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

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**THE VISION,
THE TARGETS, AND
THE STRATEGY BEHIND A
NATION'S RECOVERY**

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Royal Jordanian's radical makeover

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DEFENCE

Can UAE beat the ban to buy F-35s?

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Hail the flying taxi with no pilot...

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Relief as A380 partners keep faith together

Happy New Year! But how long we in the aerospace industry can keep a seasonal smile on our faces must be up for questioning.

In this issue – dominated by the aftermath of the successful Dubai Air Show and the Arab Air Carriers Organisation meeting in Sharjah the following week – we can sense an underlying tension.

Thankfully, following the announcement on January 18, the future of the Airbus A380 programme has been resolved. There were serious doubts following the startling action at the Dubai Airshow when a widely anticipated order from Emirates for around 35 aircraft disappeared from the order of play. Privately, some Emirates executives admit to being “stunned” by the breakdown, which came after the airline allegedly pressed Airbus to “guarantee” production for another 10 years.

This is purely personal view – but one I know that is shared by so many fellow passengers – the A380 is simply the nicest aircraft to fly as a passenger in whatever class. Emirates could not afford to see the programme collapse, which Airbus seriously considered. With more than 100 on its books it needs the programme to remain live. Equally, having still not recovered the initial investment, Airbus, too, needs Emirates, its biggest customer, to keep faith with the



programme and keep buying.

Thankfully they saw sense and with 20 firm orders and 16 options the programme gets to see another day.

Meanwhile, Emirates little sister, Flydubai, signed the Middle East’s largest narrow-body order at the Dubai show for an eye-watering 175 Boeing 737MAX aircraft. Flydubai and Emirates are coming closer together. Soon they will share a terminal to ease transfers, and pundits fully expect that by the time both airlines move together to Al Maktoum Airport at Dubai South, Flydubai will be

managing all the thin, and feeder routes for the network with a variety of aircraft, which will push the narrow-body range.

It does throw up a challenge for its neighbouring rival, Sharjah’s Air Arabia. The airlines have very different models but the Sharjah carrier’s order for just six A321s for a foray into Asia and Africa in 2019 may mean it faces a tough battle to compete.

Another airline celebrating new orders was EgyptAir with 787 Dreamliners, CSeries and A320s. We visited Cairo to meet the industry ahead of the Aviation Africa Summit (17-18 April 2018) There is growing positivity and lots to see, as you will find out from our Country Focus. I hope to see you at the Summit.

In the meantime, stay safe.

Alan Peaford, Editor-in-chief

COVER: EgyptAir’s chairman Safwat Musallam. Picture by Tom Gordon, Billypix.

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Triple alliance to develop hybrid propulsion

Airbus, Rolls-Royce and Siemens have formed a partnership to develop a near-term flight demonstrator for proving hybrid-electric propulsion for commercial aircraft.

The E-Fan X hybrid-electric technology demonstrator is anticipated to fly in 2020 following a

comprehensive ground-test campaign, provisionally on a BAe 146 flying test-bed, with one of the aircraft's four gas turbine engines replaced by a two megawatt electric motor. Provisions will be made to replace a second gas turbine with an electric motor once system maturity has been proven.

Passengers to double by 2036

IATA expects 7.8 billion passengers to travel in 2036, a near doubling of the 4 billion air travellers expected to fly this year.

The prediction is based on a 3.6% average compound annual growth rate (CAGR) noted in the release of the latest update to the association's 20-year air passenger forecast.

"All indicators lead to growing demand for global connectivity. The world needs to prepare for a doubling of passengers in the next 20 years. It's fantastic news for innovation and prosperity, which is driven by air links. It is also a huge challenge for governments and industry to ensure we can successfully meet this essential demand," said Alexandre de Juniac, IATA's director general and CEO.

EgyptAir and RAM in new code-share

EgyptAir and Royal Air Maroc have signed a new

code-share partnership.

"This new stage of commercial cooperation will offer passengers who wish to travel between Morocco and Egypt more facilities and new transport possibilities in terms of schedules and frequencies, shorter connections, with the objective of sustaining and developing the traffic flows between our two countries," said Royal Air Maroc chairman and CEO, Abdelhamid Addou.

Saudia Cargo warms to DoKaSch

The newest container technology is now available for temperature-sensitive goods on Saudia Cargo flights.

The carrier will use DoKaSch Temperature Solutions' RKN and RAP Opticooler containers to provide climate-controlled solutions for air cargo.

"We are very pleased to offer our customers a highly reliable packaging solution to transport temperature-sensitive shipments with

DoKaSch Opticoolers," said Adel Elshazly at Saudia Cargo. "This is especially important for pharmaceuticals, which must be kept within strict temperature tolerances throughout the entire supply chain, regardless of the ambient conditions – a particular challenge in our region."

UAE Space Agency in Luxembourg MoU

The UAE Space Agency has signed a memorandum of understanding with the Government of the Grand Duchy of Luxembourg defining a framework for collaboration and the exchange of information and expertise in the fields of space science, research, and technology.

Dr Ahmad bin Abdulla Humaid Belhoul Al Falasi, Minister of State for Higher Education and chairman of the UAE Space Agency board said: "This agreement falls within the strategic visions of both the agency and the UAE. This includes

working towards closer international cooperation, establishing mutually beneficial international partnerships and exchanging scientific knowledge with the rest of the world."

Golden time for Jet Aviation

Jet Aviation reported Middle East growth as it celebrated its 50th anniversary at the Dubai Air Show in November.

"We are pleased to see that aircraft owners and operators in the region value our 24x7 global reach, our cost-efficient solutions and our experience," said Jürg Reuthinger, senior vice president and general manager of Jet Aviation's aircraft management and charter operations in EMEA and Asia.

"In all aspects of our operations and across the full spectrum of our capabilities, we focus on safety and premium service to ensure we remain our customers' partner of choice."

Gulf Air launches holiday arm

Gulf Air has launched Gulf Air Holidays, offering travellers a wide range of holiday packages and tailor-made travel solutions to destinations worldwide.

Gulf Air deputy chief executive officer, Captain Waleed Abdulhameed Al Alawi, said: "Our airline's dedicated holidays unit will now give travellers even more choice when visiting any of our destinations and help make their holidays even more convenient and comfortable."

Third prototype joins flight-tests

The third Airbus Helicopters H160 prototype (PT3) performed its maiden flight in October.

With its cabin interior configuration similar to that of a serial aircraft, it will contribute to certification activities and flight-testing to ensure the aircraft's level of maturity ahead of entry into service in 2019.

Finance demand set to increase

More than 77% of business aviation professionals predict an upswing in demand for business aviation finance over the next five years, with more than one in six expecting the increase to be “dramatic”.

Only 6% anticipate a fall in demand between now and 2022.

The findings were revealed in research among business aviation professionals commissioned by Global Jet Capital.

The main reason identified is that there is a growing trend for potential buyers to use less of their own capital. Two in five respondents said the overall level of sales of business aircraft would grow, resulting in increased demand for finance, while 21% also pointed to the fact that operating leases are currently attractively priced.

DAFZA on cloud nine...

The Dubai Airport Freezone Authority (DAFZA) is partnering with Dell EMC for a landmark project titled DAFZA cloud, which aims to provide transformative ICT services to all stakeholders.

DAFZA will adopt Dell EMC's industry-leading Enterprise hybrid cloud, data protection and back-up solutions to offer unique services.

“We required an integrated platform that successfully meets our objective of accelerating growth and continually innovating and delivering services that cater to the rapidly evolving digital economy,” said Buthaina Bin Fahad, senior director of information and communication technology at DAFZA.



Boeing and Turkish celebrate freighter delivery

Boeing and Turkish Airlines celebrated the delivery of the airline's first 777 Freighter in December.

It's the first of two 777 Freighters Turkish Airlines had on order.

“The delivery is a milestone event in our cargo business,” said Iker Ayci, chairman of the board and the executive committee of Turkish Airlines.

“As a prominent sub-brand of Turkish Airlines, Turkish Cargo increased freighter destinations served from 55 to 73 from the beginning of this year, achieving approximately 1 million tonnes of cargo with a 29% increase compared to the same period in the previous year. It is surely beyond doubt that this is a remarkable success. We're sure that this significant delivery will bring great value to our rapidly growing cargo operations.”



Adel Mardini (left) with Dubai South's Khalifa Zaffin

Jetex expands at Dubai FBO terminal

Jetex Flight Support plans to build its aircraft hangar at the Jetex FBO Terminal near Al Maktoum International Airport in Dubai South Aviation District.

Set to be operational by 2019, the new development, encompassing 20,000sqm, will feature an air-conditioned hangar fully equipped to accommodate the parking and maintenance needs of all major types of aircraft.

Jetex CEO and president, Adel Mardini, said: “We are excited to announce this important step in the expansion of both our flagship Dubai facility, and the spectrum of services offered by Jetex worldwide. The new hangar will allow us to deliver a complete range of trip support from one location, increasing convenience for clients and ensuring they receive maintenance services of the highest quality from a name they can trust.”

Air Arabia increases Q3 profits

Air Arabia saw improvements in the third quarter of 2017, reporting a 27% increase in net profit to \$102 million.

This brought the year to date net profit to almost \$173 million – a 17.5% improvement

It also reported a revenue rise of 4% to more than \$480 million.

Climate cooperation

Jean-Yves Le Gall, president of the French government space agency CNES, and Ahmad Belhoual Al Falasi, chairman of the UAE Space Agency (UAESA), have signed a joint declaration of interest on tackling climate change. French President Emmanuel Macron and the Emir of Dubai witnessed the signing.

CNES and UAESA had previously signed a 2015 memorandum of understanding on the peaceful uses of outer

space that now forms the framework for space cooperation between France and the United Arab Emirates.

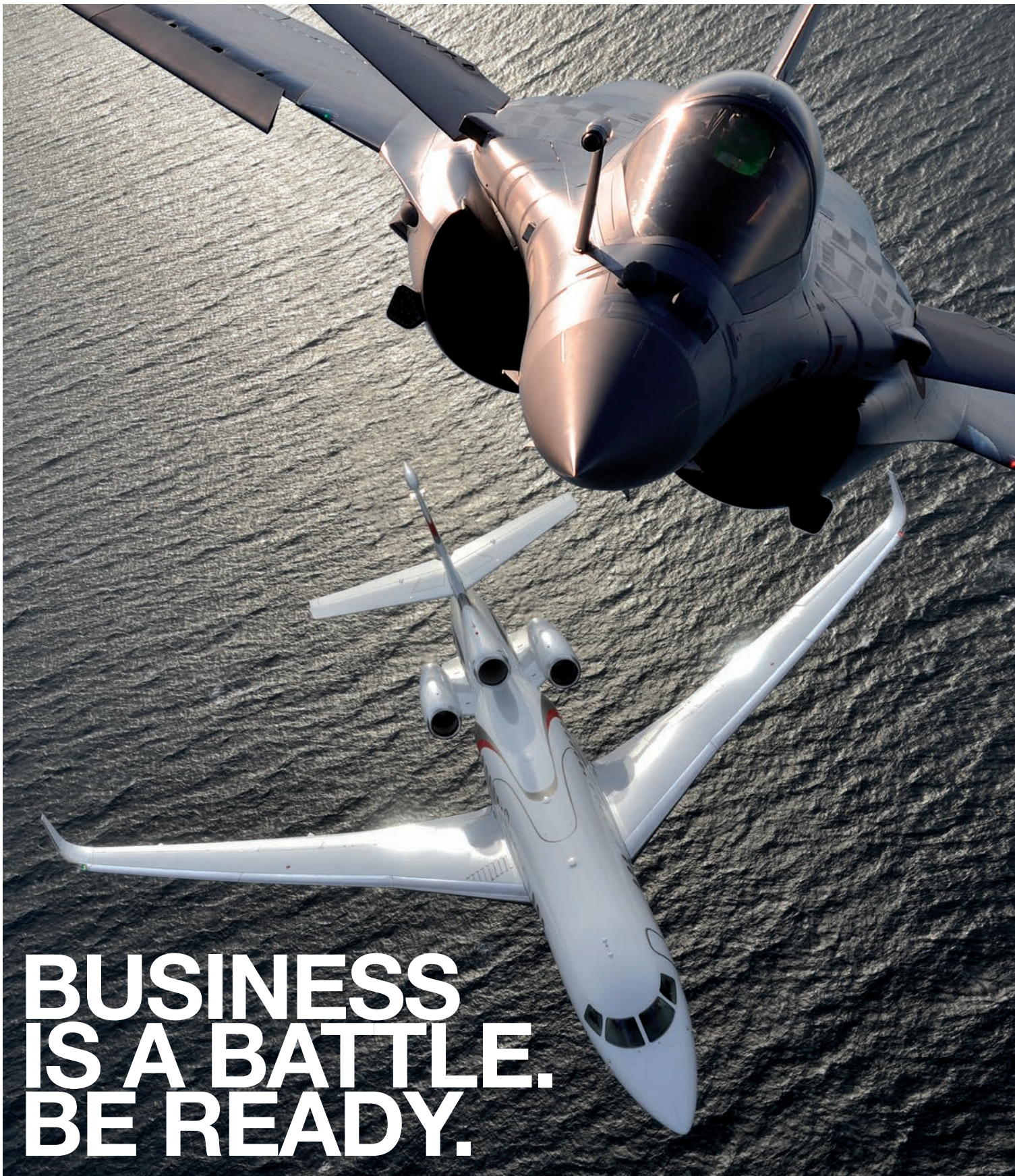
Gulf Air power play

Gulf Air has signed an agreement to purchase Honeywell auxiliary power units (APUs) for its new, incoming fleet of 29 Airbus 320/321neo aircraft.

