 and the CF34-8/-10 engine families as they become more mature.”

For such assets, MTU Maintenance has a mature engine programme focusing on alternative MRO – such as repairs, used serviceable material and customised worksourcing – as well as alternatives to MRO, such as green-time leasing.

Worldwide, more than 40% of today's global commercial fleet is under operating lease, as investors increasingly own engines. It's a trend that can also be seen in the Middle East, said Ben-Kraiem. Here, the share of fleets under operating lease has grown from 28 to 38% in the 10 years between 2007 and 2017.

He said MTU's customers are showing “growing interest” in the company's portfolio of lease services, which are tailored to the specific requirements of the Middle East region.

# generation gain...

For example, MTU provides spare engine support with short-term leasing for engines such as the CFM56, V2500, CF34 and GE90, as well as longer-term services, including the sale and leaseback of high-value engines such as the GENx and the GE90. These transactions are handled by Sumisho Aero Engine Lease BV, a joint venture between MTU Aero Engines and Japan's Sumitomo Corporation.

Lessors, themselves, are becoming more actively interested in MRO and in managing their most valuable assets – engines. As a response to this, MTU Maintenance has been developing a portable MRO solution for both lessors and lessees.

“This solution reduces exposure for all parties and makes transitions between lessees easier and more cost-efficient by carrying MRO forward throughout the lifecycle,” said Ben-Kraiem.

MTU plans to add leasing specialists to its regional presence as part of the expansion of its sales team.

As another example of MTU Maintenance's forward thinking, the company recognised the benefits to the customer of predictive maintenance through engine trend monitoring (ETM) and introduced its own independent ETM system more than 15 years ago.

## Unique in the industry

The beauty of the system, which is based on engine data from flight operations and shop visits, is that it's not restricted to a single engine type. “For example,” said Ben-Kraiem, “we can monitor a customer's GE90 and V2500 fleet with the same tool. This is particularly helpful for engineers and technical managers – and unique in the industry.”

New features introduced recently to the system as part of its continual development and optimisation include prediction of remaining on-wing time, automatic diagnostics and quick fleet analysis.

“The remaining on-wing time prediction is based on critical performance parameters like exhaust gas temperature (EGT) margin,” said Ben-Kraiem. “Automatic diagnosis helps us identify the root cause of a trend shift.”

“The quick fleet analysis tool lets us review the on-wing deterioration by engine serial number (ESN) and shop visit effects.”

“There are tangible benefits for customers who have been using our ETM system for a number of engine runs as this helps us understand the patterns that are unique to them. This, in turn, enables us to better plan shop visits and logistics and manage their fleets. As a result, we can create savings on parts for our customers and shorter turn times.”

Predictions of remaining on-wing time are particularly useful as they give fleet management



MTU has been developing a portable MRO for lessors and lessees.

staff ample notice of a removal, which allows them to search for suitable used parts with significant cost savings to the operator.

“This always works better the more access one has to fleet performance data and history,” said Ben-Kraiem. “We combine ETM with our engineering and workscope expertise to optimise solutions for our customers.”

“Essentially, it's always a holistic and highly customised process.”

## Countering the impact of harsh environment ops

Dealing with aircraft operating in harsh environments, such as the Middle East, prompted MTU Maintenance engineering specialists to look into developing their own high-tech repair capabilities.

Two proprietary solutions evolving from these efforts are a CMAS-resistant thermal barrier coating (TBC) to counter the effects of calcium-magnesium-aluminium silicates (CMAS) and MTU Maintenance's erosion-resistant coating for HPC airfoils, ERCOateco.

□□□□□

Ben-Kraiem said these treatments reduce scrap rates, improve the durability of the hardware and reduce the specific fuel consumption (SFC) of the engines.

“Such repairs are a very cost-effective way to help operators combat high material costs,” he said, “and considerably increase engine on-wing times.”

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*Little things can make a big difference in the MRO shop environment.*

**Chuck Grieve** looks into industrial cleaning practices and their impact on personnel and business.



Replacing rags in the workshop with purpose-made lint-free cloths is a step toward H&S compliance.

## Let's Tork about cleaning culture

**T**urnaround time, cost and reliability are major factors dictating where airlines and other operators place their MRO work. For any shop to remain competitive, it must satisfy those needs without compromising on quality or safety.

In recent years, the workshop environment has come under increasing scrutiny as health and safety (H&S) and environmental considerations take on more significance.

Europe's registration, evaluation, authorisation and restriction of chemicals (REACH) regulations addressed the manufacture and use of chemicals. Various legislation and directives such as Article 22 of the UAE's Public Health Law give employers a legal duty to assess risks that could affect the H&S of employees. In the workshop, technicians may still risk exposure to high levels of volatile organic compound (VOC) emissions from some of the solvents commonly used in MRO work and cleaning procedures.

### General maintenance

By the nature of their job, MRO technicians spend time and effort on general maintenance tasks such as cleaning and wiping. But these low-level tasks call for the right tools in the same way that the more sophisticated operations can't be performed correctly without the proper tools.

Tork, a Swedish manufacturer of cleaning products, argues that replacing rags in the workshop with purpose-made lint-free cloths is a step toward H&S compliance that can also make a significant impact on the bottom line.

"The uneven performance of rags holds implications that limit efficiency and flexibility of operations," said Anders Hellqvist, the company's assortment manager, wiping and cleaning. "New alternatives are safer to use and more efficient."

Aerosol International, founded in Dubai in 2014, highlights the H&S benefits of the widely approved solvent Lotoxane Fast, which it calls "a versatile alternative to more hazardous products".

It claims to reduce solvent vapour and VOC emissions during use, making it inherently safer. A line of lint-free degreasing wipes, impregnated with Lotoxane Fast, features in the company's product list.

Almadion International sales manager, Jose Martelino, said environmental and user 'friendliness' is now a given in the majority of products used in MRO workshops. Water-based solvents from manufacturers such as RoboChem, which Almadion distributes in the Middle East, were formulated as alternatives and replacements for potentially more harmful hydrocarbon-based products.

"They're mindful of what products they come up with," said Martelino. The European market demands a balance of quality, safety and technology to comply with its REACH regulations, and within the scope of what OEMs stipulate for use on their products, UAE operators try to emulate this.

### Business gains

Hellqvist said operators "expect the same standard of cleaning" in the Middle East as in Europe, America and elsewhere, adding that new customers are surprised by the business gains possible from such a simple switch as replacing workshop rags with a purpose-made industrial cleaning cloth.

Tork was recently selected by a leading European airline to supply cleaning products for its local MRO in the Middle East. Hellqvist said the company hopes to build on this success in the region, expanding its reach to major airlines that emphasise quality and environmental impact.

For Go Aviation Middle East, employee H&S is seen as a differentiator in the competitive area of aircraft cleaning. The company deploys a fleet of trucks to MROs and FBOs around the UAE and Saudi Arabia to carry out what it calls a hybrid wash that combines elements of dry and wet washes for aircraft exteriors.

Among its services, Go Aviation offers sanitizing and disinfecting for aircraft that travel to regions identified by the World Health Organization as posing health risks to travellers. Go Aviation worked with consultants to redesign its workers' uniforms to incorporate the latest safety technology.

Hellqvist said studies show that a clean environment influences the speed of workflow, and a proven first step to that environment is having effective cleaning products such as Tork's industrial cloths, which "save technician time and effort, and decrease solvent consumption, guaranteeing a more health and safety-conscious environment.

"Individuals can work in a smarter and safer way, increasing worker satisfaction as the maintenance task can be completed more quickly, ultimately improving processes in the workplace."



# HONEYWELL PICKS HELICONIA AS SERVICE ACE

**H**eliconia Group, the global operator of helicopter services, has become Honeywell's approved helicopter avionics dealership for northern Africa.

Under the agreement, helicopter operators can now use Heliconia's Marrakech base as a service point for their aircraft, limiting downtime and making upgrades easier.

Operators will also benefit from Heliconia's expertise in Honeywell International's integrated avionics systems and satellite connectivity systems.

"Access to local service, support and upgrades is a must-have for any operator; reliable equipment is intrinsic to safe and efficient flights," said Chris Krajewski, CEO, Heliconia Group.

"We are proud to be partnering with Honeywell International to provide these much-needed services to our rapidly developing region in north and west Africa."

The company can provide support to meet the needs of its customers across the region, "putting Heliconia's expertise and Honeywell's industry-leading technology right on their doorstep".



According to Rudolph Louw, aerospace leader Africa, Honeywell Aerospace: "The move is a testament to our commitment to the region and a desire to improve support structures with local specialists so that operators can reduce the kind of downtime and delays that have an impact on time-sensitive operations."

As an approved dealer, Heliconia Group can provide support and services for all Leonardo Helicopters AW139 operators looking to maintain and upgrade their aircraft. This

includes the Honeywell Avionics protection plan, which helps customers control and manage their maintenance costs.

Operators can monitor the health of their fleets to limit downtime caused by maintenance delays with Honeywell's health and usage monitoring systems.

Heliconia is an international group with subsidiaries in France, Morocco and Senegal. It provides maintenance, management, training, operation and aerial services. ■



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*A major airline says it is saving fuel and trees by using a management software solution developed by Turkish company, Innova.*

**Steve Nichols** finds out more.

## Innova doing away with the paper round...

**A** system called Cabin-4, running on iPad crew tablets, was launched in March 2014. Since then it has gone through two major upgrades.

The unnamed airline estimates that, since the launch, it has been saving up to 1.5 tonnes of paper per month by doing away with bulky logs and reports.

Innova is a 1,000+ strong Apple-authorized system integrator and one of the biggest software developers in Turkey. Established in 1999, it serves its client base from main offices in Istanbul and Ankara, a manufacturing facility in Istanbul, and support offices in 12 cities across Turkey.

Innova says it has delivered solutions and services to customers in 37 countries.

Murat Kayihan, the company's senior financial technology director, said: "An airline's crew has to complete an awful lot of form filling with reports and documentation, but this can now all be done on an iPad.

"The chief purser has to maintain a cabin maintenance log, crew management schedules, frequent flyer data and much more. The iPads definitely enable a better customer interaction as well.

"A new crew management app is helping with scheduling and we have also worked on seven different modules for flight operations."

### Orders for supplies

The iPads allow the crew to file all the necessary data to the airlines' headquarters, including placing orders for supplies, filing holiday requests and working rotas for team members.

"The update process is also much faster, as the iPads can be synched in the background via Wi-Fi, either once the aircraft has landed or via in-flight connectivity (IFC) if it is fitted," explained Kayihan.

Even ensuring that the aircraft has just the right amount of water on board, which the app can calculate, can make a big fuel saving.

Prior to Cabin-4 being introduced, paper records had to be sent to the airlines' control centres and manually entered into a computer system. This made it difficult to address important issues immediately and made monitoring complicated.

Kayihan added that keeping maintenance crews updated is one of the main benefits of being able to download data to the ground while in flight.

"For example, if an aircraft is flying from Istanbul to



**Murat Kayihan:**  
"The whole process is now much more seamless."

Hamburg and a passenger spills something on a seat, the ground crew will already know before the aircraft lands and can take action immediately. The whole process is now much more seamless," he said.

Innova says it is looking to extend the crew tablet technology to other operators, and fellow Turkish company, Pegasus Airlines, has also been using a variant of the app.

"We own the source code 100%, and if airlines want to add new modules that can be done," Kayihan said. "We can also handle development work for Android devices, such as the Samsung Galaxy Tab."

Innova is also working on software for pilot training as the airline customer has recently been recruiting heavily. These new pilots all need to be certified and the Innova app allows them to be tested on different aspects of flight planning.

The airline that Innova developed the solution for currently has about 30 aircraft fitted with L-band in-flight connectivity delivered by Inmarsat's SwiftBroadband system. While not fast enough for more strenuous applications like streaming video, it can more than handle small data transfers such as those required by Cabin-4. ■

### IFC BOOST

The airline Innova has been working with is set to get faster in-flight connectivity in the future as it has committed to fitting Ku-band multi-megabit IFC from Panasonic Avionics. The greater bandwidth available means the airline would be in a good position to develop other software-based solutions for in-flight use if it wanted.

For example, Panasonic Avionics' new NEXT Marketplace retail platform is the company's response to the growing demand of airlines to increase ancillary revenues.

It says NEXT Marketplace can now start to fine tune what is put on board an aircraft for maximum revenue generation and passenger satisfaction.

*The fusion of big data, artificial intelligence (AI) and in-flight connectivity is changing the way airlines do business.*

**Steve Nichols** looks at how cutting-edge technology is changing what you eat, read, and watch on flights, without you even realising.

# Predicting what's next in the tailor-made revolution

**T**he hot topic in the airline passenger experience arena a couple of years ago was personalisation – tailoring various aspect of your flight to suit you as an individual.

But technology has moved on and airlines can now monitor not only your wants and needs, but also everyone else's to tailor what it offers. And a lot of this can be done in real time.

The change is being brought about by the advent of big data and AI systems that can monitor what people are watching on the IFE, buying from duty free, and even eating, to predict what the airline should stock up on next.

But AI is even more powerful than that. By coupling it to social media it can predict what you might want to drink before you even know it.

Sounds like science fiction?

There are plenty of companies who think otherwise.

At the Passenger Experience Conference in Hamburg in April there were a number of sessions that looked at how big data and AI could revolutionise the industry.

## Choice, control and quality

Steve King, chief executive officer, Black Swan Data, said it is all about offering passengers choice, control and quality.

"We're using the same tricks, but in a different shop," King said. "They're just techniques that already exist, but in-flight connectivity now allows us to move data on and off the aircraft.

"This allows us to use data in a more modern way, just as we do on the ground."

Black Swan Data has been working with Gategroup to better understand the demand for its in-flight catering products.

Simon de Montfort Walker, chief technology



**“ This is not about selling bandwidth as we did in the past. This is about selling services to airlines. ”**

IAN DAWKINS

officer, Gategroup, said: "The Black Swan partnership allows us to better predict passenger preferences and, thus, consumption."

Gategroup's global retail network serves 700+ million passengers a year and has to plan 120 days ahead, so forecasting demand accurately is essential.

The Gategroup/Black Swan alliance is set to deliver a platform that will allow travellers to use their personal electronic devices to browse and purchase movies, music, food, travel, duty-free and WiFi packages.

Airlines will be able to cater to passengers' product preferences on current, connecting, and future flights.

## Social media

But it isn't just a case of monitoring what people have bought previously. Black Swan says it can use big data within social media to see what is trending to make predictions about demand.

"There are 2.8 billion social media users generating 211 million pieces of content every minute," said King.

"But we can take people's opinions and create useful metrics. Everything has a trend value and we can pick up on that. This gives us a hint as to what people will want in terms of food and drink in the future."

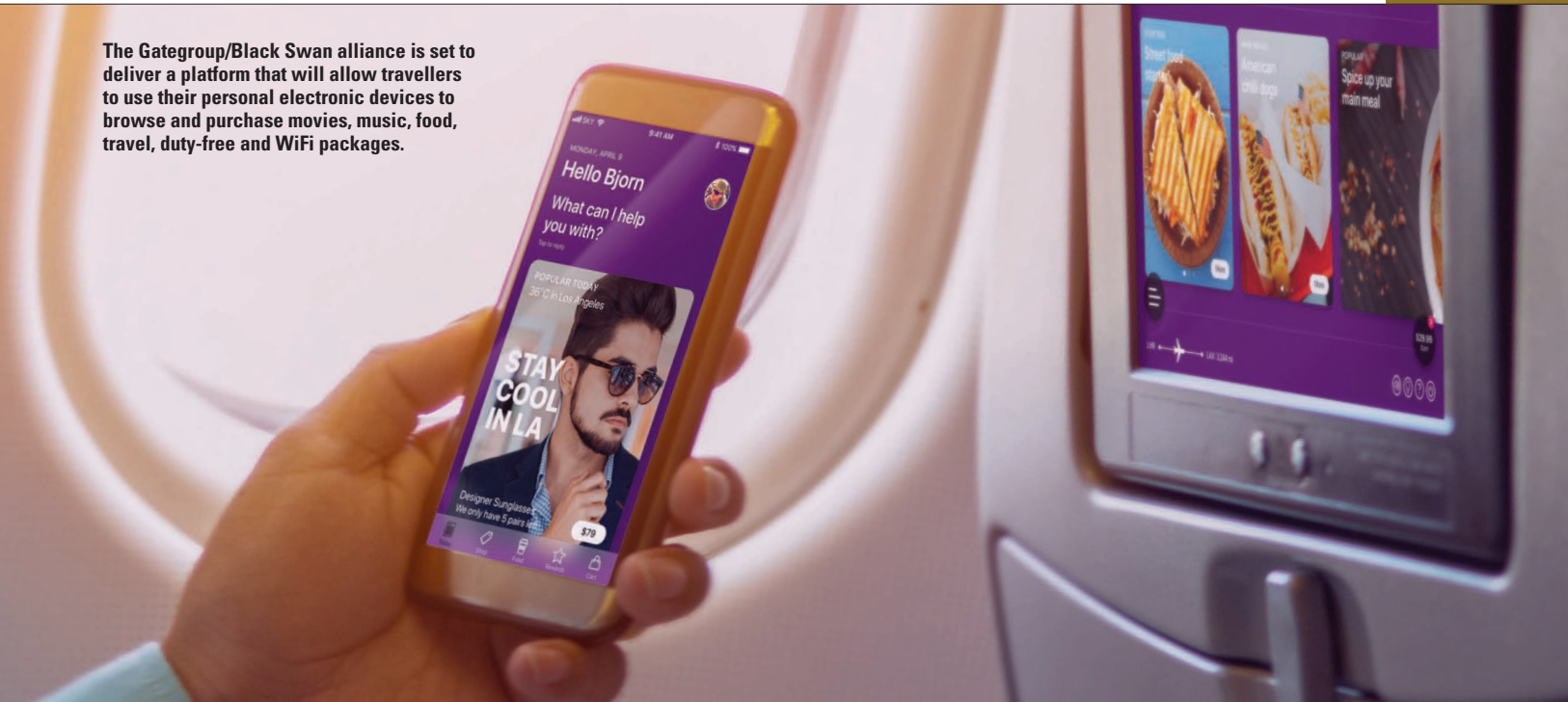
De Montfort Walker added: "A typical long-haul flight carries more than a tonne of food, which has an impact on the fuel burn. By adjusting what we load, we can typically save about £2,000 a flight in fuel.

"We believe AI will allow us to reduce wastage by half."

And it isn't just the airline catering industry that is making the most of big data.

Panasonic Avionics is combining its 'Gen 3' in-

The Gategroup/Black Swan alliance is set to deliver a platform that will allow travellers to use their personal electronic devices to browse and purchase movies, music, food, travel, duty-free and WiFi packages.



flight connectivity network, driven by faster modems and spot beam Ku-band satellites that give greater available bandwidth, with new software solutions.

The company is investing heavily in new people, AI and other software to mine the “data lake” being created by thousands of passengers worldwide.

It is setting up a new office in Silicon Valley and has selected Amazon Web Services (AWS) to help deliver data analytics and insights.

The data lake, combined with Panasonic’s cloud capabilities, means video content can be better targeted and passengers may soon receive offers and advertising that is being decided in real-time by the automated analysis of data being beamed to the ground.

#### A marketplace that never existed

In-flight connectivity, coupled with powerful AI software, suddenly opens up a marketplace that just never existed.

“As a business, we are interested in outcomes – and this is what is driving what we are doing,” said Ian Dawkins, Panasonic Avionics’ vice president, global network operations.

“This is not about selling bandwidth as we did in the past. This is about selling services to airlines. Our whole strategy is about providing a consistency of service and a huge step change with AI tools.

“We aim to lead the industry with what we are doing with these services. We want to guide the airline in new fundamental ways so that they can add value,” Dawkins said.

At AIX Hamburg, Panasonic Avionics and Gategroup announced a strategic alliance to increase revenue generation for airlines.

Panasonic’s new NEXT Marketplace retail platform is the company’s response to this

growing demand for ancillary revenues.

It says NEXT Marketplace can now start to fine tune what is put on board an aircraft for maximum revenue generation and passenger satisfaction.

It uses a data-centric cloud platform that enables stock and marketing campaigns on board the aircraft to be better managed.

For example, campaigns can be generated on the fly to sell excess duty free merchandise, food or drink on the aircraft. Airlines can create “rules” such as, if there are only one or two particular duty-free items left, start giving a 20% discount to premier customers.

“These deals can then be pushed to the airline’s frequent flyers as they sit in their seats. The system can see how the passengers react in real time,” said Samir Lad, head of digital architecture, Panasonic Avionics.

“The clever part is that you can be doing this globally.

“The system learns what works and what doesn’t. You can even predict who will ‘abandon the shopping cart’ or fail to complete the purchase. This is already happening on the ground with web sales without people even realising.

“You can then incentivise the passenger with coupons or further offers to make the sale. And, over time, the system learns and knows what to do to maximise sales,” Lad said.

The system also knows if there are major sporting events happening.

“If that is the case, the airline might want to stock up on more alcohol and less Coca Cola,” said Lad. “We are providing the platform and the insight, but it is up to the airlines as to how they wish to implement it.”

Panasonic says this offers a “plan, do, review”

marketing cycle. But where that might have taken months before, it can now be implemented and tested in real time.

And campaigns can be adjusted for different routes around the world – it doesn’t have to be a one-size fits all campaign.

A similar methodology can be used for in-flight entertainment content. That is, movies that are proving popular on some flights can be added to others, whereas content that is not being watched can be removed.

This can be done automatically on the ground via Panasonic’s Zero Touch service. This uses a global network of data transfer stations that can connect to Zero Touch-equipped aircraft via WiFi at the gate.

#### Satellite-based transfers

With the cost of 4G and satellite-based transfers coming down and speeds going up, increasingly we may see content updates while the aircraft is still in flight.

But can you give passengers too much choice? Nathaniel Giraitis, director of strategy, Smart Design, thinks you can.

“Personalisation is a critical trend we are seeing across a number of industries,” Giraitis said.

“It is an opportunity to let companies have deeper relationships with their customers. But where once it was a great idea to get more choices out to the customer, we now think this is detrimental.

“For example, there are more than 14,000 titles on Netflix and, while that sounds exciting, infinite choice is paralysing to the human psyche.

“If your customer does not see what they want in a few seconds they will lose interest,” he concluded. ■

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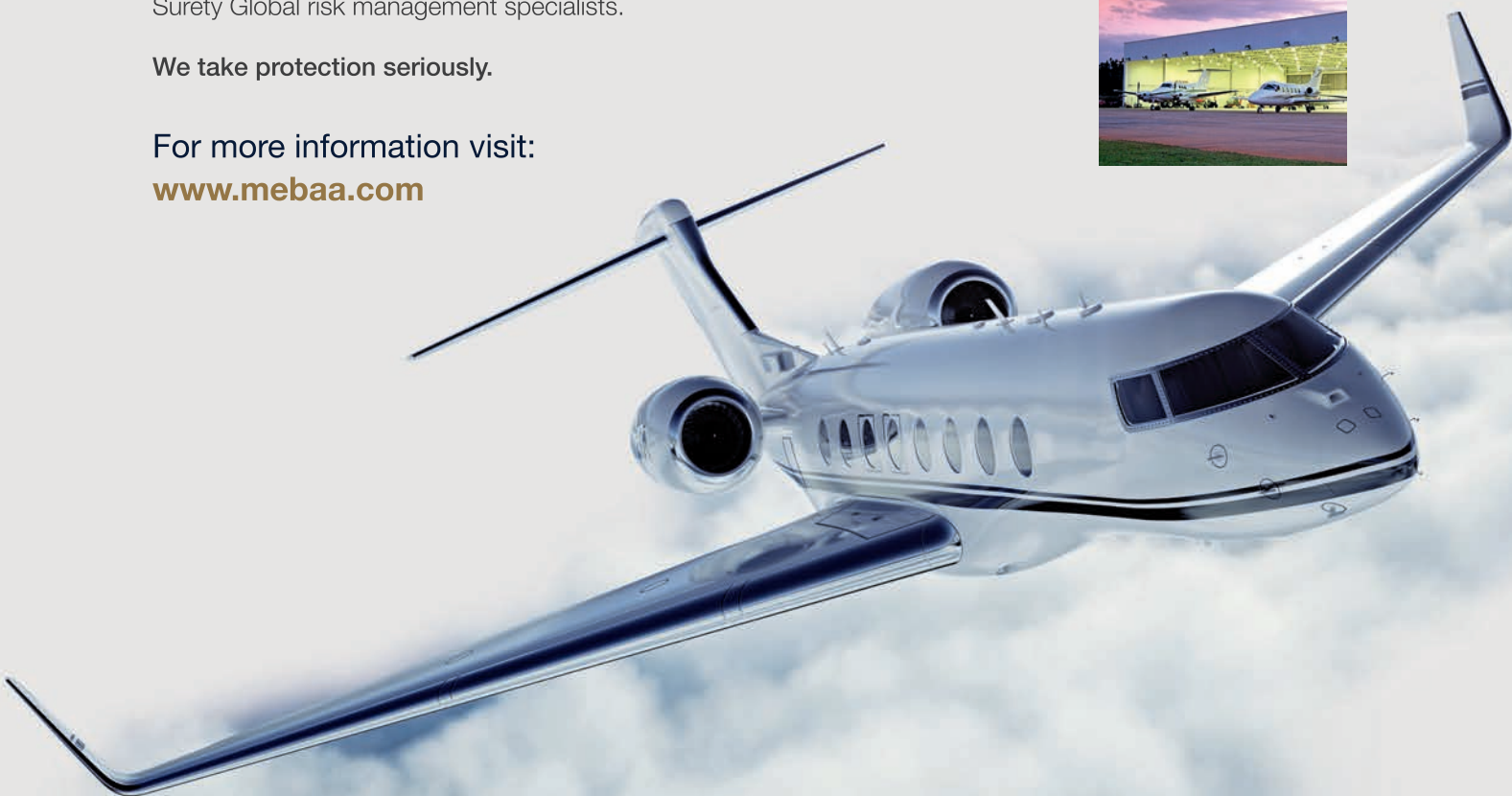
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SB-S unlocks a world of digital intelligence for airlines.

## Data link can boost safety and cut costs

*Inmarsat's next-generation SwiftBroadband-Safety (SB-S) service went live in April 2018. But, asks Steve Nichols, what is it and what will it mean for air traffic control?*

**S**B-S offers a global, secure, broadband platform for operations and safety communications for aircraft, based on satellite connectivity using three Inmarsat I-4 and the single Alphasat L-band satellites.

Satellite technology is key because ground-based VHF radio only has a limited range, which means that aircraft flying across oceanic areas can't use it to keep in touch with air traffic control (ATC).