Under the agreement, Honeywell will also provide MRO services, helping Gulf Air achieve greater cost predictability for future maintenance, while reducing expenses when unexpected servicing is required.

Alsalam identity switch

Saudi Arabia's Alsalam has changed its corporate identity to become Alsalam Aerospace Industries to reflect the broadening of its activities in providing integrated services for the maintenance, upgrade and modification of military, commercial and VIP aircraft.



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SITA rallies industry in cyber fight

The air transport industry has cyber security as a top priority with 95% of airlines and 96% of airports investing resources into major programmes over the next three years.

Barbara Dalibard, CEO of SITA said: Recent global cyber attacks demonstrate the risks and the need for a proactive approach. The air transport industry is highly connected and reliant on partners. We must work as a community to fight the global threat to cyber security.

"While we are pleased to see a 46% increase in the number of airlines prepared to deal with major cyber threats over the past year, there is still more to be done. The industry should move from dealing with common cyber threats to being prepared for major ones."

Oman calls up Bucharest

Oman Air has announced the opening of a new call centre in Bucharest, Romania. Managed by specialist Interglobe Technologies, it will provide support in German, French, and Italian languages.

Turkish and Saudi component alliance

Turkish Technic and Saudia Aerospace Engineering Industries (SAEI) have signed a memorandum of understanding to expand



Ribbon cutting at the Shell new facility.

Shell Aviation fuelling growth at Salalah

Shell Aviation has signed a fuelling concession agreement to operate the new into-plane and fuel farm facilities as the sole jet fuel supplier at Salalah International Airport in Oman.

"We see significant potential in Salalah and we aim to support its growth by providing our extensive expertise in fuel

supply," said Anne Anderson, vice president Shell Aviation.

Salim Awadh Said Al Yafaey, general manager, Salalah International Airport, said: "Shell Aviation's operational and safety capabilities were decisive factors for us. Efficiency and supply security will be key in achieving our ambitious vision for the airport and Salalah."

support and maintenance solutions in the field of component service, which forms the basis to pursue a longer-term business partnership in Saudi Arabia and surrounding markets.

Under the terms of the MoU, the companies cooperate in component maintenance and component pool services and improve the partnership by working together for warehouse and logistics services.

Istanbul bags a new system

Istanbul New Airport will use an advanced system able to handle 30,000 baggage items per hour.

Specially produced for the airport, the design, production, delivery and assembly was completed in a record 24 months.

ADA signs 20-year support deal

Abu Dhabi Aviation has signed a 20-year fleet management programme deal with Pratt & Whitney Canada for the PT6C-67C engines to power its fleet of AW139 helicopters.

The deal also includes the installation of P&WC's full-flight data acquisition, storage and transmission (FAST) solution for advanced prognostics and engine health management.

Making a greater Legacy

Embraer has announced an enhanced flight experience aboard its Legacy 450 and Legacy 500 mid-cabin business jets. The cabin altitude of these aircraft is already considered among the lowest on the market but the maximum has been further reduced to a best-in-class 5,800ft (1.768m).

TRU simulators for Emirates academy

Emirates Flight Training Academy has signed an agreement with TRU Simulation and Training to supply six new flight simulators (FSTDs) with

mini-motion systems. The deal was signed during the Dubai Air Show.

CPaT has Cairo role

CPaT Global has been selected to provide tailored distance learning solutions for the pilot training needs of EgyptAir and EgyptAir Express, as well as the carrier's cargo arm and training academy.

Flushed with success

Adams Rite Aerospace (ARA) and MSI Aircraft Maintenance Services International (MSI) have announced the additional repair capability at their Dubai facility to support the A380 lavatory water system.

Bombardier brings in Airbus

Airbus has become a partner on the Bombardier C Series aircraft programme following an agreement signed late last year.

Under the deal, Airbus will provide procurement, sales and marketing, and customer support expertise to the C Series Aircraft Limited Partnership (CSALP), the entity that manufactures and sells the aircraft.

Airbus has taken a 50.01% interest in CSALP. Bombardier and Investissement Québec (IQ) will own approximately 31% and 19% respectively.

RAM orders four Dreamliners

Boeing and Royal Air Maroc (RAM) announced orders for four 787-9 Dreamliners – valued at \$1.1 billion at list prices – that will enable the flag-carrier to expand international service.

“Royal Air Maroc has direct flights to 80 international destinations. Thanks to our unique position as a geographic hub and our high-quality

Aviation District launches suppliers' complex



Aviation District, the integrated aerospace ecosystem within Dubai South, has added a suppliers' complex to the development of its aerospace supply chain.

The Dubai South aerospace supply chain is a landside free zone development of multi-purpose buildings for businesses that are part of the global aerospace supply chain, which caters specifically from small to medium enterprises in the global maintenance, repair and overhaul (MRO) sector.

The development is aligned with the Dubai industrial strategy, where the Government has outlined 14 initiatives to develop the aerospace cluster over the next 13 years.

Tahnoun Saif, vice president of aviation at Dubai South, said: “We have earmarked a budget of AED2.5 billion (\$685 million) up to 2018 for the development of maintenance, general aviation, training and education sectors.”

Tahnoun Saif, HE Khalifa Al Zaffin, and Mohammad Al Falasi at the Aviation District announcement.

service, we bring customers from all over the world to their destinations. With more than 850 flights per month to Africa, Royal Air Maroc has the broadest presence across the continent of any airline,” said CEO and chairman Abdelhamid Addou.

New doors opportunity knocks

Work is under way to complete the installation of Esavian Type 126 sliding

hangar doors on the new DC Aviation hangar at Al Maktoum International Airport at Dubai World Central.

The new doors are 55,350mm wide by 13,500mm high with a centrally located tailgate increasing the clear opening height to 16,700mm.

Ben Pritchard, who heads the Dubai branch of Jewers Doors as GCC regional sales manager, said: “Repeat orders for our

Esavian doors, such as this by DC Aviation, are always welcome as a definite statement of customer satisfaction.”

Emirates to renew Qantas alliance

Emirates and Qantas are hoping to continue their relationship and have applied to the Australian Competition and Consumer Commission (ACCC) to renew their alliance for five years.

RJ in new security measures

Royal Jordanian has implemented the new security measures required by the US authorities for US-bound flights.

The US authorities had granted all airlines the option to delay the implementation process for up to six months but Royal Jordanian received approval to go ahead from January.

The additional procedures will affect all airlines operating direct flights to the US and will include all nationalities.

Etihad selects IBS Software



IBS Software (IBS) has been selected by Etihad Airways to implement its award-winning cargo management solution, iCargo.

The deal will see the iCargo system manage the airline's air cargo sales and operations worldwide, automating its network-wide booking, pricing and capacity management functions with real-time revenue management-based evaluation capabilities. It will also perform real-time shipment status monitoring and quality management as shipments traverse its extensive network.

David Kerr, senior vice president, Etihad Cargo, said: “This will significantly enhance our customer service offering as iCargo will enable us to be available to our customers 24 hours a day through a fully integrated online booking portal.”

David Kerr, senior vice president, Etihad Cargo and VK Mathews, executive chairman, IBS Group.

TAV Airports increases net profit

TAV Airports Holding announced its nine-month 2017 net profit of EUR 163 million (\$196m) and revenue of EUR 854 million (\$1,030m).

CEO Sani Sener said: “2017 has been a year of recovery from an aviation market that has been trending downwards for approximately 18 months. The recovery in our Turkish airports started in the second quarter and picked up full traction in the third quarter.”



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New chief executive, Stefan Pichler, admits that regional instability has held the airline back. Neighbouring Syria used to be a major source of connecting traffic before civil war closed its skies, while routes to Iraq, Libya and Yemen were also abandoned when violence flared in their borders. Surrounded by conflict, Jordan's own tourism sector has nosedived as westerners steer clear of what they perceive to be a dangerous neighbourhood.

Yet Pichler believes still greater damage was caused by a culture of inefficiency and entitlement at the Amman-based carrier – a culture he is determined to tear down and replace.

"The company, operationally, hasn't made money for the last 10 years," he said, contradicting financial reports that disclosed just three operating losses during the past decade. "That's nothing to do with security. What the company was missing was commercial acumen. The last 10 years basically were

Continued
on Page 18



“We are publicly listed, we are on the stock exchange, we cannot pump money in! We need to deliver profits.”

STEFAN PICHLER

Aviation safety academy for Dubai

Dynamic Advanced Training has signed an agreement to set up an aviation safety-training academy in the aviation district at Dubai South.

The specialist provider for aircrew training will offer comprehensive safety and emergency procedures (SEP) training, including both theoretical as well as hyper-realistic, practical instruction.

The independent academy will cater for a wide range of both corporate and business jets as well as commercial airlines, and will be compliant with international standards including the General Civil Aviation Authority (GCAA), European Aviation Safety Agency (EASA), and the Federal Aviation Authority (FAA).

Air Arabia turns to AFI KLM

Air Arabia has signed a long-term, full engine support contract for its growing Airbus A320 fleet with Air France Industries KLM Engineering & Maintenance (AFI KLM E&M),

Custom solution for Oman Air

Boeing has signed an agreement to provide



Rolls-Royce opens CSC in Abu Dhabi

Rolls-Royce has opened its new customer service centre (CSC) in Abu Dhabi.

The CSC will deliver operational planning and data insight, as well as supporting sales campaigns and leading customer account management. It will also act as a hub for Rolls-Royce airline support teams based at major airport locations across the region.

The centre will have local decision-making authority and will be connected to the recently

opened Rolls-Royce Airline Aircraft Availability Centre in Derby, UK, which tracks engine data and provides engineering expertise worldwide.

Dominic Horwood, Rolls-Royce director, customers and services – civil aerospace, said: "This is the final piece in our global CSC jigsaw. Our Abu Dhabi CSC will make us more responsive to customers, with teams given authority to make decisions locally, resulting in real improvements in service support."

custom services from its global fleet care portfolio to Oman Air.

"The ability to customise our propulsion support will augment the overall maintenance operations flexibility for our fleet," said Ali Redha Al-Lawatiya, executive vice

president engineering and maintenance, Oman Air. "It is a great addition to our long-term partnership."

NAS lounges about in Marrakech

National Aviation Services has launched its Pearl

Lounges at the Marrakech-Menara Airport in Morocco, reinforcing capacities at the newly renovated airport. The two Pearl lounges in arrivals and departures, covering 800sqm, combine luxury and serenity to offer maximum comfort for all passengers.

Safran lands Gulf Air fleet deal

Gulf Air has signed an agreement to equip the airline's new incoming fleet of 10 Boeing 787-9 Dreamliners and 12 Airbus A320neo aircraft with Safran Landing Systems wheels and brakes.

Gulf Air deputy chief executive officer, Captain Waleed Abdulhameed Al Alawi, said: "Safran Landing Systems is a reliable partner to Gulf Air and we are pleased with our choice towards a wheels and brakes technology of renowned quality to equip our new fleet, which will enter service this year."

Rhinestahl opens ME ops centre

Rhinestahl Corporation has opened its new customer tooling solutions (CTS) operations centre in Dubai.

"The opening solidifies Rhinestahl's commitment to the Middle East aviation marketplace and positions us to provide an even higher level of customer support to our GE, CFM International, and Rolls-Royce customer base throughout the region," said Dieter Moeller, president and CEO. "The Middle East region is a very important and strategic location for Rhinestahl as we continue to expand operations and serve our customers."