For years, the only means of communication in remote/oceanic airspace was high frequency (HF) radio, which uses either line-of-sight or the ionosphere to bounce the transmissions to the recipient.

The problem is that HF is highly dependent on the sun. A solar flare can wipe out transmissions for minutes or hours, plus effects related to solar coronal mass ejections can also seriously impede links.

You also have to factor in the time of day, and even the time of year to pick the right frequency for reliable contact.

In days gone by, pilots reported their position to a radio operator who, in turn, relayed the aircraft position report over a telephone line to ATC. While some aircraft still use HF communications, it is slowly being phased out.

So SB-S provides a step up from VHF/HF radio communication by using data links through satellites.

The service was officially launched at the International Air Transport Association (IATA) Safety and Flight Operation Conference in Montreal.

SB-S is the result of years of work by Inmarsat to prove to the International Civil Aviation Organization (ICAO) that it can provide reliable satellite-based aircraft communications. SwiftBroadband currently hits the 'four nines' reliability figure required. That is, it provides better than 99.99% network availability.

SB-S enables voice and aircraft communications addressing and reporting system/future air navigations systems (ACARS/FANS) data transmissions, when aircraft are flying over oceans, improving safety and efficiency in oceanic airspace.

The system enables the transfer of data messages using Inmarsat's SBB connectivity via a secure, dedicated "pipe" to the cockpit. The ACARS message is encapsulated into an IP "message", which is then stripped out on the ground before being fed into the ACARS data network.

Inmarsat says the platform enables a range of value-added applications, allowing airlines to use rich, real-time data to drive decision-making, improve operational efficiency and assure the highest levels of safety in the skies.

According to the company, SB-S can reduce airlines' fuel costs and CO2 emissions through enabling connected electronic flight bag (EFB) applications, including real-time weather reports, optimised profile descent and trajectory-based operations.

### Secure access to on-board data

With SB-S, secure access to on-board data can also deliver aircraft health and performance information to the ground in real time, improving predictive maintenance and assisting in quick fault resolution for faster on-the-ground turnaround.

Increased periodic position reporting enables reduced separation minima and will unlock additional airspace capacity to match growing demand, while digital SatVoice capabilities relieve pressure on crowded VHF radio links.

The commercial service introduction follows a successful in-flight evaluation on Hawaiian Airlines' Boeing 767-300 aircraft and installations on the airline's entire Airbus A321neo fleet.

SB-S is also in flight evaluations with United Airlines and Shenzhen Airlines, and has been selected by Airbus as a light cockpit satcom (LCS) solution on its A320 and A330 families.

In addition, SB-S received the prestigious 2018 'Jane's ATC Award' in the technology category.

Captain Mary McMillan, Inmarsat Aviation's vice president of safety and operational services, said: "With SB-S in commercial service, the aviation industry can now fully realise the benefits of the connected aircraft – driving greater efficiency in airline operations, while leading the way for the future of aviation safety.

"We are excited to see the real-world impact that SB-S will have on aviation efficiency and safety in the months and years to come."

SB-S will also serve as the platform for Iris, a new programme with the European Space Agency (ESA) that will enable 4D trajectory air traffic management, which is expected over the skies of Europe by 2020. ■

*How will the aviation industry anticipate and respond to growing numbers of customers with changing habits and expectations? Mohammed Adnane Retmi, head of Orange Applications for Business Indirect, Middle East, Africa and Russia (IMEAR), argues that the future must be digital to meet demands for seamless travel.*

# Why the future of air travel must be digital

**6** In a major global region, the economic benefits of the aviation industry are very clear and we see continued growth and development of carriers and airport facilities in the UAE and the GCC.

Dubai continues to consolidate its position in global aviation as the world's number one airport for international passenger traffic, with more than 88 million passengers passing through Dubai International Airport in 2017.

However, it's not all about the numbers; it's also about the quality of the passenger experience, on the ground and in the air. This is where technology has a critical enabling role to play in response to the challenge of carrying growing numbers of passengers, sustainably.

And we are talking about significant growth. The International Air Transport Association's (IATA's) most recent 20-year air passenger forecast predicts 7.8 billion passengers will be travelling in 2036, almost double the 4 billion passengers flying in 2017. This growth threatens to put a significant strain on aviation infrastructure and test both the passenger's experience and patience.

## Launched an initiative

IATA and the Airports Council International (ACI) recently launched an initiative called the 'new experience in travel and technologies' (or NEXTT), recognising that the industry has to transform to meet future needs and demands – change is not an option.

As Alexandre de Juniac, IATA's director general and CEO, said: "We will not be able to handle the growth or evolving customer expectations with our current processes, installations and ways of doing business. And accommodating growth with ever bigger airports will be increasingly difficult if not impossible.

"NEXTT will address these challenges. Working with our airport partners, we will explore the important changes in technology and processes to enhance the customer experience. And we will ask some fundamental questions about what really needs to happen at the airport and what can be done off-site."

Clearly, NEXTT will need to explore a range of fundamental

issues and opportunities, such as queue management, the adoption of artificial intelligence (AI) and automation, to deliver efficiencies and productivity gains, while enhancing the customer experience – on site, off site, and in the air.

In fact, NEXTT is looking at the travel journeys of passengers, cargo, baggage and aircraft and, according to reports, is focusing on three areas of potential change: the potential switching of some on-site processes to off-site to enhance the customer experience at the airport – from security processing to baggage checks and drop-off; the use of tracking and identification technology, automation and robotics to improve safety, security, and operational efficiency; and better use of data and AI for better decision-making.

## Key airports

According to IATA, there are already a number of key airports involved in NEXTT-related projects, including Dubai International (DXB).

Air transport, airlines and airports are embracing technology. According to the SITA 2017 air transport IT trends insights, over the next three years 52% of airlines plan major AI programmes or research and development (R&D), and 45% of airports will invest in R&D in the next five years.

SITA sees one of the biggest transformations in aviation is the response to the changing needs and habits of passengers, who want the same connected experience throughout their travel journey, with all the convenience of advance booking, electronic ticketing and digitally-connected loyalty schemes.

Passengers today find flights, make reservations, check-in and carry boarding passes on their smartphones (more than 90% of airlines support electronic boarding passes). Airlines make their loyalty schemes available using apps and this includes boarding passes on smartwatches – SITA predicts that 47% of airlines will support these by 2019.

Flight attendants are now given tablets to check passenger dietary needs and other requests, and confirm loyalty programme status, for example. According to SITA, nearly 80% of airlines plan major investments in passenger services via smartphones over the next three years, while 71% of airlines expect to do the same for tablets.

Clearly, the future of air travel is digital.







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Olly Hiscocks with his brother Sam. Right: Snäpzz chief executive Bahram Ajodani.

# HEALTH CHIC...

**W**ith airlines offering more cabin comfort than ever before, there is also an increased importance to health and well-being in the sky with healthier food, snacks and beverages being offered.

Earlier this year, Etihad Airways collaborated with the Department of Health – Abu Dhabi to introduce ‘weqaya’, a range of healthy food items on board its flights and in its lounges in Abu Dhabi.

Weqaya, meaning ‘prevention’, is a programme established by the Department of Health - Abu Dhabi to encourage people to eat a healthy and balanced diet.

In April, the airline began to offer a number of weqaya dishes on menus in first and business-class long-haul and ultra-long-haul outbound flights from Abu Dhabi, as well as in first and business-class lounges at Abu Dhabi International Airport.

Linda Celestino, vice president guest experience and delivery, said: “As the first airline in the region to achieve weqaya status, we are both honoured and excited to promote health and wellness, not just in Abu Dhabi, but also on board our flights, which is most certainly a passenger demand as we become more aware of health and well-being.”

At the WTCE in Hamburg in April, the halls were packed with catering companies all trying to tap into the aviation market with their

*The World Travel Catering Exhibition (WTCE) in Hamburg, Germany, was packed with companies offering snacks and drinks to airlines.*

**Marcelle Nethersole found plenty to chew over.**

healthier food options – and this included a lot of the snack products.

One such company is Snäpzz, which produces a range of dried fruit, vegetable and cheese snacks.

“We offer a range of dehydrated food that is a perfect and healthy alternative to, say, a packet of crisps,” said chief executive Bahram Ajodani. “We use only the best quality organic fruit, picked fresh, washed, sliced and, using our special technology, dried to create a delicious and crunchy snack full of nutrients and no artificial anything.”

The company’s ‘special technology’ is a vacuum dehydration method that allows moisture to leave the products at a low temperature to create a crunch.

“Our new cheese range also appeals to airlines wanting to offer a complementary snack with wine in their first-class cabins. The long shelf life – two years for the fruit and vegetables and one year for the cheese – helps reduce waste and drive costs down,” said Ajodani.

Another company leaning away from snacks like fatty crisps and nuts is UK company, Olly’s Olives.

Olly Hiscocks came up with a vacuum-packed range of fresh olives, particularly with airlines in mind, two years ago.

“I am very passionate about olives and, after some research into the market, I realised the few olive products out there were committing olive treason by pasteurising them – a process which blasts the products at high temperatures and ruins their texture, taste and incredible nutritional value – and also using artificial preservatives,” said Hiscocks.

Having started out in his parents’ kitchen and moving on to a market stall, Olly’s Olives are now an award-winning product, packaged in the world’s first unpasteurised snack pouch with no artificial preservatives.

“All the packs use the finest Greek Halkidiki olives and are marinated using extra virgin olive oil,” said Hiscocks.

Continued  
on Page 98



# 2<sup>ND</sup> HAND GSE

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**BEFORE**



**AFTER**



CONTINUED FROM PAGE 96

Flavours include chilli and rosemary, and garlic and basil.

The company is about to launch its olive pouches on Australian carrier Jetstar.

“Jetstar Airways liked the shelf life of 12 months, knowing it can serve them fresh in a pouch with just a nice light marinade offering less mess,” said Hiscocks.

“Not many people think of olives as healthy but did you know they can reduce the effects of Alzheimer’s Disease by helping with memory, they show proven benefits with cancer, they are great for hair and skin, plus they’re tasty?”

Jordanian company, Mezete, already has its ambient long-storage life houmous options on its domestic airlines.

“The various flavoured houmous is offered in aseptic packaging and in a snack box with breadsticks,” said brand owner, Mai Abu Soud.

“Houmous is now popular all over the world and makes the best tasty, healthy, and filling on-board snack.”

The company will next add baba ganoush to its range.

**Healthier lifestyle**

Lots of healthy beverage companies were also at WTCE, driving home the message that not everyone likes to drink alcohol, and that we are certainly seeing the younger generation preferring to choose a healthier lifestyle but still wanting a ‘treat’ drink.

Among them was Be-Mocktails, which was actually being launched at the show by Dutch sisters Conchita Daniel, director, and Norita Daniel, manager.

“Our drinks range is vegan, natural, with no added sugar and all based on coconut water and superfood – making the drinks healthy and hydrating, as well as giving an energy boost,” said Norita Daniel.

The range includes: Be Grateful (coconut water, pineapple, graviola, and lemon), and Be Beautiful (coconut water, pomegranate, aronia and gooseberry).

Norita added that the drinks are perfect for airlines to serve on board.

“It’s simple really; alcohol is dehydrating generally but especially when you fly. These cocktails taste like a real alcoholic beverage but offer healthy clean flavours leaving you refreshed once at your destination.”

A new water brand called Angel Revive is now on the market claiming to rejuvenate the skin and combat dehydration, making it perfect for airlines.

The product, which is marketed in health shops as well as for the travel industry, is 8.2 on the alkaline scale (pure water has a perfectly neutral pH of 7).

“The history of Angel Revive is really interesting,” said David Sharp managing director of Blue Napkin, who was representing the brand at the show.

“It was sourced from a rediscovered 500-year-



From the top: Norita Daniel at Be Mocktails; Rocco Milano co-founder and mixologist of On the Rocks; and Yasmin Badiani of Phizz.

old natural spring two-and-a-half years ago in Lancashire in the UK. The water contains natural minerals and electrolytes – which are added artificially in many competitor drinks.”

For airlines, the company said it reduces jet-lag by combating tiredness and headaches, and can help with acid reflux.

“The water is also great for sports people as it helps with performance by reducing fatigue,” said Sharp. “In fact, the former Liverpool football legend and England captain, Steven Gerrard, is a major shareholder.”

Of course, alcohol is still popular on board many airlines, but brands are offering more than just beer, wine and spirits – cocktails made easy.

On the Rocks Premium Cocktails was created a little more than two years ago by former bartenders.

“We decided to revolutionise the kind of bar service offered in the air,” said Rocco Milano, co-founder and mixologist.

“We created a line of drinks that are preservative-free, all natural and authentic cocktails, but taking away the difficulty of the multistep process of pouring and making.”

Milano added: “Being a bartender, I knew what the cocktails are meant to taste of and even look like. We use fruit or vegetable juice as a colour, as opposed to artificial colours, and we only use cane sugar.

**Circular bottles**

The US-based company has a range of six cocktails, including the Aviation Cocktail – a classic from 1915. It mainly supplies to hotels and airlines, with the circular bottles provided designed to fit into cabin trolleys.

The company has been providing its Mai Tai cocktail to Hawaiian Airlines since January 2017, and it started supplying its Old Fashioned on United Airlines domestic routes in May this year.

“Cabin crew aren’t bar tenders and passenger expertise is on the rise. People pay high prices for flight tickets and expect more,” said Milano.

If you do have one of the cocktails – perhaps it would be wise to follow it with an orange tablet to hydrate.

Phizz combines a World Health Organisation-inspired rehydration formula and mix of essential vitamins and minerals.

“A typical aircraft cabin is drier than the Sahara Desert. Time at 30,000ft in such dry conditions can rapidly cause dehydration,” said the company’s Yasmin Badiani.

“Phizz helps you get more out of that little cup of in-flight water. It is designed to rehydrate you and replenish vitamins and minerals, to help your body combat associated symptoms of tiredness, fatigue and promote general well-being.”

The company already supplies Phizz to Emirates Airlines passengers in first class.

“Emirates has given us great feedback from passengers, cabin crew and pilots, who all benefit,” said Badiani. ■

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*A major new training establishment is to be built in Qatar, as part of the support structure for the Gulf nation's forthcoming massive build-up in military aviation assets. Alan Dron reports.*



CAE will supply NH90 simulators to Qatar, similar to these CAE 3000 models.

## QATAR TRAINS FOCUS ON HUGE UPGRADE

**W**hen Qatar starts to take delivery of its new fleet of NH90 helicopters in 2022, it will be faced with the problem of training crews for the European rotary-wing type and in keeping them up to speed through refresher training.

To address that situation, Leonardo Helicopters signed a contract at the Doha International Maritime Defence Exhibition & Conference (DIMDEX) in March with Canadian simulator and training specialists CAE to provide the Qatar Emiri Air Force (QEAF) with a comprehensive NH90 helicopter training facility.

The deal is valued at more than \$115 million.

The QEAF has signed up with Leonardo Helicopters for 16 NH90 tactical transport helicopters (TTH) and 12 NH90 NATO frigate helicopter (NFH) variants.

### Associated equipment

The helicopters and associated equipment will cost a reported \$3.7 billion and will be delivered between 2022-25.

The twin-engine, medium-size NH90 helicopter programme is managed by NH Industries, a company owned by Airbus Helicopters (62.5%), Leonardo (32%), and Fokker (5.5%).

Leonardo will act as prime contractor for the programme management with the QEAF and Airbus will be responsible for the final assembly and delivery of the 16 NH90 TTH aircraft from its facility in Marignane, France.

Leonardo will also be responsible for final assembly and delivery of the 12 NH90 NFH helicopters from its Venice – Tesserà facility in northern Italy.

As part of the plan, Qatar will also receive 16 Airbus Helicopters H125 light single-engine helicopters in training configuration for operation by the Qatar Armed Forces Air Academy.

The deal is the latest in a cluster of recent major aviation contracts that will see the size of the QEAF expand massively over the next few years.

Whereas, at present, the QEAF's main fighting strength is vested in 12 Dassault Mirage 2000-5 interceptors, the country has signed up for no fewer than 96 new front-line fighters – 36 Dassault Rafales, 36 Boeing F-15QA Eagles and 24 Eurofighter Typhoons.

The ramp-up in the size of the QEAF will require a corresponding leap in the training capabilities of the air arm.

As part of the NH90 contract, CAE will provide the training system for the European helicopters, including a training centre, plus a suite of simulators and training devices and training support services. These support services will include CAE providing academic (classroom) and simulator instructors to deliver the training to the QEAF. This will cover not only aircrew, but also maintenance personnel.

CAE will act as training systems integrator “to lead the overall design and development of a comprehensive training solution for Qatar Emiri Air Force NH90 helicopters”, said Ian Bell, CAE's vice-president and general manager, Middle East/Asia-Pacific.

### Design and building

CAE will lead the design and building of a new training centre facility in Qatar. This will include CAE 3000 full-mission simulators for both the NH90 TTH and NFH variants, plus an NFH rear-crew trainer for training tactical coordinators (TACCO) and sensor operators.

The rear crew trainer will be capable of networking with the full-mission simulators to provide full-crew mission training.

The contract will also include CAE Simfinity NH90 integrated procedures trainers, a winch and door gunner trainer, plus a virtual maintenance training system classroom.

CAE will also design and develop a tactical control centre to be used for managing networked mission training exercises.

The CAE 3000 Series NH90 full-mission simulators, which will be certified to level D, the highest qualification for flight simulators, will feature a six degree-of-freedom electric motion system and high-performance vibration platform to replicate vibration cues critical to helicopter pilots; a high-fidelity CAE Medallion-6000XR visual system; and a direct projection 220-degree by 88-degree extreme field-of-view dome display.

The NH90 simulators will also feature the open geospatial consortium common database (OGC CDB) architecture, an international standard for the creation of synthetic environment databases. This common database software and standardisation will enhance synthetic environment database re-use and interoperability across the Qatar Armed Forces.



Captain Paolo La Cava: "I'm confident that we will grow to become a globally-recognised aviation training centre."  
Right: The training centre houses no fewer than 12 full-flight simulators.

## Etihad widens training to external customers

*With the global airline industry facing an increasingly urgent need for pilots, Etihad Aviation Group has expanded its training organisation and made its services available to external customers for the first time.*

**Alan Dron reports.**

**M**oves by Etihad Airways Group to bring together and re-brand two aspects of its flight training system are aimed at making Abu Dhabi a global centre for a wide range of airline training programmes.

The group has combined its ground-training component with the former Etihad Flying College (previously two separate entities) and renamed the new single organisation Etihad Aviation Training (EAT), with the aim of attracting third parties to the emirate for pilot, cabin crew and maintenance training.

Flying training will range from ab initio to instructor level.

The development was announced in March and is already being actively marketed overseas. "Response has been quite good," said Captain Paolo La Cava, director, EAT. "We have an increase in third-party training compared to last year."

Previously, only Etihad Airways and its equity partner airlines, such as Air Serbia and Air Seychelles, used the facilities.

EAT operates from two locations in the emirate; Abu Dhabi houses the main centre for ground-based training, while the flying programme is carried out in the less congested skies around Al Ain.

EAT is already the home for 10 full-flight simulators, with two additional examples (the airline's first Airbus A350-900 simulator and its third for the Boeing 787-9) being delivered this year.

When they are in operation, EAT will have simulators covering the entire Airbus range of aircraft – the A320 (three simulators), A330 (two, plus the necessary conversion package for anyone requiring A340 training), A350 (one) and A380 (one). Additionally, it will have three simulators for the Boeing 787-9 and two for the 777-300ER. A flight-training device will back up each simulator.

On the flying side, EAT operates 10 Cessna 172s with Garmin 1000 avionics, six twin-engined Diamond DA42s, four Embraer Phenom 100 light business jets and two Extra

300 aerobatic aircraft for teaching the increasingly important skill of upset recovery.

EAT has already been recognised by UAE aviation regulator GCAA as an approved training organisation (ATO) and should, by the time this is read, have received similar status from the European Aviation Safety Agency (EASA).

EAT's component parts have already played a major role in the UAE national cadet pilot training programme, which has trained more than 230 UAE nationals, nearly 100 of whom are now active flight crew with Etihad. Additionally, a further 200-plus cadets are planned to go through the syllabus between 2018-22.

The Etihad Group has invested in EAT to take advantage of the steadily-increasing demand for aircrew and ground personnel around the world as aviation continues to grow at a rate of around 5% a year. "We're in the market to reduce the shortage of pilots," said La Cava. "Of course, it's a business opportunity."

EAT anticipates taking advantage of increasing demand, particularly from within the Gulf Cooperation Council nations, Europe, the Indian sub-continent, Africa and southeast Asia.

EAT will offer airline transport pilot licence (ATPL) and multi-crew pilot licence (MPL) qualifications and courses are not restricted to pilots employed by airlines: "Individuals can apply, but they have to follow the ATPL integrated course, not the MPL, which has to be sponsored by an airline," noted La Cava.

"Etihad Aviation Training is an ambitious enterprise, pursuing its mandate to provide outstanding training services to a global audience," added Etihad Aviation Group CEO, Tony Douglas.

"The growth of the business will mirror the expansion of the global training market and we are excited about our expanding portfolio of programmes and products. These services are accessible to both Etihad Airways and now, for the first time, to external customers." ■

*Could your organisation stop an experienced operative from gaining access to its premises and extracting vital information? As **Steve Knight** reports, governments and businesses across the Middle East have the chance to find out.*

# THE BLAG MARKET

**A** top security company has been offering a ‘penetration testing’ (blagging) service to UK customers for some time. However, not too many people know that the Middle East has access to a similar service.

The company – Dorset-based C3IA Solutions – works in the defence and security sectors, for government departments and within industry, serving both SMEs and multi-national firms.

Once commissioned, C3IA operatives try to talk their way inside an organisation to gain access to sensitive material.

“Company executives are often staggered by the sort of information we can extract – usually by the simplest means,” said C3IA founder Matt Horan.

C3IA also offers a similar ‘blagging’ operation in the Middle East. “Because cyber-security – particularly corporate – is improving, criminals are now switching tactics to physically enter businesses in an attempt to acquire information that they can use for nefarious purposes,” explained Horan. “This has led to a growing need for specialists, who are skilled at breaching security, to highlight where companies should improve their systems and procedures.”

## Penetration testing

C3IA has a number of such operatives, who carry out this type of ‘penetration testing’ using both simple and more elaborate techniques in order to gain access and trust.

They call it ‘social engineering’ and often make use of social media to research and make contact with their targets in the various companies and organisations.

A study in the US by Agari showed that, in 2016, 60% of leaders were, or might have been, a victim of a social engineering attack; by physical or digital interaction.

It showed that 65% of those who were attacked said employees’ credentials were compromised, and financial accounts were breached in 17% of cases.

One of the C3IA Solutions operatives, who has to remain anonymous for obvious reasons, explained: “The weakest part of any organisation is its people. They are trained to be helpful, so

## HOW TO BEAT THE BLAGGERS

Recent C3IA successes have included:

- **Technique: vishing (phoning and requesting information).**  
**Organisation: outsourced ‘secure’ service desk for a sensitive law enforcement agency.**  
**Result: C3IA operative persuaded the manager of the service desk he was an internal IT auditor over a series of phone calls and extracted sensitive information which would be of use in any subsequent attack. Also arranged to be invited onsite to continue the audit.**
- **Technique: physical penetration of a site.**  
**Organisation: repair and maintenance facility for ‘secure’ emergency services communications system.**  
**Result: C3IA operative tailgated into the site, took up a ‘hot desk’ seat, and interviewed a member of staff on security procedures for 30 minutes, claiming to be an internal auditor.**
- **Technique: physical penetration of a site and extraction of sensitive client data.**  
**Organisation: commercial operation.**  
**Result: claiming to be the new IT manager, C3IA operative spent 10 minutes on site with the retail staff and walked out with invoices containing personal information on clients including purchases, evaluations, and home addresses/contact information.**
- **Technique: sending a CD with instructions to a site.**  
**Organisation: software development agency.**  
**Result: a CD and printed instructions with company logo were sent to site by post, with a request to complete an urgent systems update and send information back to an e-mail address. This was carried out by staff after consulting their information security manager (remotely) and being assured the request was legitimate.**

when someone asks for something their instinct is often to hand it over without question.

“I get asked to try and breach all types of businesses and organisations and usually start by researching their staff online. I have a number of false identities that I use to make contact with them on social media and on LinkedIn. With this information, I can then decide how best to target the business.

“Often the clients want me to take a photo in part of their premises that should be very secure or they want databases accessed or customer details or invoices ‘stolen’. I usually find out simple things like what type of identity card and what colour lanyard the staff use and I have so many I can usually find one to match.

“I’ll then pretend to be a new employee, or from their IT support, and, because I have a bit of knowledge and information, I’m often just waved through.

“There are numerous other methods I use and, although occasionally I’ll ‘trip the wire’ and get caught, I am usually able to breach security.

“The process tests whether staff are adhering to company policies and highlights whether the policies and systems require changing.

“Often this type of activity will be completed alongside checking the computer systems by penetration testing and means we can provide a detailed security report with recommendations.”

Horan added: “Businesses and organisations are getting better at their cyber-security and now realise that their physical security is their weakest part. Testing it regularly can lead to better training for staff and it gives reassurance to customers, clients and their insurers.”

C3IA tactics will change depending on the part of the world in which the company is operating. Whereas, for example, it may be relatively easy for a UK national to pass himself off as a different kind of UK national in an English-speaking domestic environment, somewhere like the Middle East might be more tricky.

“Social engineering activities in the GCC countries will rarely be straightforward,” said Horan. “Assessing the risks of working there



**“Training, education and improving the awareness of staff can greatly reduce the likelihood of an intruder gaining access.”**

**MATT HORAN**

comes with important considerations. Firstly, it is a vast area with several distinct cultures, several different languages, and the harsh environment and the religion of Islam as its unifying themes. It is important to understand the fundamental differences (and conflict) between the Shia and Sunni Islamic blocs, and which countries align with each other; if you are to have any comprehension of how, for example, a Saudi might interact with an Iranian. Background research and the addition of intimate local knowledge, therefore, is vital if a task is to be scoped for feasibility and then executed effectively.

“A good example of this is airport security, where there is a reliance on technical countermeasures and methods of detection (e-passports, scanners), a plethora of agencies and moving parts, and the potential to identify vulnerabilities in between these sequences of activity.

#### **Two must-haves**

“In these situations, for the social engineer, the two must-haves are time (to observe, plan, and exploit an identified vulnerability) and a copy of the ‘Rough Guide’ to an area, to ensure that at least a base level of cultural knowledge is understood and utilised.