Dnata tests use of blockchain technology

Dnata's cargo operations, in conjunction with Emirates Innovation Lab, IBM and Flydubai Cargo, has created a new innovation through the use of blockchain technology.

Kevin Ennis, vice president commercial and business development for Dnata's UAE cargo operations, said: "Dnata has always been at the forefront of innovation and the success of our study to use blockchain technology in our operations means greater security, efficiency and cost savings to our customers.

"We are on the cusp of revolutionising the way we operate and the success of this initiative with our partners will give the industry a real boost towards seamless service delivery."



Dnata's Blockchain team.

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STEFAN PICHLER

CONTINUED FROM PAGE 17

lost – nothing moved – so now we try to enhance revenue management, sales, marketing and ancillary revenues.”

Royal Jordanian’s sassy advertisements, launched before Pichler took on his role in May, were just a taster of things to come.

Under his watch, the airline has ditched its gentrified image in favour of a stripped-down, cheap and cheerful brand that treats air travel as a “commodity” and is better placed to compete with low-cost competitors.

“My mission here at Royal Jordanian is to make the company sustainable profits,” he said. “I developed a five-year turnaround plan, which got approved by our board. Our plan is not about market share and not about opening new markets. We don’t want to rule the world. Our plan is making money every year, full stop.”

He highlighted Royal Jordanian’s third-quarter results as an early sign of success. The company achieved a net profit of 31.8 million Jordanian dinar (\$44.9 million) during the period, thanks in large part to a load factor of 75%, compared with last year’s average of 65%.

The improvement stemmed from a “more aggressive commercial strategy” that has its roots in Pichler’s experience heading up low-cost operators like Jazeera Airways and Thomas Cook. Hot meals have been replaced with cold snacks on most flights, he noted, while a series of promotional campaigns have been launched to win publicity and stimulate the market. The first such initiative, dubbed “Fares Are Not Fair”, attracted 50,000 new customers.

Low-cost game

“We try to play the low-cost game in Jordan,” Pichler enthused. “We have very attractive fares, we have non-refundable cheap fares, and we grow the market.”

Asked to what extent Royal Jordanian can really become a no-frills carrier, the chief executive appeared nonplussed. “Excuse me, we are moving already in that direction,” he insisted. “We are going to offer branded fares, and the lowest branded fares will be very attractive, but you can only have hand luggage. We will offer exactly this kind of product.”

Would the airline go so far as to remove all complementary food? “Happy to! I will go as far as I need to go to make money,” he responded.

While some customers will be dismayed by the strategy, Pichler believes that Royal Jordanian needs to keep pace with industry trends. Tim Clark, the boss of Dubai’s Emirates Airline, has openly contemplated adding a “budget economy” class to his wide-body services, while also seeking greater cooperation with low-cost unit Flydubai. Even Saudia, the conservative flag-carrier of Saudi Arabia, has entered the low-cost sphere with new subsidiary Flyadeal.

Going down the low-cost route also carries less risk than alternative strategies – an important point for a government shareholder that has grown tired of losses.



Royal Jordanian now treats air travel as a “commodity” and is better placed to compete with low-cost competitors.

“We define our core home market as the Levant, not the Gulf,” Pichler emphasised. “That means our key competitors are not the non-commercial Gulf airlines, like Etihad, Emirates and Qatar Airways. Their shareholders pump money in. We are publicly listed, we are on the stock exchange, we cannot pump money in! We need to deliver profits.”

Avoiding competition with what he describes as state-subsidised companies means avoiding the specialism of these so-called super-connectors – intercontinental transfer traffic. Royal Jordanian’s historic plans to grow sixth-freedom flows through Amman have, thus, been abandoned, with the result that the Gulf and Asia are no longer considered priority growth markets.

Indeed, the change of strategy appears to have been decided prior to Pichler’s arrival. Both of the Far Eastern routes added in late 2015 and early 2016 – Jakarta in Indonesia, and Guangzhou in China – were dropped after a year of operations.

Their cancellation followed earlier pull-outs from the Indian sub-continent and west Africa – two other sources of connecting traffic.

Selective network development

Modest growth and selective network development is, instead, the order of the day. Management want to grow operations by “about 3% to 3.5% per year” until 2023, adding a handful of mostly western routes. Washington DC in America, Copenhagen in Denmark, Stockholm in Sweden, and Kyrenia in Cyprus have already been identified as targets, while operations will also be scaled up in Aqaba, the southern city just across the border from Eilat in Israel.

Royal Jordanian currently serves 20 points in Europe; 15 in the Middle East; four in northern Africa; four in North America; and three in the Far East. Its mixed fleet comprises seven Boeing 787 Dreamliners, 12 Airbus A320-family jets, five Embraers and two wide-body Airbus freighters.

Committing to “very rational” growth of the fleet that matches the network development, Pichler has set a target of 30 aircraft by the end

of the turnaround plan. This will not include Royal Jordanian’s eighth ordered 787, which is being cancelled because “we can’t fly it profitably”. But it will include a reorganised single-aisle fleet. “The growth will be narrow-body,” Pichler confirmed. “We will develop a fleet plan in the next four to five months. My objective is to go to a single [type] narrow-body fleet. It can be Airbus, it can be Bombardier, it can be Embraer, it can be Boeing. Anything.”

With two decades of C-level experience in the airline and tourism sectors, the Jordanian Government has every reason to be confident in Pichler’s ability.

If he has a flaw, though, it may be his honesty. Despite claiming that his turnaround plan “focuses on RJ being a consumer champion”, the airline boss freely admits he is stamping out competition in the sector.

Air Arabia Jordan suspended scheduled flights within months of his appointment, officially blaming the Jordanian Civil Aviation Regulatory Commission for denying its traffic-rights requests. In reality, Pichler’s influence in the matter is plain to see. “I try to own the market so I try to kick everybody out, full stop. That’s how life is,” he said. “I am there to operate a profitable airline, so if a competitor reduces my profits I want to kill them. I hate competitors.”

Pressed on the negative impact that a monopoly would have on Jordan’s economy, he retorted: “I’m not paid for the overall growth of the air transport market in Jordan. I’m not the transport minister. I’m not the tourism minister. I am just a guy who runs the airline.”

Such remarks may be encouraging for shareholders in the company. They are certainly well-suited to a small airline that punches above its weight for marketing.

But they also expose a conflict of interest within government. Jordan’s leaders must decide what price they are willing to pay to see their flag-carrier turn a profit. Lifting commercial performance without stifling competition is surely a better option for the country and the travelling public. ■

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BOEING TAKES FLYDUBAI TO THE MAX

As 2017 came to a close, Boeing and Flydubai finalised the deal for 175 Boeing 737 MAX aircraft – the largest single-aisle jet order in Middle East history. The contract, which includes options for an additional 50 jets, is valued at \$27 billion at current list prices.

The order was announced at the Dubai Air Show in November and allows Flydubai to take advantage of the 737 MAX family's flexibility and commonality, while using the size and range of the MAX 8, MAX 9 and MAX 10 to suit its growing network.

"I am delighted that we end 2017 with this announcement representing the next chapter in Flydubai's success story," said Ghaith Al Ghaith, Flydubai's CEO. "This third order with Boeing gives us the ability to carry 44 million passengers since we began operations.

"With up to 296 aircraft on order, we have become one of the world's top 10 airlines in terms of order backlog and we look forward to continuing to enhance the connectivity of Dubai's aviation hub."

Industry analyst, Saj Ahmed, said the deal throws down a gauntlet to rivals such as Sharjah's Air Arabia.

"It's a positive statement of intent to dominate the GCC

market by proliferating routes faster than the competition, while driving down costs to enable fares to stay attractive to new and existing customers," he said.

"Competitors like Air Arabia and others have sat idly on the sidelines for too long. Serious questions about Flydubai's rivals, dithering on fleet replacements, mean that they are now not in a position to robustly provide effective competition since they will be operating older, less fuel-efficient fleets.

"Air Arabia has committed to only a handful of A321neos – this is simply not enough when you look at the size of aggressive expansion that Flydubai is setting up for. Air Arabia and other GCC LCC's are vying for the "me too" status behind Flydubai."

Flydubai is developing closer ties with its sister-company, Emirates, and will move to Terminal 3 ahead of an eventual move to Dubai World Central's Al Maktoum International Airport.



Ghaith Al Ghaith: "This is our largest order in our eight-year history."

Flydubai has ordered 175 Boeing 737 MAX aircraft.



Adel Ali: "We've not been able to secure sufficient traffic rights that we want to improve the business."

BATTLE FOR THE ARABIAN RIGHTS

Air Arabia is mainly limiting its Jordanian operation to charter flights after being unable to secure traffic rights to allow it to expand its scheduled services.

The Sharjah-based low-cost carrier has operations based in Jordan, Morocco, Egypt and Ras Al Khaimah.

It started services from the Jordanian capital, Amman, in 2015 after it set up a joint venture with local carrier, Petra Airways, operating under the title Air Arabia Jordan. The airline bases two A320s in Amman.

"We still do scheduled [flights] but it's very small," said Air Arabia CEO, Adel Ali. "We've not been able to secure sufficient traffic rights that we want to improve the business."

Scheduled services from Amman at present are mainly to Sharm El-Sheikh and Saudi Arabia, he said. Air Arabia's website route map shows services from Amman to Medinah, Jeddah, Sharm El Sheikh, Alexandria, Antalya and Sharjah.

However, he said: "There seems to be sufficient demand for charters," and that would continue to be the main activity out of the

Jordanian capital until more scheduled rights could be secured. Charter operations were being undertaken to surrounding countries and to Europe.

Although two-year-old Air Arabia Jordan did not blame Royal Jordanian for the decision, Royal Jordanian CEO, Stefan Pichler, has been clear that the flag-carrier is taking an aggressive stance against new market entrants. (see story page 17)

"We have decided to operate charter flights from Amman until a time we receive a commercially-viable schedule that best serves our customer base," a spokesperson for Air Arabia said.

"Air Arabia Jordan's growth from Amman Queen Alia International Airport has been capped by traffic-right approvals that are required for the carrier to develop its network and grow its operations. We will resume our scheduled flights from Amman as soon as we receive necessary traffic-right approvals, which we are confident that the local authorities in Jordan will grant us as and when they are ready."

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every year at
the facility

Facing stronger than expected competition in its home market, SaudiGulf Airlines is turning its gaze abroad while re-evaluating a stalled order for the Bombardier CSeries.

Martin Rivers talked to president *Samer Majali*.

When SaudiGulf Airlines applied for an operating licence in the Kingdom of Saudi Arabia in 2012, owners Al Qahtani Group believed that a winning bid would grant them access to a heavily underserved duopolistic market.

By the end of the year, it was clear that SaudiGulf would not be the only company emerging from the tender process with flying rights.

Al Maha Airways, a subsidiary of Qatar Airways, was also approved to launch operations. And, while its plans ultimately came to naught, two other market entrants were waiting in the wings – Nesma Airlines, a regional carrier formerly based in Egypt; and Flyadeal, a low-cost subsidiary of flag-carrier Saudia.

Together with privately-owned Flynas, five separate carriers now ply routes across the kingdom. Though fantastic for passengers, this explosion of competition has left SaudiGulf re-evaluating a business model that presupposed rapid growth and untapped demand.

“We were surprised when Al Maha was given the second licence (which has recently been frozen) and, subsequent to that, two additional carriers were licenced, fast-track, while we took the long route,” said SaudiGulf president, Samer Majali, referring to the airline’s three-year delay in launching, which most observers blamed on foot-dragging by the General Authority of Civil Aviation (GACA).

“Many studies by different companies have said that the Saudi Arabian market can only take three domestic carriers. Now there are five, and obviously everybody is adding capacity.”

High-yield premium traffic

Oversupply is particularly damaging for SaudiGulf because of its focus on high-yield premium traffic. The airline’s on-board product features leather seats, in-flight entertainment systems and free meals – and that’s just in economy. Its extravagant first-class cabin is best-in-class for the Saudi domestic market, matching even Al Bayraq, Saudia’s all-business-class shuttle service. Yet Saudi customers now have access to “some of the lowest fares in the world”, dragging down the airline’s pricing power.

“The biggest problem now is that people are undercutting [airfares],” Majali explained. “This very low pricing is partly due to the Saudi market itself – with the five carriers – and it’s partly due to the overall revenue dilution that’s happening in the region and globally.”