“Of course, for our operation, there is also the increased physical danger from the commonality of harsh and punitive laws, terrorist organisations, routinely-armed police and security guard forces, which we may not ordinarily face in the UK or Europe.

“Using local resources as either advisors or, as appropriate, operators, is an option which may be effective under certain circumstances, but needs to be carefully managed in terms of skill level, knowledge transfer and of course duty of care.”

Sending in an operative is usually quite an eye-opener for clients and really focuses their minds on their security and training for staff, according to Horan.

“Training, education and improving the awareness of staff can greatly reduce the likelihood of an intruder gaining access and the negative impact should they succeed,” he concluded. ■



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# AEROSPACE ON A ROLL IN MOROCCO

**Moulay Hafid Elalamy, Morocco's minister of industry, trade investment and digital economy, opens Hexcel's new plant in Casablanca.**

*Morocco's aeronautical ecosystem continues to grow, integrating new operators and new technologies.*

**Anuradha Deenapanray and Vincent Chappard spoke to Karim Cheikh, the new president of Morocco's aeronautical and space industries group (GIMAS).**

**S**ince the early 2000s, Morocco has been attracting aerospace equipment manufacturers and French SMEs like Safran Group, Zodiac Aerospace and Daher.

In 2014, new international groups such as Bombardier, Eaton, Stelia Aerospace, Alcoa and Latecoere joined in.

Today, aviation activity in the kingdom keeps on growing with more incentives given to investors.

"Last year witnessed 20% growth, mainly organic, which was the strongest performance for a decade," said Karim Cheikh, the new president of GIMAS.

"Our ecosystem has also been enriched by the establishment of key players, who are setting up or completing the missing links in the global aerospace supply chain."

One example of this was Thyssenkrupp Materials Services, which announced the construction of a sales and production site to strengthen its aerospace business. "This new site underscores our ambition to be a reliable and solid partner for our customers," explained CEO Joachim Limberg.

#### Production site

Hexcel has launched its new production site in the MidParc Free Zone in Casablanca. At the inauguration, Moulay Hafid Elalamy, Minister of Industry, Trade Investment and Digital Economy, welcomed the development, emphasising that engine ecosystems and composite materials were significantly creating added value, which Hexcel would help support and strengthen.

Four ecosystems have been launched in the aeronautics sector as part of the industrial acceleration plan. These include assembly, electrical wiring and harness (EWIS), MRO, and engineering.

For Cheikh, each ecosystem has its own challenges. "We must further integrate new technologies and strengthen local integration in the industrial fabric," he said.

Daher has inaugurated its new industrial site in Tangier. After more than 15 years of operation in Morocco, the

equipment manufacturer is now present through three sites.

"Our main intention is to improve the performance of our supply chain, to gain more maturity and added value," added Cheikh.

The new 3D metal printing plant inaugurated by the Moroccan authorities and Thales in the free zone of MidParc constitutes a major breakthrough in technologies of the future. It specialises in 3D laser aluminium and titanium printing. This plant epitomises the ambition of Thales in Africa.

Morocco's prospects for the coming years are positive and encouraging as it has a solid order book. This organic growth will double the turnover of the export sector to reach \$2 billion within five years.

#### Key sector

GIMAS wants the dynamism in this key sector of the country's economy to gain more momentum.

"We want to expand in sectors driven by the future aircraft technology, composite, embedded electronics and MRO," underlined Cheikh.

Morocco also wishes to forge cooperative ties with other regions and, in particular, with the Middle East. Morocco and the UAE signed several agreements during the fifth session of the joint Morocco-UAE commission.

Several Emirati companies have expressed interest in investing in Morocco, particularly in the aeronautics sector, due to its geographical proximity with the European Union and the United States. Moroccan companies will also explore investment opportunities in the UAE, which is a leading logistics platform for western Asia.

For Cheikh, the sector faces continuous challenges, which necessitate improved technical and industrial skills. Hence, there's a huge demand for training to meet the needs of the growing industry as well as global aerospace industry standards.

GIMAS is going to tackle the innovation challenge through the recently launched Moroccan aerospace cluster. ■



Almost 1,000 delegates from 56 countries converged on Cairo for the third Aviation Africa Summit and Exhibition. **Alan Peaford** reflects on the impact of the event, which also featured 118 exhibitors and involved 42 airlines.

# AVIATION NEEDS ITS HEART TO BE STRONG

**S**ecurity, the single African air transport market (SAATM), service support, airline strategy and aviation finance were among the key discussion points at the Aviation Africa summit, held under the auspices of Egypt's Civil Aviation Minister, Sherif Fathi, in association with EgyptAir.

Air traffic for Africa's carriers is forecast to grow 5.9% annually over the next 20 years, which is above the world average, and keynote speakers called for greater cooperation between governments and industry members to allow the continent to benefit from this growth.

North African airlines already play a major part in the African total air trade with EgyptAir and Royal Air Maroc dominating the traffic figure, but speakers at the conference urged the hosts to go further.

Addressing the theme 'How can aviation rise to the challenge of making the MENA region's beating heart

stronger?', the International Air Transport Association's Adefunke Adeyemi said: "Cardiologists will tell you that the best way to protect your heart is to keep it beating strong all year long. Translated to aviation, it means that governments and regulators must let aviation do what it does best all the time and not just at certain periods."

#### SAATM initiative

Adeyemi echoed a call by African Airlines Association (AFRAA) secretary general, Abderrahmane Berthe, aiming to ensure that African countries do not lose momentum with the SAATM initiative, which will bring an equal playing ground for all African airlines.

But she went further, demanding countries don't just sign the agreement but implement it as well.

The summit host was one of the countries that are behind the agreement, but have not yet fully implemented it. "We commend Egypt for signing up to the

SAATM," she said. "But it is important to stress here how important full implementation is to realising Egypt's full economic potential.

"We also urge other states to follow suit for their benefit and the overall benefit of the region. Protectionist policies are not beneficial and actually do more harm than good."

There was a clear message that sharing resources and collaboration will generally boost aviation business across Africa. Maintenance, repair and overhaul (MRO) is one of those areas.

EgyptAir advisor to the chairman, Hisham Nasr, said Africa represents 4% of the global fleet of 25,368 aircraft and 3.9% of the global \$75.6 billion annual MRO expenditure. The continent needed investment in new technology and human development to be able to cater for the growing demand and staff retention was an important task, he added.

Richard Hass, head of Lufthansa Technik's MRO activity in Africa, agreed

**Brian Lord: "Don't wait to be regulated upon. Don't fight it, engage with it."**



## CYBER LORD KEEPS

*There's much hype around cyber threats. To unravel that hype, Victoria Moores caught up with an expert in the field, PGI managing director cyber, Brian Lord, who spent 21 years with UK intelligence and security service GCHQ.*

**W**hen there is tension between two states, cyber-attack threats against critical infrastructure are "attractive levers", said cyber-security expert Brian Lord.

This risks aviation becoming a ripe target for geo-political collateral damage.

The cyber threat to aviation comes from two obvious places; criminals seeking to exploit companies for their own gain and governments looking to apply political pressure against another nation.

But there is a third, higher-impact threat – ignorance.

The good news is that it is "unbelievably difficult" to technically disable an airline or airport for very long, but the reputational and public-confidence impact for national-infrastructure providers can be huge. For the aviation industry, a fairly minor data breach, with ill-informed media or social-media hype, can translate into disproportionate public concern about aircraft being hacked and passenger safety being put at risk.

6 Governments and regulators must let aviation do what it does best all the time and not just at certain periods. 9

ADEFUNKE ADEYEMI



there are tremendous MRO opportunities. “We have so many customers in Africa. We want to grow our customer relationship from a supplier relationship to a higher level – first with increased cooperation and then, eventually, it could evolve into establishing joint venture companies.”

Another pressing concern through the event was cyber security. Top experts from the US and the UK shared the latest

information on cyber attacks on aviation assets.

Brian Roos, from Satcom Direct, which says VIP jets are currently facing 10 aggressive cyber attacks a month, said that often executives assume they’re safe. “Most are aware cyber security is an issue but bury their head about the aircraft. That’s dangerous.”

Airports have been one of the key targets of cyber criminals, or even

governments, and Egypt’s director general of the civil aviation authority Hany Yehia Eladawy, who is also president of the African Civil Aviation Commission (AFCAC), called on governments to put infrastructure investment first.

“Investment in infrastructure accounts for more than half of the recent improvement in economic growth in Africa and has the potential to achieve even more,” Eladawy said. ■

## THE THREAT IN PROPORTION

Lord described airlines as a “highly emotive” part of the infrastructure that can be exposed and manipulated to play on innate public safety fears. “There will inevitably be dramatic exposés, deliberately aimed at creating panic – a tactic that will be regularly used,” he said.

Another area of concern is the risk that regulators will introduce draconian rules that deal with the perception, rather than the reality, of the cyber threat.

Lord said airlines should actively work with regulators to create sensible and proportionate rules and standards. “Don’t wait to be regulated upon. Don’t fight it, engage with it. Once one airport is hit, no matter where, regardless of the reality, the regulators will go into

overdrive. Stay ahead of the game.”

Lord insists that airlines must manage cybersecurity in the same way as any other business risk. “I’m not playing down the risk. I’m trying to clear the fog to proportionately manage the risk. There’s a whole breadth of sales pitches, so people have no idea of what is good and bad.”

### Modelling process

Lord said there is a straightforward maturity modelling process, built around international information-security control measures. Airlines can use this to assess their ability to protect themselves and know exactly where they need to invest to improve. Experts come in and assess a company’s maturity to deal with

a cyber threat in 14 areas, giving them marks in each area up to five. This process takes around 10 days for a mid-sized airport.

“Any organisation that says ‘we have to have a five in every area’ is overachieving – this is the equivalent of necessitating a strip search for passengers at physical-security checks,” Lord said. “You have to ask ‘what is our target score for each of the 14 measures.’ Some will be three, others will be five.”

The main way to manage the risk is simple. Train your people. “Human beings are invariably the route into organisations. Just about every major breach wouldn’t have happened if an employee or system user had not inadvertently done something they shouldn’t have done.” ■

6 Human beings are invariably the route into organisations. Just about every major breach wouldn’t have happened if an employee or system user had not inadvertently done something they shouldn’t have done. 9  
BRIAN LORD



**Marcelle Nethersole** reports from the exhibition halls at Aviation Africa.

**Abeer El Gohary:**  
"We are local experts in lubricants."



## OILING THE WHEELS OF COMMERCE

MultiForce Egypt, the authorised distributor of AeroShell in the country, was at Aviation Africa to "network" with the airlines as it looks to expand its products in the African market.

"We serve a diverse cross-section of worldwide aviation, marine, and military manufacturers and associates, enabling the growth and sustainability of these sectors in Egypt," said Abeer El Gohary, general manager.

"We are local experts in lubricants. For the aviation market, we distribute fluids, greases, piston engine oils, and turbine engine oils."

The company has been active in Egypt since 1994 under the Egyptian Petroleum Products Marketing Company, the largest distributor of Shell Oil in Egypt.

In 2010, MultiForce partnered up with Shell Aviation.

Today, the company has an established warehouse in Alexandria Free-Zone.

"It's been fantastic to exhibit here at the show and speak with the airlines as we look to expand in Africa. It is our main focus – we are particularly interested in Morocco, Nigeria, Kenya, and Sudan," said El Gohary.

## FLEET EXPANSION FOR ALKAN AIR

Alkan Air has been offering air taxi and aircraft maintenance services from its hangar at Cairo International Airport since 1996 – and is the first provider of private air taxi services in the country.

The company is authorised for Beechcraft and Hawker type aircraft, as well as maintenance for the Gulfstream series, but is expanding its fleet due to demand in Egypt.

"We currently have Beechcraft SKA350 and a Hawker 850XP but we are now about to add a Legacy 600 to our fleet," said Amr Madi, sales and marketing manager.

"The Legacy 600 fulfils all the needs we are looking for. It has low maintenance, covers distance, takes 13 people, and it has huge cabin space, which is great for our business travellers."

□□□□□

Madi also announced at Aviation Africa that the company hopes to get two smaller aircraft by the end of the year – making a total fleet of five.

"Egypt is getting to be a hub now," said Madi. "We have strong competition with companies like Smart Aviation, so we are expanding to address the needs of our customers. However, we focus mainly on the GCC and Europe, with 40% of our clients being Egyptian."

He added that the company does face a couple of challenges while focusing on these regions.

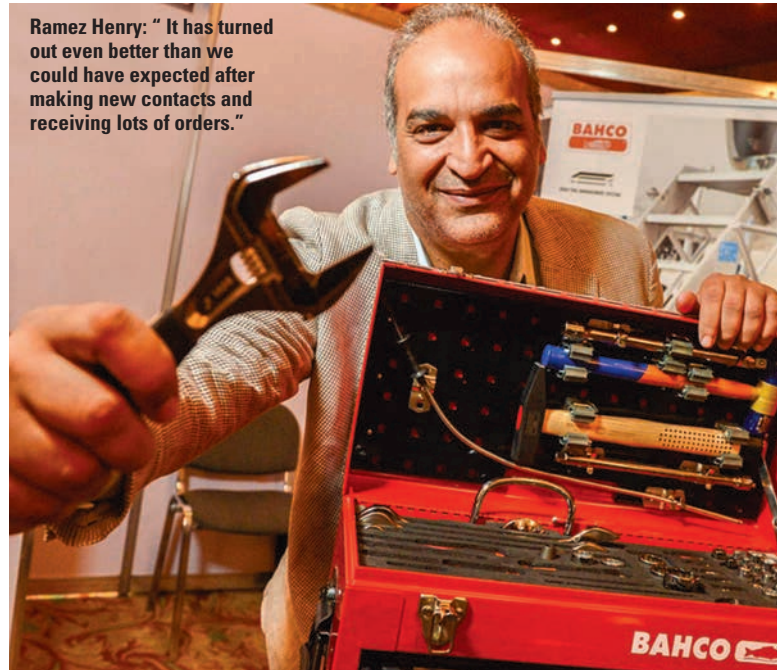
"Of course, we face restrictions on red zone areas like Syria, Iraq and some parts of Libya –



just like other air taxi companies. However, we can have problems in European countries too. Germany, for example, is very strict on security approvals, so this can take us 72 hours to get clearance."