Disruption to SaudiGulf’s fleet development has also been a major headache. The airline had planned to launch with the Bombardier CSeries CS300, having ordered 16 firm units plus 10

BRIDGING THE GULF

Delays to the Bombardier CSeries CS300 meant SaudiGulf had to begin operating with four Airbus A320s instead.



options. But delays to the programme forced it to begin operating with four Airbus A320s instead.

“We’re very unhappy with them, because of what happened,” Majali said of the Canadian aircraft-maker. “The programme delays have caused us some big damage and big costs, because we have an overhead sized for an operation several times the size of what it is today. We were severely damaged by the inability for us to grow in the second half of 2016, and 2017, and now 2018.”

Although he described the CS300 as a “good aeroplane” with impressive seat costs, the president said that Bombardier had fallen short of its contractual obligations and that “all options are open” to the airline as a consequence. No date has been set for the deliveries.

While those commercial talks continue, management have decided to wet-lease between two and four narrow-bodies to give SaudiGulf a sorely-needed “capacity bump” in 2018. That will allow the Dammam-based company to spread its wings beyond Jeddah, Riyadh and Abha, taking in some smaller domestic points and – critically – venturing overseas.

“The civil aviation [authority] wanted us to really get some experience domestically for the first year of operations. That’s why we didn’t go international [before],” Majali noted. “Now that we have established ourselves – we finished one year of successful operations at the end of October [2017] – we are moving on to re-deploy some of the aeroplanes in international operations.”

The airline will start by linking Dammam with Dubai in the UAE, before also branching out to

unspecified Pakistani points and, potentially, Cairo in Egypt and Khartoum in Sudan.

Regional expansion had always been in the business plan, but Majali admits that challenging conditions at home have forced him to scale up the overseas strategy faster than expected. Worryingly, he is not the first airline boss to lose faith in the kingdom’s domestic market.

Domestic fare cap

In 2010, Simon Stewart, the then-chief executive of Nas Air (later rebranded Flynas), cut back domestic operations in favour of growing flights to India and Pakistan. Stewart also complained that the local market had become financially unviable, blaming a domestic fare cap that stopped airlines raising ticket prices above a level deemed “predatory” by the authorities. But Nas Air’s narrow-bodies struggled to match the seat costs of its competitors’ wide-bodies, forcing a complete withdrawal from the sub-continent.

Majali, at least, can take comfort from on-going reforms to that controversial fare cap. GACA started dismantling it in 2014 by allowing carriers to lift ticket prices within 10 days of departure. Further steps towards free-market pricing are planned for this year, before the mechanism is dropped entirely in 2019.

“The fare cap is being removed gradually,” Majali confirmed. “But the civil aviation [authority] still feels that it has to intervene at the moment, which is a bit of an issue, bearing in mind that there are now five airlines.”

Although greater commercial autonomy



Samer Majali: “The programme delays have caused us some big damage and big costs. We were severely damaged by the inability for us to grow in the second half of 2016, and 2017, and now 2018.”

should boost profits in the sector, higher ticket prices are only achievable when paired with capacity discipline – something the market clearly lacks.

Flynas has outstanding commitments for 80 aircraft – more than double its current fleet size – while Saudia and Flyadeal are both negotiating large orders. Majali’s plan to add eight jets in 2019 and eight in 2020 seems modest by comparison. Without rationalisation, all Saudi carriers can expect losses in the years ahead.

The stakes will be raised even higher for SaudiGulf in 2021, when it could take delivery of its first twin-aisle aircraft. Majali confirmed last year that he is negotiating a purchase of up to 16 Boeing wide-bodies – part of a package of mostly military deals unveiled during US President Donald Trump’s visit to the kingdom.

Asked for an update, he said SaudiGulf will likely place a firm order for “eight to ten aeroplanes, with some options to make it up to 16”. Both the 787 Dreamliner and the 777 are being considered.

Passenger demand

“We’ll be using those wide-bodied aeroplanes initially on short-to-medium-range routes, where passenger demand is high,” the president explained. “We will do long-range eventually, but the primary [aim] is [sourcing] a large people carrier that helps us [add capacity] in slot-restricted airports. Plus, we need an aeroplane with very low seat mile costs.”

He described the 787-10 – a stretched variant of the Dreamliner capable of seating up to 330 passengers – as an “ideal aeroplane” to compete with Saudia’s A330-300 Regional, a variant of the Airbus wide-body that is designed for high-capacity, short-haul routes.

By up-gauging to twin-aisle aircraft on regional flights, SaudiGulf could avoid the difficulties encountered by Nas Air at the turn of the last decade. But the experience of one of Stewart’s successors, Raja Azmi, offers another cautionary note from the kingdom. Azmi also took Flynas down the wide-body path – albeit targeting long-haul destinations such as London and Kuala Lumpur – only to abandon the strategy within months due to heavy losses.

If Majali has one thing working in his favour, it is undoubtedly the strong brand recognition that SaudiGulf has cultivated during its short time in the skies. “The feedback has been very good,” he said. “We are currently rated the highest [of any Saudi carrier] in terms of service offering and general quality of service – on-time punctuality, reliability and so on.” ■

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Sudan's glimmer of hope

For a decade, Sudan Airways has struggled to maintain services in the face of US sanctions against the African nation. Those sanctions have now been eased, but the airline still faces problems, as deputy general manager, Yasir Timo, explained to Alan Dron.



We still cannot buy aircraft at the moment. This will be the case until we are removed from the list of states sponsoring terrorism.

YASIR TIMO

It has been a long, hard road for Sudan's national airline. After the country was placed on a US sanctions list in 2006 for war crimes against its own people and support for known terrorists, the company found it difficult to source new aircraft, spare parts and all the other services that are required to allow an airline to function.

Struggling to maintain services, it was forced to acquire aircraft wherever possible, with its current fleet consisting of just one Airbus A300-600 and a smaller A320.

Those aircraft fly seven international routes – to Riyadh, Jeddah, Cairo, N'Djamena, Kano, Juba and Asmara – as well as four domestic destinations.

The October 2017 decision to ease sanctions allowed US companies to trade with the African nation once again. However, Sudan remains on the US list of state sponsors of terrorism, which means the airline's equipment situation is unlikely to improve in the near future, explained deputy general manager, Yasir Timo.

The US Government must still grant licences for companies wishing to export a wide range of goods to Sudan.

"It's not easy at all to buy spare parts. It's very difficult, very costly and always takes us a long time to find somebody who can provide us with them," said Timo.

"We still cannot buy aircraft at the moment. This will be the case until we are removed from the list of states sponsoring terrorism."

In the past, the company has used aircraft on operating leases from other Sudanese and foreign companies to maintain services. Today, aircraft are sometimes leased from Sudanese operators such as Badr Airlines and Tarco Air.

There are glimmers of light on the horizon. "After these sanctions have been partly removed we are starting to have contacts with aircraft manufacturers such as Boeing and we hope that we will find a way to get a licence to get new aircraft," said Timo.

"We are doing this through the US embassy in Sudan. We need to come up with a practical lease plan that shows that we are trying to get aircraft only for civil use. The Americans are always afraid of things that can have a dual use, civil and military.

"We'll try to come up with a business plan that they can monitor, so they can be assured that [the aircraft] are for civil use."

Export control requirements

The airline is receiving assistance from the US Bureau of Industry and Security (BIS) in the Office of Foreign Assets Control (OFAC). BIS ensures that exporters have the information they need to comply with US export control requirements on commercial goods. "They are trying to help the vendors apply," said Timo.

One possible means of easing the process of finding new aircraft is through aid from Saudi Arabia. Riyadh has offered funding to help improve Sudan's transport sector as a whole and it may provide easy funding terms for Sudan Airways to acquire aircraft, or even donate them. But this route remains unclear and Saudi Arabia would still have to receive a US licence, even to donate aircraft.

When these problems are finally resolved, Sudan Airways is looking at two classes of narrow-body aircraft to renew its fleet – one in the 120 to 140-seat category and a slightly larger type in the 180 to 220-seat bracket. Various models from the Airbus A320 and Boeing 737 families are obvious contenders.

The airline also has an eye to longer-range routes in the future and hopes that the role of Khartoum Airport can be enhanced. "We used to fly to London before and we can connect traffic from northern to southern Africa using Khartoum as a transit point," said Timo.

Like many of the region's carriers, Sudan Airways also foresees a role in carrying pilgrims to Saudi Arabia's holy sites. A Boeing 737-900, for example, would be capable of flying direct from points in west Africa, such as the Malian capital, Bamako, to Jeddah.

For the moment, however, those glimmers of light on the horizon are still rather faint.

Open skies with the European Union could help the Tunisian Government turn the corner on a difficult few years. But for Ilyes Mnakbi, the new chief executive of flag-carrier Tunisair, the hard times are just beginning.

Martin Rivers reports.

Tunisair struggles to squeeze through the Open door

The European Union's delegation to Tunisia could not have struck a more optimistic tone in December, when EU Transport Commissioner, Violeta Bulc, met with officials in Tunis to conclude negotiations over the looming open skies treaty between the two sides.

The Tunisian Government has been inching towards the treaty for several years, emboldened by the success of Morocco's deal with the EU in 2006. That landmark agreement saw tourist arrivals rocketing by 60% over five years, propelled by an influx of European low-cost carriers to the country's popular holiday resorts. Tunisia's treaty, Bulc predicted, would be no less transformative.

"Today, we are not only delivering on the EU's aviation strategy, we are also taking our relations with Tunisia to new heights," she said. "This far-reaching aviation agreement will improve market access and contribute to the highest safety, security and environmental standards. This is great news for tourism, passengers and businesses."

Despite promising to grow Tunisia's gross domestic product (GDP) by 2.7%, the open skies agreement remains a source of contention for many stakeholders in the country.

Trade unions staged a protest within days of the deal being rubber-stamped, warning that flag-carrier Tunisair – by far the country's main employer of aviation workers – cannot withstand a competitive onslaught from Europe. The state-owned airline has already lost \$240 million since the Arab Spring erupted in 2010, reeling from an exodus of tourists that only accelerated after Daesh targeted the country in 2015.

For Tunisair chief executive, Ilyes Mnakbi, who describes the deal as a "huge problem", buying time has become the preferred strategy. "We will not have open skies in Tunis for five

years," he said, referring to the capital's temporary exclusion from the agreement. "We will have open skies in Djerba, in Monastir, but not Tunis."

By the time Tunisair's primary hub is opened to competition, Mnakbi said he expects "about 1,200" of his 7,400 employees to have taken voluntary redundancy. Reducing the headcount has been a priority for successive bosses at the airline, but disputes over severance pay have repeatedly derailed the process. Tunisair currently employs more than 230 people for each of its aircraft, versus less than 70 per aircraft at Royal Air Maroc.

"We have to give them an amount of money for compensation for early departure," the chief executive confirmed. "We hope that next year we will find an agreement. Then we have the appropriate number of employees and we will be in a better position."

No-frills offshoot

Creating a no-frills offshoot could be another way for Tunisair to boost its competitiveness, Mnakbi added, with management weighing up launching a "small new company" with a "low-fare, not low-cost" philosophy.

The subsidiary would configure its aircraft in an all-economy layout and charge extra for food, checked luggage and seat selection. If properly executed, it could narrow the gap between Tunisair's full-service pricing and that of ultra-low-cost-carriers like Ryanair. But its small scale would be a significant handicap. When Royal Air Maroc made a similar foray into the no-frills arena with Atlas Blue, it quickly deemed the project as non-viable.

A better lesson from Morocco's flag-carrier could be its reliance on sixth-freedom traffic flows between West Africa and Europe. Rather than competing in low-yield point-to-point

markets, Royal Air Maroc retreated to its Casablanca hub after open skies and focused on routes that Ryanair had neither the traffic rights nor the inclination to serve.

The result was a dramatic reversal of fortunes from four years in the red to four in the black – a turnaround that Mnakbi is eager to replicate for his government shareholder.

Tunisair's international network is already primed for transit traffic. The flag-carrier flies to 29 destinations in Europe; eight in West Africa; five in North Africa; three in the Middle East; and one in North America. It also operates three domestic routes.

Regional subsidiary Tunisair Express, meanwhile, serves four domestic routes, as well as connecting Tunis with Naples, Italy and the Mediterranean island of Malta.

The addition of Montreal, Canada in 2016 heralded Tunisair's entry to the long-haul market. Frequencies on the route will double to four per week this year, while New York JFK Airport is also in the pipeline for 2019.

"We have a lot of demand from [passengers in] African countries to get them to Tunis, and then to go to other countries in Europe and Montreal," Mnakbi said, when asked about the sixth-freedom model. "Maybe when we open New York it will be an opportunity for African people to go there."

Finding new markets in the airline's home continent is a critical component of the strategy. Having launched flights to Cotonou, Benin last December, Tunisair will this year begin serving Khartoum, Sudan; Douala, Cameroon; and N'djamena, Chad.

For 2019, its targets are Lagos, Nigeria and Accra, Ghana. The roadmap for 2020 has not yet been decided, but Libreville, Gabon is believed to be among the candidates.

Frequencies are also likely to grow in the key



“We will not have open skies in Tunis for five years... We will have open skies in Djerba, in Monastir, but not Tunis.”

ILYES MNAKBI

transit points of Dakar, Senegal and Abidjan, Côte d’Ivoire, owing to Tunisair’s reliance on fifth-freedom routes in West Africa.

Growing capacity in Europe will be more challenging due to 2015 terror attacks on a beach in Sousse and a museum in Tunis. Those atrocities claimed the lives of 58 foreign tourists, prompting several western governments to warn their citizens against visiting Tunisia. However, with Daesh on the back foot across North Africa, most countries have softened their travel advisories and holidaymakers are again returning.

“In 2017, we had growth of traffic. In Europe it was about a 23% increase and we suppose that this year it will be about 11% or 12%,” Mnakbi confirmed. “Now we can consider that Tunisia is in a good position of safety and we are very happy to have visitors from Germany, from France,

from all Europe to come into Tunisia.”

He noted that Manchester in the UK and Dublin in Ireland could both re-join the network in 2018, likely as charter services. Britain was the worst affected country in the 2015 attacks, losing 31 of its citizens. But the UK’s Foreign Office eased its travel warning for Tunisia last summer, allowing tour operators to re-enter the market.

Steady expansion at Tunisair will necessarily be accompanied by a gradual increase in the fleet size. The flag-carrier currently deploys 16 Airbus A320s, four A319s, seven Boeing 737-600s, and two A330-200s.

Six leased A320neos will be inducted between 2019 and 2020, injecting new capacity for the African network in particular. Mnakbi is also considering whether to take more Boeing narrow-bodies, noting that some of the -600s

will be relocated to Djerba and Monastir to fend off low-cost competition.

Parallel changes are afoot at Tunisair Express. The regional subsidiary has already agreed to sell its ATR 72-200 to Niger Airlines, and Mnakbi now wants to replace its two 72-500s and one Bombardier CRJ900. Despite saying that newer models of the same variants will be sought, the chief executive left the door open to a possible CSeries switch.

“We visited the [Dubai] air show and we are interested maybe to purchase some CSeries, because it is a very good aeroplane. For us it will be useful,” he said, without clarifying which business unit would deploy the type. “We will check with our minister and then we will decide maybe to take at the most, in the beginning, two or three.”

Restructure Tunisair

Having witnessed the impact of open skies on Royal Air Maroc, Mnakbi is determined to restructure Tunisair before low-cost carriers descend on its home base.

Even as he lays down plans for a more efficient future, though, there is little doubt that management remain fundamentally opposed to liberalisation. With no firm date set for the signing of the treaty, Europe’s policymakers should not take for granted that the deal will be implemented in full.

“Royal Air Maroc started the experience [with open skies] because they expected a lot of tourists will fly on board these low-cost carriers. But it was the Moroccan people living abroad who take these flights! [There was] no increase in the hotels,” communications director Youssef Kekli argued. “That’s why the Tunisian Government wants to reinforce the [flag-carrier’s] position in the main airport before accepting open skies.”

OMANI CARGO PLANS START WITH A VILLAGE

Oman has given the go-ahead to an air cargo facility at Muscat International Airport. Projected to start operations in June 2019, the centre is estimated to bring in \$78 million revenue by 2020.

The venture was first suggested by Tanfeedh (the national programme for enhancing economic diversification) and is one of 16 related investments and initiatives by the Omani Government to create a logistics-centric economy in the sultanate.

The air cargo village's facilities will include warehouses, freight-forwarding and cargo-handling, customs and inspection areas, and distribution. Specialist-handling areas for perishables, pharmaceuticals, live animals and valuables are also planned.

The village will actively assist multimodal cargo transfer. "To promote multimodal transportation in cargo-handling, the village project [will create] multiple modes of transportation that operate round-the-clock to support shipping and packaging," said a Tanfeedh spokesperson.

Oman Air Cargo will be central to the operations. Mohammed Al Musafir, senior vice-president – commercial cargo, at the airline, said: "This state-of-the-art cargo-handling facility will offer Oman Air the



opportunity to carry more consignments than ever before, further specialise its product offering and support the cargo division's growth strategy."

Al Musafir said the airline had ambitious plans to grow its cargo share in the Middle East by trying to take on the market leaders like Emirates SkyCargo, Qatar Airways Cargo and Saudia Cargo. That would take a massive investment, not only in aircraft and facilities, such as the air cargo village, but also skilled employees and IT support.

Oman Air already operates a joint venture with

Cargolux for cargo flights to Chennai and Mumbai, but Al Musafir claims one current plan is to increase leased freighters to improve services to hub destinations in Africa, Europe, the Indian subcontinent and the Far East.

Supporting those flights will be the air cargo village, which he suggests will position Oman into becoming not only a successful transit hub in its own right, but also the cargo gateway of the Middle East.

That kind of positioning will require some heavy commitment, but with Oman having a higher gross domestic product per capita than Japan or the UK, it may just have what it takes. ■



Mohammed Al Musafir (inset): "This state-of-the-art cargo-handling facility will support the cargo division's growth strategy."



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Turkey has previously indicated its interest in building modernised jet and turboprop versions of the Dornier 328.

PICTURE: LOREBI



All-change on the Turkish aero-design front

Turkey says it plans to design and build a brand-new passenger aircraft midway through the coming decade. But, asks Alan Dron, what does this mean for its previously announced intentions to revive a 1980s design?

The rapidly-expanding Turkish aerospace industry has undertaken multiple projects in recent years, from the Hürku military turboprop trainer to the A129 ATAK combat helicopter.

It is also developing many of the technologies required for a modern aerospace sector to successfully compete in world markets, and individual companies are now part of the international supply chains that provide components to the major aircraft manufacturers.

One area it has not yet tackled is the civil airliner market. That sector is now on the horizon – although a slightly distant one – with Turkish Aerospace Industries' (TAI) chief executive, Temel Kotil, talking of developing a new-design “100-seat-plus” aircraft for the world market.

Kotil, the former head of Turkish Airlines, who took up his current role in 2016, said at the Dubai Air Show that TAI's intention was to create a clean-sheet-of-paper design. Since then, he has talked in Turkey's newspapers of an indigenously designed aircraft that would make extensive use of composites for both fuselage and wings and be powered by two as-yet-unspecified turbofans.

Speaking to the Turkish press, Kotil said that TAI planned to start the design of the new aircraft within the company's current five-year plan.

He made the point, however, that a significant part of TAI's design capacity was being taken up with the new Hürjet, a supersonic trainer and light attack aircraft for the Turkish Air Force. Other projects taking up manpower and design resources are a heavier version of the ATAK and a transport helicopter in the same class as the Sikorsky Black Hawk.

Turkey and the UK have also signed an agreement by which BAE Systems will supply technical and engineering assistance to TAI in developing a new-generation air superiority fighter, the TFX.

This heavy military workload, Kotil told Turkish newspaper *Takvim*, would take up much of TAI's capacity for the next few years. However, by 2022, not only would many of these projects be coming to fruition, but working on them would have given TAI several hundred increasingly

experienced engineers and technicians, who would then be able to turn their skills to the new airliner project.

The plans make no mention of the previously announced project to re-start production of the Dornier 328 in Turkey. In June 2015, the US-based Sierra Nevada Corporation (SNC) announced that it was forming a new Turkish subsidiary, TRJet, to serve Turkey's newly announced regional aircraft project (RAP).

To do this, TRJet would produce a modernised version of the 30-seat 328, which went out of production after Dornier filed for bankruptcy in 2002. This would be a first step towards the production of what would become Turkey's domestically built passenger aircraft, the TRJ628, a largely new design in the 50 to 70-seat class.

Changes the face of transportation

“We are confident that TRJet, working with our partners in Turkey, and the commitment and support of those involved in the Turkish RAP, will be successful in producing aircraft that changes the face of transportation in Turkey,” said SNC president, Eren Ozman, in a statement at the time.

Over following weeks, it emerged that initially turbofan, then turboprop, versions of the 328 would be produced, with the Turkish Government indicating an initial requirement for up to 50 aircraft, to be used to establish a network of domestic routes between secondary Turkish cities.

Further details emerged at 2016's Farnborough International Airshow, when TRJet said that, along with TAI, it was developing initial agreements to support the RAP.

TRJet also announced a series of agreements with major suppliers for the new versions of the 328. These included plans for Pratt & Whitney Canada to use a new version of its PW127 engine to power TRJet's TRP328 turboprop variant.

Rockwell Collins' Pro Line Fusion avionics system was selected for both the turbofan and turboprop; Liebherr-Aerospace was to supply the aircraft's air management system, while Heggemann would build the main and nose landing gear.

However, both TAI and SNC have declined to comment on the current status of the project.

Political instability a threat to Gulf airline industry – IATA boss

The International Air Transport Association's (IATA) top official believes that political instability in the Middle East is posing a threat to the region's airline industry growth. Kaleyesus Bekele reports.

The Middle East airline industry has not yet totally recovered from the Arab Spring – the 2010 series of protests and demonstrations across the region.

That's the view of IATA CEO, Alexander de Juniac, who believes that continuing regional political instability is still affecting the industry.

"The tourism industry in Egypt, for example, has not yet fully recovered from the impact of the Arab Spring," he said.

"The geopolitical instability and security threats hovering in the region are not encouraging the development of air traffic. What we have seen so far is that dynamic factors are able to overcome the challenges. But the more instability you have, the less attractive the region will be."

The CEO cited the blockade in Qatar, the war in Yemen, and the position of Iran and the Saudi-led countries as not being favourable conditions for air transport.

Speaking of the blockade, de Juniac said IATA believes that the world needs connectivity with Qatar. "We will help to establish normal connectivity between Qatar and the rest of the world. We have practically helped the International Civil Aviation Organization (ICAO) to find an appropriate corridor for Qatar Airways and for the airlines flying to Qatar to be able to have access to the country."

Border closure

He said that governments had the right to close their borders when they thought it is necessary. "They can do it but border closure has never been good news to the airline industry," he added.

Regarding the war in Yemen, de Juniac said that uncontrolled groups were firing short-range missiles. "When missiles are fired by a state army there is no problem because it applies ICAO regulations and warns airlines. But when uncontrolled groups fire missiles, it is dangerous. That is what happened in Ukraine and it is now the case in Yemen. The missiles are not fired precisely and, in that case, there may be a need to establish a no-fly zone."

He added that, that in the wake of the Malaysian airliner MH17 disaster (a scheduled passenger flight from Amsterdam to Kuala Lumpur that was shot down on July 17 2014 while flying over eastern Ukraine, killing all 283 passengers and 15 crew), pilot awareness of missiles had increased.

The CEO also reacted to the third version of the Trump administration's travel ban, which the US Supreme Court allowed to go into effect on December 4. The ban bars most citizens of Iran, Libya, Syria, Yemen, Somalia, Chad and North Korea from entering the United States.



“The more instability you have, the less attractive the region will be..”

ALEXANDER DE JUNIAC

"There is little passenger traffic coming from those countries to the US. There are no direct flights between these countries and the US and that is why we believe that the operational consequence will be limited," he said.

De Juniac said that Gulf airlines had been affected by various factors over the years. "It's not just political instability, they've also been growing at an incredible (double-digit) pace. Now I think they are entering into normal waters," he said.

"They are now growing like their peers. They are discovering the big world – facing similar issues like replanning their networks, which is normal business."

Despite the political turmoil, IATA forecasts that Middle East carriers will see net profits improve to \$600 million in 2018 – up from 300 million last year.

Demand in 2018 is expected to grow by 7%, outpacing announced capacity expansion of 4.9% (the slowest growth since 2002).

According to IATA, the region's carriers face challenges to their business models, and from low oil revenues, regional conflict, crowded air space, the impact of travel restrictions to the US, and competition from the new "super connector" (Turkish Airlines).

Despite the challenges, however, there is positive momentum heading into 2018.