The company has 58 staff working across its range of services.

**Amr Madi:**  
"Egypt is getting to be a hub now."



**Ramez Henry:** "It has turned out even better than we could have expected after making new contacts and receiving lots of orders."

## TOOL ORDERS FOR BAHCO

The Egyptian agent for Swedish aircraft hand toolmaker, Bahco, had a "fantastic" two days at Aviation Africa.

"Being based in Cairo, it made sense to come to the show but it has turned out even better than we could have expected after making new contacts and receiving lots of orders. We are very excited about this," said Ramez Henry, CEO of Brain Power.

Bahco provides airline and aerospace engineers with highly specialised hand tools for all aircraft types.

"Bahco simply offers the best quality tools for the aviation sector with a lifetime warranty," said Henry.



## AVIATION AFRICA PERFECT TO PLUG 'APPS'

Swiss company Aphrodite chose Aviation Africa to launch its new ancillary revenue platform called 'apps'.

"Apps is a plug-and-play solution that will help relieve a burden, as well as costs, to airlines," said Haitham Al-Naggar, VP branding. "It can facilitate everything that is travel-related within bookings, besides selling the seats.

"For example, EgyptAir can provide you with a hotel, car, travel insurance,

destination-related services etc. What we are able to do is take away these services with customers simply plugging and playing this app – so no customer service is needed."

Apps currently hosts 2.5 million travel products, aggregating their prices in milliseconds, serving more than 30 airlines with a portfolio of 300 million passengers. It handles 10 payment gateways with full transparency.

"All of this comes with a carefully-crafted

conversion rate optimisation strategy, which is capable of converting passengers into high-value travellers," said Al-Naggar. The company, which has offices in Cairo, has been operating since 1992 offering insurance management, aviation marketing, aviation consulting and aviation agencies.

"Aviation Africa was the perfect launch platform to introduce 'apps' to the industry and we're excited to speak with the airlines," said Al-Naggar.

Haitham Al-Naggar:  
"Aviation Africa was the perfect launch platform to introduce 'apps' to the industry."

Joel Glusman:  
"Africa is a fast-growing market – it's now booming."

## TALA'S NETWORK KNOWS HOW TO DELIVER

Set up in 2012, The Aerospace Logistics Alliance (TALA) is the first global provider exclusively dedicated to the aeronautic industry, specialising in bespoke aerospace logistics solutions.

"TALA calls upon a wide network of worldwide branches that can provide a one-stop-shop of logistics solutions for commercial airlines, OEMs and MROs. We hand pick our members and associates to reflect our heritage in this industry," said Joel Glusman, president and CEO.

"TALA has come a long way since its inception five years ago and today generates more than \$2 million."

TALA is a subsidiary of France's largest

independent logistics service provider, Crystal Group, and has a Miami headquarters and franchises all over the world.

"Africa is a fast-growing market – it's now booming," said Glusman. "Our African locations include Egypt, Tunisia, Morocco, Senegal, Kenya, Ivory Coast and South Africa.

"We are about to create a TALA Middle East between TALA Jordan and TALA Egypt."

He added that while TALA has attended many industry shows around the world, it is its first time in Africa.

"To come and exhibit here in Cairo is a new beginning for us in this region," he said. "Our goal is that we will be the premier player in logistics servicing the aerospace industry."



*Jordan's Special Operations Forces Exhibition and Conference (SOFEX), which takes place in Amman every two years, reached its 12th edition.*

**David Oliver reports.**

## RJAF shows off its growing capability...

**H**M King Abdullah II inaugurated SOFEX on May 8. As supreme commander, he was accompanied by HRH Crown Prince Hussein and was received by HRH Prince Faisal Ibn Al Hussein and by the chairman of the Joint Chiefs of Staff, Lieutenant General Mahmoud Freiha.

The king, members of the royal family, and the dignitaries attended a demonstration by Jordanian special operations forces on the opening day of the exhibition.

The scenario was an attack on a group of insurgents hiding in a remote village by special forces dropped by parachute and fast-roping on to the roof of the insurgents' hideout from Black Hawk helicopters, supported by AH-1F Cobra attack helicopters, resulting in the insurgents being killed or captured.

Royal Jordanian Air Force (RJAF) Black Hawk and Super Puma helicopters evacuated the forces.

Jordan is in the middle of yet another financial crisis, with Saudi Arabia, Kuwait, the UAE and Qatar recently pledging some \$3 billion in economic aid. However, at SOFEX, there was a clear indication that the Jordanian armed forces are being expanded and there seems no shortage of investment into its air force.

The first Mil-26T2 'Halo' heavy-lift helicopter to be delivered to the RJAF earlier this year dominated the static display. It is powered by two 12,500hp

(9.325kw) Ivchenko-Progress D-136-2 turboshaft engines, which drive an eight-blade 105ft (32m) diameter main rotor.

The Mi-26T2, which is the largest operational helicopter in the world, can carry up to 82 fully equipped troops or 60 stretchers, or lift up to 20 tonnes of cargo either internally or as an under-slung load. It is equipped with a rear loading ramp and clamshell doors capable of accepting large military vehicles in its 10.5ft x 10.5ft (3.2m x 3.2m) hold. Overhead track-mounted hoists have a 2,500 kg lifting capacity.

The RJAF is taking delivery of four Mi-26s, which will be operated by a new unit – No 26 (Falcon) Squadron.

### All-weather avionics suite

The T2 variant features the BREO-26 night and day all-weather avionics suite, a new digital autopilot and Navstar/GLONASS satellite navigation system, and a glass cockpit with five multi-functional liquid-crystal displays (LCDs).

The three-man RJAF Mi-26 air and rear crews, who included former Cobra and Super Puma pilots, undertook a six-month training course at the Rostvertol plant in Rostov-on-Don, where more than 330 Mi-26s have been produced since 1980.

Another sign of the RJAF's wide-ranging modernisation programme is the comprehensive upgrade of 12 of its 20-plus extant Bell AH-1F/S Cobras. One of



**The opening demonstration of SOFEX 2018 involved SOF fast roping from RJAF UH-60M Black Hawk helicopters.**

the first to be delivered was displayed at SOFEX 2018.

The work is being carried out by Science & Engineering Services (SES) at its Huntsville facility in Alabama.

Under the contract, SES performs depot maintenance work requirement (DMWR) inspections of the airframe, tail boom and components, after which structural modifications are installed and the aircraft is completely rewired. Once completed, a new glass is installed based on the Northrop Grumman integrated avionics system.

An L3 Wescam MD-15D multi-sensor multispectral targeting system replaces the original laser range finder and tracker.

A passive self-defence suite, comprising the Orbital ATK AAR-47 missile approach warning (MAW) system and active countermeasures, including the Extant Aerospace ALE-47 chaff/flare dispensers, is installed.

The AH-1F/S Cobras were Raytheon BGM-71 TOW-compatible versions of the Cobra.

The SES upgrade includes Lockheed Martin M310 AGM 114R Hellfire launchers in addition to seven or 19-round 70mm unguided rocket launchers. The RJAF plans to install software for the use of the BAE Systems advanced precision kill weapon system (APKWS) when the last of the upgraded Cobras are delivered at the end of the year.

The upgrade is completed with the





installation of automatic stabilisation equipment (ASE) and the Rockwell Collins ARC programmable digital communication system. The upgrade cycle from when the aircraft is depopulated to maintenance test flights is eight months.

No 10 Squadron, at King Abdullah Air Base, will operate the upgraded Cobras. Surplus RJAF Cobras are being donated to Kenya and the Philippines.

Jordan has also taken delivery of 12 Sikorsky UH-60M Black Hawk helicopters to support the Royal Jordanian Army's quick reaction forces and, with new and upgraded operational helicopters entering service, the RJAF is boosting its rotary-wing training capabilities.

The Golden Eagle Aviation Academy (GEAA) is the first Jordanian helicopter training school. It was established at Amman-Marka in 2015 to provide training for military rotary-wing students in partnership with the RJAF.

GEAA's team of experienced former military pilots, under head-of-training, Captain Murad Al-Jdo'a, follow the highest aviation standards to meet the rigorous RJAF and international aviation requirements.

Future plans for GEAA include military training programmes on combat and transport aircraft in full cooperation with the RJAF, as well as an aviation-engineering programme.

The captain also confirmed that the GEAA is looking to acquire twin-engine

helicopters for both military and civilian training, to supplement its four Robinson R44 Raven II helicopters, which back-up eight RJAF R44s, equipped with Garmin and Aspen avionics, in service with No 5 Squadron at the Air Training College at King Hussein Air Base at Mafrq.

The RJAF's fixed-wing fleets are also being upgraded. Shown for the first time was an RJAF Iomax/Air Tractor AT-802i two-seat turboprop light attack/surveillance aircraft, which was developed from the Air Tractor crop sprayer.

Six aircraft were donated to Jordan by the UAE in 2015.

In RJAF service with No 25 Squadron, the aircraft are being upgraded to increase weapon options.

#### Armament control system

Iomax in Mooresville, North Carolina, modified the first aircraft to block 1B standard. The aircraft received a new armament control system and the weapons pylons were strengthened to allow the carriage of the 500lb/227kg GBU-12 Paveway II munitions, while the Roketsan Cirit laser-guided missile becomes a weapons option.

Also on display at SOFOX were examples of two new European training aircraft, replacing three types of RJAF trainers at its air training college. Fourteen Grob 120TP basic turboprop trainers are replacing a legacy fleet of 16 Slingsby T-67 primary trainers and two Socata TB-20 basic trainers serving with No 4 Squadron

**Clockwise:  
The SOFOX 2018 static display was dominated by the RJAF's first Mil Mi-26T2, flanked by a CH-4B armed UAV and GEAA Robinson R44.**

**The first of 12 RJAF Bell AH-1F Cobras upgraded by Science & Engineering Services (SES) in Alabama.**

**One of the RJAF's 10 Pilatus PC-21 advanced training aircraft replacing CASA C-101CC Aviojets and Hawk Mk.63s.**

**The front and rear cockpit of an upgraded RJAF Iomax AT-802i two-seat turboprop light attack/surveillance aircraft.**

at the college at Mafrq. Two of the Grobs are being donated by Germany as part of a military assistance package.

In 2015, the RJAF planned to order the Pilatus PC-9M turboprop trainer to replace its fleets of CASA C-101CC Aviojets and former UAE Air Force Hawk Mk.63 advanced trainers. However, it changed the order in 2016 to 10 Pilatus PC-21s to serve with No 11 Squadron.

These two state-of-the-art turboprop trainers will provide an ideal cost-effective introduction to operational air combat training on RJAF F-16 combat aircraft in the future. This is carried out on two-seat F-14Bs at the Muwaffaq Salti Air Base at Azraq under a Lockheed Martin contract.

Making its defence show debut at SOFOX 2018 was one of the RJAF's CH-4B armed unmanned aerial vehicles (UAVs), which is in service with No 9 Squadron at Prince Hassan Air Base alongside the Leonardo Falco tactical UAV and Schiebel S-100 Camcopter VTOL UAV.

Designed by the China Aerospace Science and Technology Corporation (CASC), the medium-altitude long-range (MALE) aircraft, powered by a 100hp (75kw) piston engine, has a top speed of 150mph (235km/hr) and endurance of 30 hours at a maximum altitude of 23,550 ft (7,200m).

The CH-4B can carry a 760lb (345kg) payload and be armed with up to four AR.1 ground-attack missiles or 60kg precision-guided bombs. ■

*Collaboration and closer partnerships was the overriding theme of the Global Aerospace Summit held in Abu Dhabi in May. Alan Peaford reports.*

# LET'S WORK TOGETHER

**T**op aerospace industry leaders from around the world came to the St Regis Hotel on Saadiyat Island and, rather than talk about competitive issues, opted to discuss cooperation and collaboration.

In a keynote address, Khaled Al Qubaisi, CEO of Mubadala's aerospace, renewables and ICT businesses, told more than 1,000 industry leaders that it was worth remembering that, in a period of rising protectionism, "it is partnerships that are changing globalisation, especially when it comes to disruptive new technologies".

Lockheed Martin CEO, Marillyn Hewson, said partnerships that focus on growth and shared opportunities played a key role in global security. "Public-private partnerships are most effective and most transformative when they are focused on making a strong, long-term impact," she said.

## Payload design challenge

Lockheed has teamed up with Mubadala to support the unmanned aerial systems payload design challenge that aims to encourage university students across the Emirates to develop and incorporate payloads with industrial and commercial uses into aerial drones.

One Abu Dhabi business that might be expected to steer clear of partnerships was Etihad. But Tony Douglas, group CEO, said that the airline group had not lost its appetite for partnerships of investments, despite the costly relationships with Alitalia and Air Berlin.