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LIGHT FANTASTIC

The B-250 will be built in the UAE – Calidus has already started development of a production complex in Al Ain.

Calidus, an Emirati industrial machinery and equipment company located in Abu Dhabi, unveiled its new B-250 light attack aircraft on the first day of the Dubai Air Show, after a campaign of teasing advertisements.

Jon Lake reports.

Calidus originally laid down the specification for a carbon fibre light attack and trainer aircraft in 2015 and commissioned Brazil's Novaer to design and produce the aircraft.

The resulting B-250 was claimed to be "the first military fighter ever developed in the UAE", although the aircraft was actually co-developed with and designed by Novaer.

Novaer's Hungarian-born chief designer, Joseph Kovács, working under the leadership of technical director, Marcelo Ramon Ferroni, designed the B-250 to an unusually tight deadline.

"Novaer conceived, designed and manufactured a complex and sophisticated aircraft, all carbon fibre, and flew the first prototype only 25 months after the start of work," explained company CEO, Graciliano Campos.

The B-250 programme involves suppliers from all over the world, including Brazil, Canada, the USA, the UK, Sweden, France, Germany, Italy and Switzerland. US company, Rockwell Collins, is a strategic partner in the

project, supplying the Pro Line Fusion on-board avionics system.

All intellectual property rights in the B-250 belong to Calidus, however, and the aircraft is to be built in the UAE, where the company has already started development of a production complex in Al Ain. It claims that this will become a regional hub for aerospace industry excellence, capable of "very high production rates".

Hamdan Abdulla Al Shkeili, Calidus chief software engineer, said the aircraft has already generated significant interest among regional and international air forces, and emphasised that its performance characteristics make it suitable for the light attack, close air support (CAS), intelligence, surveillance and reconnaissance (ISR) and trainer roles. He added that it had been designed from the ground up to address these requirements, rather than being an adapted trainer or civil aircraft. He also claimed that the aircraft would be competitively priced.

The UAE Air Force and Air Defence already operates a fleet of Iomax Archangel light attack

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aircraft and, therefore, does not seem to have an obvious requirement for the B-250, although export prospects in the wider MENA region may be quite good. Al Shkeili explained that the UAE national markings on the aircraft in the Dubai flying display were to: "reflect the aircraft's parentage and not its customers".

In fact, there were two B-250 prototypes at the Dubai air show. The first (PR-ZNT) appeared in the daily flying display, while the second (PR-ZNU) was shown in the aircraft static park, next to Calidus' demonstration tent and simulators.

A close resemblance between the B-250 and the Tucano is, perhaps, not entirely coincidental, since the B-250's designer, Joseph Kovacs, had previously been responsible for the Neiva T-25 Universal aerobatic trainer and had led the design of the Embraer T-27 Tucano.

After leaving Embraer, Kovacs designed a two-seat aerobatic touring aircraft known as the Kovacs K-51 Peregrino, and redesigned the US Aircraft Corporation A-67 Dragon light attack aircraft into a tandem-seat turboprop, which also bore a resemblance to the Tucano. At Novaer, Kovacs helped develop his own K-52 design into the T-Xc basic trainer (now known as the N-210 Sovi) and a four-seat civil derivative known as the U-Xc Pilgrim.

Aircraft component supplier

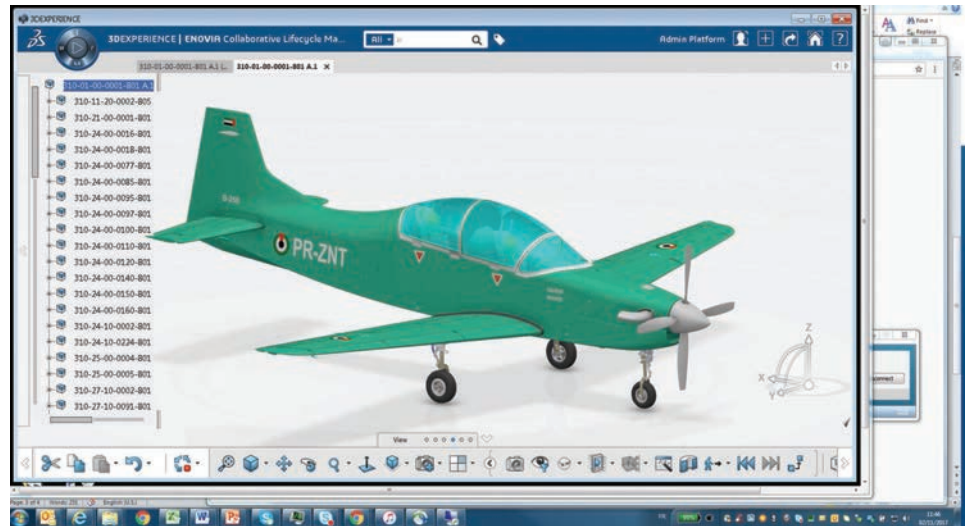
Originally formed in 1998 by the late Luiz Paulo Juanqueira, former head of Embraer's equipment division, Novaer began as an aircraft component supplier, rapidly becoming the prime contractor for the landing gear of the Super Tucano and also working on the design of the Eviation Jets EV-20 business jet (the former VisionAire Vantage), before starting work in earnest on its own aircraft programmes.

The B-250 is larger but lighter than the similarly configured Super Tucano, thanks to its innovative carbon fibre structure, which also allows for more accurate manufacturing and cleaner, lower drag aerodynamic surfaces. Calidus claims that the aircraft enjoys superior performance compared to the A-29 Super Tucano.

"It is the first aircraft in this category to be totally made of carbon fibre," said Al Shkeili.

The B-250 is powered by a 1,600shp Pratt & Whitney PT6A-68 turboprop driving a four-bladed Hartzell propeller. This is the same engine/airscrew combination as is used by the Textron AT-6 Wolverine. The Super Tucano and Pilatus PC-21 use the same engine but with a smaller radius five-bladed prop, a quieter but less efficient solution.

The fully-pressurised tandem cockpits are less steeply stepped than those of the Super Tucano, but are claimed to provide the most comfortable and advanced cockpit environment in the turboprop light attack category, with a Rockwell Collins Pro Line Fusion on-board avionics system. The crew sit on Martin Baker zero-zero ejection seats.



3D technology key to fast-track design

Calidus made use of the Dassault Systèmes 3DEXPERIENCE platform to create virtual designs of the light attack aircraft.

The platform allowed Calidus' teams to virtually design, develop and optimise two prototypes within a two-year timeframe in order to unveil the aircraft at the Dubai Air Show. Its single source of data and integrated applications accelerated Calidus' design process and streamlined the company's project collaboration, both internally and externally with its suppliers.

"We designed our first aircraft through the

3DEXPERIENCE platform from Dassault Systèmes, whose legacy in the industry was a major factor when the time came to choose what solution we would use for the project," explained Hamdan Al Shkeili, chief software engineer for Calidus.

"The 3DEXPERIENCE platform enabled our teams in Abu Dhabi and Brazil to work together throughout the design process to get the aircraft's components right from the start. We successfully demonstrated that, with the right technologies, we could deliver in an industry having the highest technological standards."

The aircraft is fitted with a rugged landing gear for use on rough and semi-prepared airstrips.

The large 'wet' wings have a more highly swept leading edge than some of the B-250's competitors, and are fitted with six hard points for weapons carriage, with a further centreline pylon for the carriage of an external fuel tank or more weapons.

At Dubai, the static aircraft carried seven Tawazun Mk 82 P3 GPS-guided bombs (with two bombs on twin carriers on the central under-wing pylon) and with South Korean seven-round LIG Nex1 LOGIR imaging infrared precision rocket pods on the outboard pylons.

Avibras Skyfire-70 and Equipaer 70mm rocket pods and Halcon Systems DS-16 smart munitions were displayed adjacent to the aircraft.

The official Calidus B-250 brochure listed a warload of four GBU-58 Paveway II 250lb laser-guided bombs, with two AIM-9 Sidewinder IR-homing AAMs and a single drop tank.

An L3 Wescam MX-15 HDi electro-optical/infra-red turret is mounted under the forward fuselage – though this was originally carried under-wing on the first prototype. It is controlled using a sidestick controller in the rear cockpit. The aircraft is also fitted with a fuselage-mounted 30-round chaff/FLIR dispenser.

The B-250 has a 560nm (1,037km) radius of action, flying at 250kts in the attack role, or a 1,180nm (2,185km) radius at 280kts in surveillance configuration, with a sensor turret and three fuel tanks. Ferry range is 2,400nm (4,445km). Mission endurance is up to 12 hours. Calidus has quoted an operating cost of less than \$1,200 per flying hour.

The B-250's maximum level speed is 301kt (557km/h) and the service ceiling is 30,000ft. Maximum payload is 3,960lb (1,796kg), or about 660lb (300kg) more than the rival Super Tucano.

The B-250 has been referred to as the Bader (the Arabic name of a species of Falcon) or as the Bader-250, but reports that there would be a formal naming ceremony at Dubai proved unfounded. Calidus is the genus name of a type of Peregrine Falcon, and broad hints were dropped that something Falcon-related was likely to be chosen for the aircraft.

There was a formal launch of the aircraft at Dubai, attended by the Brazilian Air Force commander, Air Lieutenant Brigadier Nivaldo Rossato, and the chief of staff of the Brazilian General Command of Support (COMGAP), Major Air Brigadier Jose Augusto Crepaldi, together with Brazil's Secretary of Defense Products, Dr Flavio Augusto Correa Basilio, and the director of the defence products department, Air Brigadier Paulo Roberto de Barros Cha.



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The Airbus C295W was displayed as a strike ISR platform. Weapons from Turkey's Roketsan and Spain's EXPAL were on show as options to equip four under-wing pylons that will be mounted.



FORCE READY TO STRIKE

Jibadi militias sweeping across Iraq during 2014 and 15 saw many Middle Eastern government leaders breaking out into a sweat. As a direct result, several countries are now equipping their militaries to take on such armed groups, while at the same time lessons are also being learnt from the on-going conflict in Yemen. Alan Warnes reports.

At the Dubai Air Show in November, the war in Yemen, jihadi terrorists and the Iranian threat were uppermost in many military leaders' thoughts.

The eighth Dubai International Air Chiefs (DIAC) Conference, held the day before show opened, saw the United Arab Emirates Air Force and Air Defence (UAEAF&AD) chief, Brigadier General Ibrahim Naser Al Asawi, speak briefly on operations over Yemen.

Asawi told a packed audience: "The UAEAF&AD is currently participating in Operations Decisive Storm and Restore Hope in Yemen, under the leadership of the Saudi Arabia. It has been almost 1,000 days since the start of this operation and, during that time, we have executed more than 130,000 flying hours involving fighter, transport and support aircraft, as well as intelligence, surveillance, and reconnaissance (ISR) platforms.

"The UAEAF&AD continues to adjust to the ever-changing battle scenarios as it tries to

defeat the enemies, including ISIS, in Yemen. I think we all agree that the battles we are facing there will continue for a long while and are similar to the threats being faced in Iraq and Syria – against a well-trained and well-worked fighting force."

It was left to the UAEAF&AD's deputy commander, Brigadier General M Al Shamsi, to tell the DIAC audience of the importance of multi-role, multi-sensor platforms as part of UAE's network-centric strategy. "One of the important needs for the future is to embark on a more versatile set of procurement requirements that would see more multi-role platforms with the ability to share data and enhance command, control, communications, computers, and intelligence (C4I) selection and distribution systems," he said.

Thus, it wasn't surprising to see several examples of multi-role aircraft, in the shape of strike ISR platforms, on display at the air show itself.

A significant newcomer to the strike ISR world is the Calidus B-250 light attack aircraft, which made its public debut at the show. (See pages 33/34).

Calidus LLC is an Abu Dhabi industrial machinery and equipment company, which has moved into aircraft manufacture. However, claims that the B-250 was the "first military fighter to be developed in the UAE" might be a little ambitious as Brazil's Novaer has been influential. Having been contracted to design the new aircraft in 2015, Novaer was instructed to have the new design ready for the Dubai show.

Ejection seats

Powered by a 1600shp Pratt & Whitney PT6A-68, with a four-blade Hartzell propeller, the cockpit houses two Martin Baker Mk 16 ejection seats and a Pro Line Fusion avionics system from Rockwell Collins.

A pressurised cockpit system means the aircraft can reach heights of up to 30,000 feet. Not too surprisingly, the B-250 looks similar to the Embraer Super Tucano, because they both share the same designer, Novaer's Joseph Kovacs.

Calidus senior communications consultant, Hares Shehab, said: "Calidus, supported by the UAE Government, sees a niche for a light aircraft with multirole capabilities. You must remember that technologies used to build some of the aircraft currently operating in this role are up to 50 years old. Some US companies [like Iomax and Air Tractor] have even adapted



Parked next to the armed C295W was a Saudi General Security Aviation Command (GSAC) C295W, complete with a full ISR kit. This is the second of four C295Ws for the Saudi GSAC, but the first with an ISR capability.

AGAINST TERROR THREAT

agricultural aircraft! We decided to start from scratch, using all the 21st century technologies available to build this new aircraft.”

A plethora of weapons surrounded the B-250 in the static display, produced by Brazil’s Avibras, or in UAE by Tawazun Dynamics (now Al Barj). An L3 Wescam MX-15D electro-optical/infrared (EO/IR) turret with an advanced video tracker has also been integrated to cater for its close air support, ISR and counter-insurgency needs.

Short demonstration

After being transported by a UAEAF&AD C-17 to Minhad, the B-250 was flown by Saif Alkaabi, Calidus’ VP marketing and a former UAEAF&AD Mirage 2000-9 pilot, during a short demonstration to his former colleagues at the base before the show. He checked the aircraft out at the Dubai show and was part of the team presenting the aircraft to the UAEAF&AD afterwards.

According to Calidus, the single-engine B-250, when loaded with four 250lb GBU-58 Paveway II laser guided bombs, two AIM-9 Sidewinders and a drop tank, has a range of 350 miles (560kms).

Production of the aircraft is expected to take place at Al Ain, home to the new national aerospace park, which will undoubtedly lead to the UAEAF&AD eventually acquiring the new multi-role turboprop.

While the B-250 might have been catching much of the local attention, it was the Airbus

C295 gunship that caught the imagination. Despite being only a modular concept, it provided many would-be customers with food for thought.

Miguel Morales, Airbus’ head of airborne ISR marketing said: “There are several light attack aircraft [in operational use in the region] but we have been told by potential customers that, while they are good with high-quality weapons, they lack endurance and ISR sensors.”

To ensure the concept would appeal to as many potential customers as possible, Airbus looked at different weapons proposals, with US and non-US options.

Non International Traffic in Arms Regulations (ITAR) systems are important to many potential customers, particularly in the Middle East. This was highlighted by the choice of weapons for the pre-production phase programme on display in front of the armed C295W. It included Madrid-based EXPAL Mk 40 guided and Mk 46 unguided rockets, as well as CAT-70 (2.75in) rockets that could be fired from a rocket launcher designed by Brazil’s Equipaer. All are options that could arm the four hard points under the wings.

Munitions from Turkey’s Roketsan were also a feature, with the 2.75in CIRIT laser-guided rocket and laser-guided long-range anti-tank missile (L-UMTAS) both on show. They are already being used by the UAEAF&AD on the Iomax Archangel and AT-802U.

Another Roketsan exhibit was the 500lb Teber 82 laser-guided bomb.

Morales continued: “Some of our potential customers want these weapons and were interested in working with two of the providers, which makes it easier.”

There are also machine gun and cannon options, as could be seen around the aircraft. Morales added: “We have already integrated a 12.7mm M3D machine gun on a C295 for a customer in the Middle East, which will be delivered soon.

“Its fixed to the cargo hold and can be installed in 30 minutes, working with a fully integrated tactical system (FITS). The Rheinmetall Bk27 auto-cannon used by the Eurofighter, Tornado and Gripen, is also an option, with a range of up to 4kms. It is useful for the heavier targets.”

Heavy load

Morales was keen to point out the duration of the aircraft with a heavy load: “The C295 can fly up to 10-hour missions, depending upon weapons integration. The most limiting configuration would be 16 L-UMTAS, four missiles on four hard points, which will limit endurance to between six and nine hours. Other configurations could allow 10 hours with two crews on board.”

He continued: “We are doing the critical design review before the end of the year (2017). Ground tests, with all the weapons under wing, will take place before the summer of 2018 and the flight-test is expected in October 2018.

Continued on Page 38

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Several potential customers are currently defining their requirements.”

During the later stages of the show, the UAEAF&AD announced a \$250 million contract for five C295s, which might eventually be armed. Airbus is hoping to complete weapons integration on the prototype by October 2018, with a first aircraft operational in mid-2021.

Airbus was keen to stress that the full-up armed version is likely to include systems available on the Saudi General Security Aviation Command (GSAC) C295W, which was parked next to the gunship version.

A satcom on top of the fuselage allows the C295 to transmit huge bandwidths of imagery to the ground. The data-link aerial positioned between the main undercarriage allows the on-board operators to send and receive smaller levels of data, while the radar housed in the forward fuselage provides the aircraft its ‘eyes’.

Airbus would not confirm any of the systems on the Saudi example, although an L3 Wescam MX-20 EO/IR system was mounted under the nose. The latter has an integrated laser designator but a second EO/IR system for the auto-cannon could be fitted and fired via the fully-integrated tactical system.

Technical evaluation

The highly modified Saudi airlifter is the second of four ordered by the GSAC. It was on delivery to Riyadh, where it will undergo technical evaluation. The first example was a passenger aircraft delivered 18 months ago.

Orbital ATK was at the Dubai show marketing its next generation armed Caravan, the AC-208 Eliminator, which already has a launch customer. The company remained tight-lipped on who that was but confirmed it is a new Middle East operator.

The Eliminator is fitted with two dual-rail weapon pylons under each wing allowing a mix of AGM-114 Hellfires and/or 2.75in rocket pods, although the launch customer is looking at an unguided version for the latter.

Also on board was a high definition (HD) EO/IR system with an integrated laser designator, probably a L3 Wescam MX-15. Both Iraq and Lebanon, which already operates



Making its debut in Dubai was the Iomax Archangel Block 2. The bigger L3 Wescam MX-25 EO/IR turret, will allow the aircraft to operate out of harm's way.

armed AC-208Bs, are prospective AC-208 Eliminator operators.

Orbital ATK is also the preferred partner for the armed An-132, which Taqnia Aeronautics is set to develop with the Royal Saudi Air Force.

AirLand Textron flew its Scorpion ISR/strike jet into Dubai after participating in several evaluation sorties in Saudi Arabia over a two-week period.

The tandem-seat light fighter had enjoyed an eventful year as the company looked to push the aircraft to the next level. It led to two full-spec aircraft – P2/N532TX and P3/N534TX – making their maiden flights during the summer to join the other two jets, D1/N531TA and P1/N530TX.

P2 was involved in a light attack experiment (LAX) at Holloman AFB, New Mexico during most of August, where it flew 21 missions.

Scorpion test pilot, Brett Pierson, said: “Earlier it had gone to [Naval Air Station] Patuxent River for weapons clearance work. The USAF had specified the weapons it wanted to use in the LAX so, we set about clearing the 500lb series GBU-12, FN Herstal HPM 400C 15 calibre

single-barrel machine gun and LAU-31 rocket pods to fire unguided and guided rockets.”

US aerospace company Iomax debuted its new company Block 2 demonstrator. Lee Moritz, senior director, marketing said: “We built the aircraft specifically for this show and then flew it out here.”

Mounted under its wings were two Roketsan CIRIT 2.75in launcher pods, a GBU-58 250lb Paveway II laser-guided bomb, two AGM-114 Hellfires and a GBU-12 250lb laser-guided precision-guided munition, in addition to two Terma self-protection systems.

However, the most obvious difference from previous Block 1 versions is the L3 Wescam MX-25 EO/IR turret, rather than the standard MX-15, mounted underneath the nose.

Maximum stand-off range

The company’s Archangel instructor pilot, who didn’t want to be named, said: “It allows the aircraft to operate at the maximum stand-off range [he wouldn’t provide exact details] and at the same time provide the best standard of imagery on the 17in HD display in the rear seat.”

He went on: “The MX-25 is designed to operate at high altitude, up to 25,000ft, which our customer wants, so it means the aircraft can’t be heard.”

The UAEAF&AD has taken delivery of 24 Archangels but crashed one on operation over Yemen on September 11, 2017, during a reconnaissance mission. While the pilot was killed, the back-seater survived.

The bigger MX-25 will help to keep aircrews out of harm’s way. Iomax is now putting the aircraft through a US Air Force non-defence military aircraft (NDMA) certification, which will pave the way for sales through foreign military sales. Egypt is already showing interest in this new version of an agricultural aircraft first built 50 years ago. ■

The Textron AirLand Scorpion attack/ISR light jet flew to Dubai from Saudi Arabia after evaluation flights by the Royal Saudi Air Force. This example, P2/N532TX, is one of two full-spec aircraft being flown by Textron AirLand as the US company seeks its first customer.





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Marks out of ten for Scorpion prototype

Royal Saudi Air Force pilots flew a series of 10 evaluation flights in Textron AirLand's production-representative third prototype while the aircraft was en route to participate in the Dubai Air Show. It is believed the UAE Air Force and Air Defence then also briefly evaluated the aircraft. Jon Lake reports.

Light attack and intelligence, surveillance, and reconnaissance (ISR) aircraft have been the subject of a great deal of interest over the past year or two, since they promise to meet the requirements of today's asymmetric warfare campaigns at a more affordable cost than conventional fast jet multi- or swing-role fighters.

The UAE's innovative use of crop-duster-based Iomax Border Patrol Aircraft and Archangels during combat operations over Yemen, Libya and elsewhere, demonstrated the usefulness of aircraft in this category, while the US Air Force and Navy have conducted a series of evaluations of various light attack and ISR aircraft.

Most recently, the Embraer/Sierra Nevada A-29, Beechcraft AT-6 Wolverine, L3 Longsword and Scorpion participated in a test/evaluation

campaign as part of the US Air Force's OA-X initiative in August 2017.

There is no programme or record as to how to actually procure a light attack aircraft for the USAF, but the service is evaluating the potential of this class of aircraft, and in doing so has attracted the attention and interest of other air forces, including Saudi Arabia and the UAE.

The UAE actually sent observers to the OA-X fly-off. The Emiratis were among representatives from about a dozen of the USA's international partners, including Canada, Australia, and Paraguay.

It is not known if Saudi Arabia was represented, although the kingdom's serious interest in this class of aircraft was revealed during US President Donald Trump's visit to Saudi Arabia in May 2017, when a \$110 billion package of arms deals included \$2 billion set

aside in a memorandum of intent for an unspecified type of "light close air support" aircraft.

In July 2017, Scott Donnelly, Textron's chief executive, revealed that Saudi Arabia was considering acquiring the Textron AirLand Scorpion.

Textron AirLand's production-standard third prototype Scorpion light-attack aircraft (N532TX) was one of two aircraft used during the USAF's OA-X evaluation, and was subsequently chosen to be the aircraft displayed at the Dubai Air Show in November 2017.

Range of weapons

The aircraft is fitted with an L3 Wescam MX-15 electro-optical, infrared sensor turret under the nose, and is cleared to carry a range of weapons, including 500lb GBU-12 Paveway II laser-guided bombs, guided and unguided rockets, the 70mm advanced precision kill weapon system II, a laser-guided rocket, and a 0.50 calibre machine gun.

Textron plans to integrate the GPS-directed GBU-39/B small diameter bomb (SDB) and GBU-53/B small diameter bomb II (SDB II), as well as the GBU-31/32/38/54 joint direct attack munition (JDAM) family, and the multi-mode MBDA Brimstone missile.



They saw that the Scorpion is a great ISR and light attack aircraft.

BRETT PIERSON

The Scorpion has a relatively large, reconfigurable mission bay that could accommodate a range of sensors and other payloads, including electro-optical and video cameras, radar and laser imaging equipment, electronic warfare, warning and self protection equipment or extra fuel.

The aircraft departed early and visited two bases in Saudi Arabia from October 29 to November 9 for an 11-day, 10-flight demonstration/evaluation programme. Textron test pilot, Brett Pierson, revealed that one of the bases was King Faisal Air Base, co-located with the Tabuk Regional Airport.

Pierson, who helped instruct a number of Royal Saudi Air Force pilots during the evaluation, said that it had taken about half-a-day to take a qualified pilot from ground training to taxiing, taking off and landing.

“They saw that the Scorpion is a great ISR and light attack aircraft,” he said. “They saw the ability to loiter over a target area for long periods with very low fuel burn rates, which is what drives the very low hourly operating cost.

“We did drop inert GBU-12s and it was the Saudi pilots who did that.

“Typically they were doing those bomb drops within half-an-hour of taking off on their very first flight in the aircraft.”