"Etihad is 15 years old this year," Douglas said. "We are in our adolescence. I know when I was 15 I had made some mistakes but I learned from them. We have learned from our experience with Alitalia and Air Berlin, and it was not all bad. We are not frightened of collaboration. We will be very measured and disciplined and will choose wisely."

Asked about growing collaboration with neighbouring Dubai's mega-carrier Emirates, Douglas said he "greatly admired" the Dubai airline. "We have learned from them," he said. The two airlines have collaborated recently on a joint security programme and were



**Marillyn Hewson:** "Public-private partnerships are most effective and most transformative when they are focused on making a strong, long-term impact."

working with Dnata for some overseas ground-handling. "This is two UAE airlines working together. It makes us stronger."

FLYDUBAI CEO, Ghaith Al Ghaith, whose hybrid-carrier partnered with Emirates six months ago, followed Douglas on stage. "More than 600,000 passengers have taken the opportunity to use the combined offer," Al Ghaith said.

The partnership – and the introduction of the new Boeing 737Max aircraft – has seen the development of new routes.

Al Ghaith cited Dubrovnik. "This route is difficult for Emirates and the wide-body fleet, but perfect for the 737Max. It opens it up and delivers more business into the

UAE and to access the Emirates network. It benefits both parties."

Mubadala's aerostructures business, Strata, was demonstrating the value of relationships when it announced a deal with Boeing to manufacture composite empennage ribs for the OEM's new 777X aircraft.

The agreement, announced at the summit, is the Mubadala subsidiary's first contracted statement of work for the 777X programme, enabling the company to expand its role as a direct composite aero structures supplier to Boeing Commercial Airplanes.

"The new 777X contract underscores Strata's strong reputation, and the confidence of our partners, which we have earned by delivering high-quality components to a globally-renowned aviation giant," said Ismail Ali Abdulla, Strata's CEO.

"Strata continues to be a leading example and proof that 'Made in the UAE' isn't a goal for tomorrow, but a reality of today. Strata holds an important role in the evolution of Abu Dhabi towards becoming a global aerospace hub and has become one of the leading employers for high-value and fulfilling careers in the UAE."

## State-of-the-art facility

Strata will manufacture 777X empennage ribs at its state-of-the-art facility in the Nibras Al Ain Aerospace Park.

This is the fourth work package that Boeing has awarded to Strata since 2013, as it already manufactures empennage ribs for the 777 and vertical fin ribs for the 787 Dreamliner. In the future, Strata will be a supplier of the 787 vertical fin.

"Boeing is proud to advance our mutually beneficial strategic partnership with Mubadala in ways we strongly believe are delivering long-term benefits to the UAE's economy and Boeing's business growth," said Bernard Dunn, president Boeing Middle East, North Africa and Turkey.

The Global Aerospace Summit is an invitation-only event for C-level executives, senior decision makers and government officials involved with the aerospace, aviation, defence and space industries. ■



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Embraer president John Slattery faces up to the E2 jet with a shark's livery.  
Right: The RAF escorted a World War II Spitfire.  
Inset: The Airbus A220.



# TRIP TO THE FLIGHT

*The largest aerospace event of 2018 – the Farnborough International Airshow – took place in July.*

**Alan Peaford** travelled to southern England to spot the highlights.

It is always difficult to determine what it is that makes a good show great. The UK is suffering the chaos surrounding its divorce from the European Union (Brexit) and political uncertainty is never good for business. Weather in England in July is also uncertain; with the build-up coinciding with the Wimbledon tennis finals you could almost guarantee at least one torrential deluge.

And would the airlines open their wallets to purchase new aircraft – particularly given the latest trade war/tariff risks and the fallout from Airbus taking the leading role with the (previously known as) CSeries aircraft from Bombardier and then, on the eve of the show, Boeing's capture of 80% of Embraer's commercial aircraft division?

As it happened, Farnborough rode over all of the pitfalls on a crest of a wave.

Firstly, the sun shone throughout the

week, normal irritants like sodden car parks and tedious queues disappeared and the industry was not going to be put off by a few spat over Brexit.

"The queues went as people passed security quickly – and yet our visitor numbers were up by 10%," said Farnborough International CEO, Gareth Rogers.

That old yardstick of deals announced at the show was also up, with \$192 billion or orders for more than 1,400 aircraft.

## Global aerospace world

"This show brings the global aerospace world together for an intense but important week. Manufacturers, airlines, financiers, military and government representatives; they're all here. Six months' worth of meetings can take place in a week; it's a highly productive place to be," Rogers said.

Coming 37 weeks before Brexit, the show attracted its most global attendance ever with around 100 countries represented and a record Chinese presence. More than 80,000 trade visitors passed through the gates.



Airline CEOs attended a roundtable event on the opening day.



# FARNTASTIC...

UK Prime Minister, Theresa May, opened the event and a number of British politicians were on hand at the conferences and meetings with delegations to reassure the world that the British aerospace industry was ready to do business.

The Royal Air Force (RAF), which is celebrating its centenary this year, marked the occasion with a flypast, while escorting a World War II Spitfire.

The consolidation among the regional jets was a major element of the show. Embraer indicated that it still has bite, by painting its new E2 jet with a shark's livery. And it also swallowed a mass of orders.

The Bombardier rival – now Airbus – was unveiled as the Airbus A220-100 and -300. Both manufacturers demonstrated their aircraft in the flying display.

The airline customer asserted itself with a 163% increase in attendance. Ten airline CEOs attended a round table event on the opening day, including Air Arabia's Adel Ali, Gulf Air's Kresimir Kucko, and Saudia's Jaan Albrecht.

There was a marked shortage of

military aircraft on display. The UK's F-35 and Typhoon flew together in a single flypast, and an F-16 was put through its paces. Most of the military issues were firmly on the ground – and in the ether.

The UK did unveil its future combat aircraft, the Tempest, which bears great similarities in appearance to the F-35. This was a response to the European fighter project excluding the UK.

## New concepts

Flying cars and urban air mobility were all the rage with Rolls-Royce and Aston Martin unveiling new concepts – and the UK Government announced investment partnerships for these initiatives, as well as for space.

In all, this was a good show. There was something for everyone and a lot of business done.

For Rogers, work has already begun on the next edition. "Farnborough continues to be at the epicentre of the aerospace community and we look forward to growing this pivotal role over the next two years as we head towards the 2020 show," he said. ■



## HURJET MAKES ITS DEBUT

The Turkish Aerospace Industries (TAI) introduced the Hurjet to the international market for the first time at the Farnborough International Airshow, when it unveiled a mock-up of the advanced jet trainer and light attack aircraft.

TAI's chief executive, Temel Kotil, said the company was expecting first flight of the 5th-generation training aircraft in 2022, while hinting that it may be sooner.

The fighter was announced a year ago and is currently being developed to replace the Turkish Air Force's Northrop T-38 Talon trainers.

It will be equipped with an advanced mission computer in a modern cockpit, and will be capable of speeds up to Mach 1.2.

Hurjet will be the first supersonic aircraft produced by a Turkish manufacturer.

## IT'S A DRONE DEAL

Dubai-based Falcon Drones Technology signed a letter of intent for Kenya-based cargo airline Astral Aviation to acquire two Lucas-F250 drones with an option to purchase an additional 10 in 2019. Astral Aviation will become the exclusive operator of the Lucas F-250 drone in Kenya.

Falcon Drones Technology is founded and owned by Dubai-based entrepreneur Kamel Alzaka, who aims to revolutionise the cargo transportation sector with the use of UAVs for operations in danger zones, disaster relief, firefighting, freight, humanitarian aid and oil and gas services.

"This is a very exciting opportunity for Falcon Drones and we are thrilled to have signed this letter of intent," said Alzarka,

This latest drone offers a range-extending 1,500km, with endurance of up to 10 hours, a cruise speed of 150kph and maximum speed of 200kph. It also benefits from a cargo payload of up to 250 kilograms, capacity for Euro pallet dimensions, folding wings, a folding tail, fully autonomous take-off and landing and waypoint navigation and landing.

Sanjeev Gadhia, CEO of Astral Aviation said: "The Falcon Drones technology is truly groundbreaking. At Astral, it brings with it the exciting prospect of further expansion in the wider east Africa region."



From left: Mubadala's director of aerospace, Badr Al Olama, Mansoor Janahi, Bae Kim and Danny Kim from Asiana.

## TREBLE TOP FOR TS&S

Mubadala's engine MRO business – Turbine Services and Solutions (TS&S) – enjoyed a triple success at the show.

The Abu Dhabi company announced engine maintenance contracts with three major international airlines: Atlasglobal, Yemen Airways, and Asiana

TS&S has seen a threefold increase in business volume in the last four years and has serviced more than 300 engines for both local and international customers, it said at the show.

The MRO services on the V2500 engines that power the Airbus A320 fleets flown by Atlasglobal, Yemen Airways, and Asiana will be conducted at the company's complex in Abu Dhabi. The facility is approved by International Aero Engines (IAE) as an overhaul base, and remains the only V2500 engine repair facility in the MENA region.

TS&S has also entered a new market in Africa. During the show, it signed a deal with Ethiopian Airways to collaborate on establishing auxiliary power unit (APU) capabilities, engine on-wing care centres, and, through its sister-company Sanad Aero Solutions, to explore financing and leasing opportunities to support the growing fleet of the Ethiopian flag-carrier.

Under the memorandum of understanding, TS&S gains access to the developing African aviation market. The centres of excellence will focus on spares pool management, predictive maintenance and associated connectivity.

## Unlikely pairing

Among the highlights of the flying was the unusual pairing of a Boeing 727-200 with a couple of Extra 300s. But it worked

The Boeing 727-200 is a converted freighter now operated by Oil Spill Response, an industry collective aimed at responding to major oil spills.

The aircraft is equipped with internal tanks, pumps and a spray boom to deliver dispersant liquid.

The accompanying Extras are part of The Blades aerial display team.



Increased range: the A350-1000. Inset: Akbar Al Baker with Gulfstream's Scott Neal.

## Al Baker reveals wider-ranging view

In an interview at Farnborough, Qatar Airways CEO, Akbar Al Baker, detailed proposals to Airbus to increase the range of the A350-1000 in a move that would create a huge competitor to the Boeing 777-300

According to *Flightglobal*, the Qatar CEO said the European manufacturer could increase the range of the -1000 by putting in additional tanks.

It is not clear how much additional range the new maximum take-off weight (MTOW) and fuel capacity will provide, or whether the plan requires additional thrust from the Rolls-Royce Trent XWB-97, currently rated at 97,000lb thrust (432kN).

Airbus declined to comment about the specifics of any proposed changes, saying only that it is "always looking at developments and talking to airlines about possible improvements".

■ Qatar Executive, the business aviation division of Qatar Airways, unveiled its latest purchase – a Gulfstream G500 – at the show.



The aircraft is from a 2014 order from Qatar for 30 Gulfstream jets, including its larger, longer-range sister, the G600 – for which Qatar is also the international launch customer – and the flagship G650ER.

Speaking at the unveiling, Akbar Al Baker, chief executive of Qatar Airways Group, called the G500 "a game-changer for Qatar and the industry as a whole".

The launch aircraft was taken back to Savannah "to await US type certification" on the Thursday of the show. They didn't have to wait long. The following day the certification was confirmed.

The FAA simultaneously awarded production certification for the G500, allowing the airframer to produce, test fly and issue airworthiness certification for each of the 5,200nm (9,620km)-range aircraft.

This opens the way for delivery to Doha in the third quarter once type certification is complete and it will likely enter service in Q4.

## HUDLINE NEWS FROM BAE SYSTEMS

Raytheon will design, develop and manufacture the projector for BAE Systems' Digital Light Engine (DLE) head-up display (HUD) on the F-16 Fighting Falcon for the UAE armed forces, the company said at Farnborough.

The digital HUD upgrade integrates into the F-16's existing HUD space, requiring no changes to the aircraft, cabling or computing.

HUDs are located immediately in front of the pilot's line of sight and combine real-time mission-critical information with the outside world view. BAE Systems' new DLE is an electro-optic upgrade to traditional analogue HUDs, replacing conventional cathode ray tube devices.

"Digitising the HUD helps our customers extend the service life of their fleets. By removing the conventional analogue system, we're able to increase the HUD's reliability and decrease obsolescence issues, which all lead to lower lifecycle costs," said Andy Humphries, director of advanced head-up displays at BAE Systems.

Deliveries begin early next year.

## R-R GOES FOR A TAP IN

The Rolls-Royce Trent 7000, which powers Airbus' latest aircraft, the A330neo, received its 'ticket to fly' from the European Aviation Safety Agency (EASA) at Farnborough. It is the fourth Rolls-Royce engine to receive formal certification in just 12 months, following in the footsteps of the Trent 1000 TEN, Trent XWB-97, and Pearl 15. The certificate was presented to Rolls-Royce by Trevor Woods, EASA's certification director at the show.

The Trent 7000, the latest member of the Rolls-Royce Trent engine family, powers the A330neo which enters service later this year. The first production engines have been delivered to the Airbus facility in Toulouse, France. The A330neo also made its first appearance at this year's Farnborough Airshow.

## SALAMAIR'S SIX OF THE BEST

Oman's first budget airline, SalamAir, signed an agreement to add six new A320neo aircraft to its fleet – five on lease from an undisclosed lessor. The new fleet will support the low-cost airline's plans to increase connectivity across the region's under-served and popular short-to-medium-haul routes.

Eric Schulz, Airbus chief commercial officer said: "As a home-grown brand, SalamAir has demonstrated huge potential by addressing Oman's demand for affordable travel options. The new Airbus A320neo is the best in the industry and will allow the carrier to achieve lower operating costs, greater fuel efficiency and offer the highest standard of passenger comfort."

SalamAir CEO, Captain Mohamed Ahmed, added: "In less than 18 months since our launch we have connected more than half-a-million passengers across the globe. With the new A320neo addition to our fleet we look forward to building on this success and expanding to new markets." ■

## Fighting fires a Herculean task

The Lockheed Martin LM-100J was giving an impressive flying display with loops and turns set to show the flexibility of the commercial freighter production model of the C-130J Super Hercules.

And it fired the imagination with its latest variant, announced at the show, the "FireHerc," a civil-certified firefighting tanker.

"As a variant of the C-130J Super Hercules, the FireHerc delivers a powerful combination of established, performance advantages and innovative technology that will truly change the way we fight and defeat wildfires," said George Shultz, vice president and general manager, Air Mobility & Maritime Missions at Lockheed Martin.



Wataniya Airways CEO, Rakan Al-Tuwaijri (left), with Embraer president John Slattery.

## Wataniya deal is a jaw-dropper

Wataniya Airways was at Farnborough fishing for a good deal – and it got a mighty bite. The Kuwaiti carrier signed a deal that will see it become the region's first operator of the Embraer E-195 E2 regional jet. It bought 10 of the type and took options on 10 more.

The new E2 made its debut at the show in a stunning livery depicting a shark – thus following the OEM's theme of 'The Profit Hunter'. The order has an estimated value of \$1.3 billion, at current list price, with all the purchase rights being confirmed. The deliveries will start in 2020.

John Slattery, president & CEO for Embraer Commercial Aviation, said: "Wataniya will not only be the first E2 operator in the Middle East, but also the worldwide launch customer of our staggered-seat business class, which will establish a new level of comfort for crossover narrow-body jets."

The airline will configure the E195-E2 in a layout of 118 seats, with 12 in business class and 106 in economy class.

Wataniya also confirmed an order for 25 Airbus A320neo family aircraft. The order follows an earlier memorandum of understanding announced at last year's Dubai Airshow.

Wataniya Airways resumed operations in July 2017 and currently operates a fleet of four A320 family aircraft. The A320neo family aircraft will support the airline's vision to become the fastest-growing and leading airline in the country.



## March of the robots

Rolls-Royce demonstrated an exciting vision of how robotics could be used to revolutionise the future of engine maintenance, bringing another element of its IntelligentEngine vision to life.

The British company teamed up with academics from Nottingham (UK) and Harvard (US) to discuss and demonstrate a wide range of potential future technologies including 'snake' robots that work their way through the engine like an endoscope, to miniature, collaborative 'swarm' robots that crawl through the insides of the engine.

The IntelligentEngine vision, first introduced by Rolls-Royce at the Singapore Airshow earlier this year, describes a world where product and service have become so closely connected that they are inseparable. This vision drives activity across a range of fields, including robotics, with a particular focus on digital technologies.

The robotic technologies displayed at Farnborough each represented an opportunity to improve the way engine maintenance is delivered, for example by speeding up inspection processes or by removing the need to take an engine off an aircraft in order to perform maintenance work.

Alia Twal  
and (right)  
speaking at  
Aviation  
Africa.



# Every woman can be a high flyer

*Royal Jordanian pilot Alia Twal has a simple message to pass to young women across the Middle East and Africa: if you are female, want to be a pilot and have the determination, nothing should stop you.*

**Marcelle Nethersole** meets the woman who lives the dream.

**L**ike most little girls, Alia Twal had big dreams when it came to a career. She wanted to be either an animal tamer in the circus or an astronaut.

However, these dreams changed as a teenager after she attended a school careers day.

“There were pilots at the event giving a talk and I asked if there were any female pilots. I was surprised to hear that there were,” said Twal.

“Growing up in Jordan, I had never heard of female pilots – even though Jordan is one of the pioneers of flying. It was a life-changing moment for me as I decided there and then that that was exactly what I wanted to do.”

After speaking with her parents, both doctors, about her new ambition, it was a resounding “no”.

“The problem was I was female and, not only that, a female growing up in the Middle East,” explained Twal. “My parents expected me to become a doctor – not something that was ‘unusual’ in their eyes.”

“In the Middle East, there are a lot of barriers for women; the cultural barriers, the lack of information we get, and the taboo of females doing anything that men tended to do.”

Twal finished school and won a scholarship but stayed at

home for a year before convincing her grandfather she wanted to train as a pilot.

“Eventually, my parents were convinced by my grandfather for me to join the aviation industry,” said Twal. “I studied at the academy, where I was one of four females, and I finished after two years with a commercial instrument rated pilot’s licence – but I was in love with single engines so I stayed a little longer and became a flight instructor. At age 24, I was the youngest female pilot in the Middle East.”

Twal was a flight instructor for three years before accepting a job with Jordanian Airlines as a first officer on an A320. She then moved to an A330 and is now back on the A320 with more than 6,000 flying hours.

“My parents are now very proud,” said Twal. “When they first saw me in my uniform they cried and I even inspired my younger brother to become a pilot too.”

After Twal qualified, she felt she had a duty to spread the word that women can become pilots.

## You can still fly and have a family

“Nowadays, it is very expensive to be a pilot and a job at the end is not guaranteed,” said Twal. “We need to bring in more career days exposing pilots; airlines need to encourage more female pilots – as well as support them if they want children. You can still fly and have a family!”

“We also need to educate parents of potential female pilots, particularly in the Middle East, and say it is not unusual and your daughter can fulfil her dream. This is a daily challenge on which we all need to work together.”

Twal is now the governor of the Arabian section of female pilots’ networking group, the 99s – the international organisation of women pilots that promotes advancement of aviation through education, scholarships and mutual support. It was set up by 99 female pilots in 1929, with its first president being Amelia Earhart.

“In the Middle East, we have 120 people in the 99s and we are looking to increase figures all the time” said Twal. “Flight training organisation, Airways Aviation recently launched and awarded a joint scholarship programme with the Arabian 99s that allows us to jointly screen, and sponsor, female student pilots – which is wonderful.”

There are still challenges, though, for women to become pilots and Twal is passionate to help change these.

“Flying is very important for tourism and many people think of pilots as heroes and presume they are men,” said Twal. “We need people to understand a female pilot is normal; we do the same job, the same training, the same number of flying hours, and we also get the same pay here in the Middle East.”

“When you watched the film *Top Gun*, how many men and women wanted to be fighter pilots? Nearly everyone! So why shouldn’t a woman be able to do that? Women can be pilot heroes too.”



**EAG announces new structure**

Etiha Aviation Group (EAG) has announced a new organisational structure and operating model.

Under the new structure, the group will be reorganised into seven business divisions – operations, commercial, maintenance, repair & overhaul (MRO), human resources, finance, support services, and transformation, led by a new executive leadership team reporting to Group CEO, Tony Douglas, who also assumes responsibility for Etihad Airways.

Peter Baumgartner will now serve as the senior strategic advisor to Douglas as part of the executive leadership team.

Mohammad Al Bulooki, Etihad Airways executive vice president commercial, has been promoted to chief operating officer, while Robin Kamark has been appointed chief commercial officer, and Ibrahim Nassir becomes chief human resources and organisational development officer.

The new group

**EGYPT AIR FORCE CHIEF STEPS UP**

**Air Marshal Younes Al Masry** has been appointed as the country's civil aviation minister following a restructuring of the Egyptian Government's cabinet in June.

He succeeds **Sherif Fathy**, a former EgyptAir Group chairman and an International Air Transport Association (IATA) executive, who had also worked with US airlines as part of a civil aviation career development.

The reshuffle came following negotiations with the parliament to nominate new ministers after President Abdel Fattah el-Sisi ordered Prime Minister Mostafa Madbouly to form a new government to succeed that of Sherif Ismail, who resigned on June 5.

As is traditional, the entire serving cabinet resigned at the election, but the appointments appear to indicate a strengthening of the military influence.

Lieutenant General **Mohamed Ahmed Zaki**, who had been the head of the presidential guard, was appointed minister of defence, replacing General **Sedki Sobhi**.

**Mahmoud Tawfik**, who had previously led the national security department, which focuses on anti-terrorism and homeland security, replaced **Magdy Abdel-Ghaffar** at the interior ministry.



**Mohammad Al Bulooki:** promoted to chief operating officer.

organisational structure also sees **Abdul Khaliq Saeed** become chief engineering officer MRO; **Mark Powers**, chief financial officer; **Mana Al Mulla**, chief support services officer; and **Akram Alami**, chief transformation officer.

General counsel and company secretary, **Henning zur Hausen**; senior vice president government & international affairs, **Ahmed Al Qubaisi**; and vice president corporate affairs, **Amina Taher**, continue in their respective positions, also reporting to the group CEO

Douglas said: "We are now well equipped to deliver our plans as a reinvigorated innovator brand, with an optimised and profitable network, technologically-advanced fleet, and a strengthened position as the global airline of choice, run by a seasoned team of talented professionals.

"The fact that almost half of our leadership team are UAE nationals reflects our strong succession planning efforts and commitment to developing Emirati talent."

**IATA top job for Al Baker**



Qatar Airways Group chief executive, **Akbar Al Baker**, has assumed his duties as chairman of the International Air Transport Association (IATA) board of governors for a one-year term effective.

He took over at the conclusion of the 74th IATA annual general meeting in Sydney, Australia in June.

Al Baker, said: "To be nominated to such a prestigious leadership position in the industry is a great honour, made all the more pertinent in the difficult circumstances in which Qatar Airways currently operates.

"I look forward to continuing my work in the coming year for our great aviation industry, connecting safely the peoples of the world. Aviation is a sector that will only continue to grow in the years ahead.

"It is one in which I am most proud to work and represent one of the world leading airlines."

**NEW ROLE FOR KLAUKE**



**Airbus Defence and Space** has appointed **Sabine Klauke** as head of engineering and a member of its executive committee.

In her new role, she reports to chief executive officer **Dirk Hoke**.

Previously, Klauke was head of customer services programmes within Airbus.

She succeeds **Grazia Vittadini**, who was recently appointed chief technology officer of Airbus.

"Sabine has extensive engineering and operational expertise," said Hoke.

"She is the right person to press on with the integration of our engineering activities, a process of key importance for our division, which her predecessor had successfully initiated."

## David Greer

Marcelle Nethersole *speaks to the CEO of Serco.*



**“In many ways, the job is similar to being a corporate decathlete where fitness, passion, dedication and commitment are required to deal with many internal and external stakeholder issues.”**

1

■ Where does Serco operate in the aviation/defence sector?

Serco has been providing business-to-government support in the Middle East aviation air traffic control segment since 1947.

We are immensely proud of the long-standing relationships we have developed with our clients and to have been part of an exciting aviation growth story spanning more than 65 years.

Serco currently provides air traffic services in support of Dubai, DWC Al Maktoum and Sharjah airports in the UAE and at Bahrain and Iraq (Baghdad) international airports.

We also provide airport flight management services in terminals one and two at Dubai Airport.

In the defence sector, Serco provides base support and logistics to an international defence client and a staff college education programme.

2

■ You recently signed a deal to bring your fire and rescue services (FRS) and training to Saudi Arabia; do you see that line of business expanding?

We see tremendous opportunity for growth in the aviation FRS sector, particularly in Saudi Arabia in line with its on-going ambitious airport privatisation programme.

We intend to use the recent King Fahd International Airport (KFIA) FRS contract win as a platform for growth in both Saudi Arabia and existing markets, where we see airport customers looking for transformation and efficiencies within their existing service lines.

We also intend to leverage our UK capability in FRS training, where Serco runs the International Fire Training College (IFTC), which today provides fire-fighting training to a number of Middle East customers. We would like to build on this service offering in conjunction with operational service delivery.

3

■ There is a large emphasis on developing careers for nationals across the MENA region through knowledge transfer. How does Serco subscribe to this?

We are known for the high quality of our products, which gives the users higher uptime and less worry. Our units spend less time in the workshops and there are fewer operational alarms and stops. That same quality also provides for longevity. We have de-icers in use today that we delivered in the early 1980s.

The same goes for toilet and water service trucks. With such a proven track record, that means the re-sale value of second-hand Vestergaard equipment is quite high, which again provides security to customers.

4

■ What is next for Serco Middle East?

The aviation sector in the region is growing quickly, with passenger traffic estimated to continue to expand significantly to 2020 and beyond. Governments will need to invest in key airport hub expansion projects and, at the same time, drive efficiencies in the operation, maintenance and upgrading of the systems and processes needed to underpin these programmes.

This will result in potential outsourcing opportunities, which Serco will be well placed to service, including consultancy, ATC, FRS and facilities management.

The strategic focus for the defence business will be on base operations, military ATC, bespoke education and facilities management within our chosen territories as regional defence investment and outsourcing programmes are developed.

5

■ What does a typical day hold for you and what challenges do you face?

In my job, no two days are the same.

In many ways, the job is similar to being a corporate decathlete where fitness, passion, dedication and commitment are required to deal with many internal and external stakeholder issues and challenges that arise in such a multi-sector and diverse regional geography.

I am privileged to work with a great team of expatriates and local staff and colleagues, who work tirelessly in support of these efforts and who ensure that Serco continues to provide customer satisfaction and service excellence across the region.

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