F-16Vs to the rescue of Bahrain’s age concern

Bahrain is to recapitalise its ageing fighter force with the purchase of 19 new-build Block 70 F-16Vs and via the upgrade of its 20 surviving Block 40 F-16C/Ds to the same standard.

Bahrain originally acquired 12 aircraft (including four two-seat F-16Ds) under the Peace Crown programme in 1990, and received 10 more (all single-seaters) under Peace Crown II in 2000. Two aircraft have been lost in service, the most recent in December 2015 while supporting the Saudi-led intervention in Yemen.

The aircraft are used as multi-role tactical fighters – providing air defence armed with Sidewinder and AMRAAM missiles but also able to fulfil ground-attack duties using 500lb GBU-12 and 2,000lb GBU-10 laser-guided bombs, TV-guided AGM-65B and IR-guided AGM-65G Maverick missiles. Lockheed Martin AN/AAQ-14 Sharpshooter low altitude navigation and targeting infrared for night (LANTIRN) targeting pods can also be carried.

Bahrain has been seeking further F-16s for some time and a sale of up to 19 further aircraft was submitted to the US Congress for approval in September 2016, though the White House blocked this until it saw progress on human rights issues after the protests of 2011.

Finally, in September 2017, the US State Department approved the sale of 19 Block 70 Lockheed Martin F-

16V aircraft to Bahrain, though different sources gave different numbers of aircraft, varying from 16-22.

Approval was also given for a deal to upgrade the existing fleet of 20 Bahraini F-16 aircraft to the same standard under the designation F-16V. The two separate contracts were valued at a combined \$3.86 billion.

□ □ □ □ □

The Block 70/F-16V configuration includes the AN/APG-83 active electronically scanned array (AESA) radar, which leverages technology from the F-35’s AN/APG-81, and an automatic ground collision avoidance system (GCAS). The new variant has a 50% longer airframe life (12,000 hours, rather than 8,000 hours) and addresses some obsolescence (diminishing manufacturing sources) issues.

The F-16 production facility will be transferred from Fort Worth, Texas to Greenville, South Carolina, in order to make room for the expanding F-35 Joint Strike Fighter production line.

The Bahraini order will take F-16 production out to 2022, facilitating further exports. Lockheed is currently pursuing F-16 sales in Indonesia and Colombia, Slovakia, Croatia, Bulgaria, Austria and Poland, while the F-16V upgrade has been sold to Taiwan, Singapore, South Korea and Greece.

Boeing’s \$240 million Saudi AWACS contract

The US Department of Defense has announced the award of a \$240 million contract for Boeing to modernise Saudi Arabia’s fleet of five E-3A Sentry airborne warning and control system (AWACS) aircraft.

The sole-source fixed-price-incentive-firm foreign military sales (FMS) acquisition contract, announced on October 16 last year, was placed by the US Air Force Life Cycle Management Center (AFLCMC) at Robins AFB, Georgia.

The Royal Saudi Air Force’s (RSAF’s) pair of RE-3 signals intelligence (SIGINT) aircraft and eight KE-3A tankers are not included in the modernisation programme.

The E-3 Sentry is a modified Boeing 707 with a rotating radome (rotodome) above the fuselage. The aircraft is designed for all-altitude and all-weather real-time surveillance of the battlespace, providing airborne early warning, and target detection and tracking capabilities, with integrated command and control and battle management functions.

The aircraft is operational with the US Air Force, NATO, Britain, France and Saudi Arabia.

The RSAF E-3A AWACS aircraft serve with the 18th Squadron, part of the 6th Wing based at Prince Sultan Air Base, Al Kharj, which provides early warning of potential airborne threats to Saudi Arabia and also manages friendly airborne assets.

The E-3A upgrade will provide AWACS mission



computing, navigation and communications upgrades, as well as the next generation in identification, friend or foe (IFF) system enhancements.

The work will be performed at Boeing’s Oklahoma City facility and should be completed by February 28 2019. It includes upgrades and modifications to legacy US Air Force platforms and export aircraft, including the Boeing E-3A AWACS, the Northrop B-2 Spirit Stealth Bomber, the Boeing B-52 Stratofortress and Rockwell B-1B Lancer strategic bombers.

The RSAF E-3As were originally purchased in 1983 and delivered in 1986-87. The aircraft have been regularly modernised and upgraded to maintain interoperability with US and coalition forces, with Boeing and Alsalam only completing the radar system improvement programme in May 2017. That programme included a new radar computer, a radar control maintenance panel, and new software and hardware.

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The Royal Jordanian Air Force (RJAF) has completely revamped its pilot training system. Jon Lake reports.

Jordan grabs Grobs to revitalise training fleet



Students come to the flight line better prepared, and the aircraft's systems help them to keep up and to have better situational awareness.

LIEUTENANT
COLONEL AHMAD HIARI

The RJAF has replaced Slingsby T-67M260s with Grob G 120TPs and CASA 101s with turboprop-powered Pilatus PC-21s.

Some 13 ex-Emirati BAE Systems Hawk Mk 63s, delivered in 2013, have also been retired.

"The Hawks have been grounded. They didn't work out well; there were maintenance issues," explained RJAF Lieutenant Colonel Ahmad Hiari.

This may have been what lay behind Jordan's April 2016 decision to amend its previous commitment for nine Pilatus PC-9Ms (ordered in August 2015) to eight examples of the higher-performance and more capable PC-21.

Jordan ordered 14 aircraft, plus a self-paced computer-based training (CBT) system and a Frasca flight-training device (FTD) simulator. The CBT system is being used as the standard method for theoretical training and promises to provide more consistency and to eliminate differences.

The aircraft formally entered service in April 2017.

Grob G 120TP deliveries to the Royal Jordanian Air Force have now been completed; the RJAF has graduated two courses of flying instructors and a first ab initio training course is well under way.

The new aircraft serve with No4 Squadron at Mafraq, part of the King Hussein Air College, which has recently been upgraded to full university status working in parallel with the nearby Al-Bayt University.

When students arrive at Mafraq to begin flying training they have already completed one year of academic study, including systems, avionics and an English language course. From December 1 2015, students were able to graduate with a degree in aviation, majoring in air traffic control, navigation and other subjects.

The Grobs have replaced 11 white-painted Slingsby T67M260s that were delivered in 2002, upgraded with a sand filter, cockpit air conditioning, electric trim and flap actuator systems.

They have also replaced eight yellow-painted Slingsby T67M260s used by the Flying Instructors School. These aircraft were delivered in 2011 and had formerly been used by Babcock Defence Services to support UK RAF training. As such, they lacked the sand filter, air conditioning, electrical trim and flap actuators fitted to Jordan's original Slingsbys.

The RJAF has been pleasantly surprised by its experiences with the new Grobs. Fears that the powerful turboprop-powered, retractable landing gear-equipped and glass cockpit G 120TP might be "too much aircraft" proved unfounded.

"The new generation are good at this, at working with LCD display screens," Colonel Hiari said, explaining that the chop rate has reduced to about 16%. "The game-changer is the sim, which is almost a full dome simulator," he explained. "Students come to the flight line better prepared, and the aircraft's systems help them to keep up and to have better situational awareness."

The G 120TP is proving to be better preparation for advanced training on the PC-21, and the PC-21 course will be shorter than that now being flown on the CASA.

Extremely satisfied

So far, the Royal Jordanian Air Force has also been extremely satisfied with the serviceability and maintainability of the new aircraft, and with the customer service it has received.

"The company is very helpful; the company is always there," said Hiari.

The launch customer for the G 120TP was the Indonesian Air Force, which operates a fleet of 24 aircraft and which has placed six follow-on orders.

Indonesia was followed by Argentina (10 aircraft, plus five options), Mexico (25 aircraft), and Myanmar (20 aircraft). The UK will operate 23 G 120TPs as part of its new military flying training system (MFTS) operated by service provider, Ascent, on behalf of the Royal Air Force, Royal Navy and Army Air Corps.

Britain's QinetiQ has also purchased two Grob G 120TPs as part of its modernisation of the Empire Test Pilots' School fleet. The Grobs will be used to train flight-test engineers, with the type's low hourly operating cost allowing students to spend more time in the air.

The G 120TP has also been selected by the United States Army to train its fixed-wing pilots. Grob Aircraft, working with CAE USA, will provide academic, simulator, and live flying training, using a fleet of six aircraft, one flight-training device and one procedures trainer.

On December 10, the RJAF suffered its first G 120TP loss. Both pilots managed to escape before the aircraft hit the ground near Blila in the Governorate of Jerash. ■

■ **Instructors laud Grob trainers - Page 112.**

Great expectations: The Boeing F-15 Advanced Eagle, the Dassault Rafale (right) and the Eurofighter Typhoon (inset).



ORDERS ACCELERATE THE

Jon Lake reports on an unparalleled expansion for the Qatar Emiri Air Force.

Qatar's latest fighter orders have taken the number of aircraft on order for the Qatar Emiri Air Force to 96 new generation multi-role fighter aircraft – enough to equip a fighter fleet eight times larger than the current force.

As well as that, the latest order for 12 additional Dassault Rafales includes provision for 36 further options, potentially taking the total number to 132 aircraft!

For many years, Qatar's air force has had the smallest operational element of any GCC air arm, with just 12 ageing Dassault Mirage 2000-5s and six Dassault Alpha Jet advanced trainer/light attack aircraft.

Half the size

This force was half the size of the Royal Bahraini Air Force's fighter element, and was even dwarfed by the Royal Air Force of Oman's frontline fighter force.

The dramatic expansion and modernisation of the Qatar Emiri Air Force began in earnest in July 2010, when Qatar requested proposals to replace its ageing 12 Dassault Mirage 2000-5s, though there had been earlier evaluations of alternative fighters in 2004.

Boeing opened an office in Qatar in December 2010 to promote the Super Hornet and the F-15

as solutions to the Qatari requirement. A circa 20-flight Qatari evaluation of the Eurofighter Typhoon in the UK was scheduled for April 2011, but was cancelled because the personnel involved on the Qatari side were all involved in the Libyan operations. This was not immediately rescheduled after the war amid reports that Qatar had been unhappy with the costs being quoted by the UK MoD for flying RAF aircraft.

Qatar conducted a Rafale technical assessment at Istres in March or April 2012, and two Armée de l'Air Rafales were deployed to Doha in July 2012 for an in-country evaluation. These were followed by a pair of US Navy Super Hornets at the end of August, and finally by a pair of USAF F-15Es, which were flown from RAF Lakenheath to Qatar for evaluation in early September.

Qatari officials were in Britain evaluating the Eurofighter Typhoon in May 2013, and the Qataris conducted a brief evaluation at RAF Coningsby, after which a Eurofighter team deployed to Doha for further flight trials and evaluations.

Arabian Aerospace reported then that Qatar's requirement was for 72 aircraft, and predicted that Qatar would split its fighter-buy three ways, purchasing 24 examples each of the Rafale, Boeing F-15 Advanced Eagle and Eurofighter Typhoon.

It was likely that the Rafale would be ordered first. Dassault was hungriest for an export order and was always going to give a competitive price, which could then be used to strike a harder bargain with the next supplier. This especially since Qatar asked for 12 options, in addition to the 24 Dassault Rafales ordered in March 2016, for a total cost of \$7.6 billion.

The next order to be placed went to Boeing and, after a November 2016 Defense Security Cooperation Agency (DSCA) notification cleared the way for the supply of up to 72 F-15s to Qatar, Dr Khalid bin Mohammed Al Attiyah, Qatar's Minister of State for Defense Affairs, and US Secretary of Defense, James Mattis, signed a \$12 billion deal covering the supply of 36 Advanced Eagles in June 2017.

Warfare system

The Advanced Eagle for Qatar was by now designated F-15QA (Qatar advanced), though precise details of the configuration remain uncertain. It is likely to be similar to the F-15SA for Saudi Arabia, with active electronically scanned array (AESA) radar (Raytheon AN/APG-82(V)1 or AN/APG-63(V)3), a digital electronic warfare system, General Electric GE F-110-129 engines, digital joint helmet-mounted cueing systems, and perhaps with large area displays and fly-by-wire flight controls and two additional under-wing weapons stations.

The F-15QA order brought the number of



QATAR FIGHTER EVOLUTION

fighter aircraft on order to 60, just 12 aircraft short of the anticipated total requirement, and many expected that the total would be reached by exercising the 12 Rafale options or 12 of the Advanced Eagle options.

Any such expectations briefly seemed to be confounded on September 17, when the then-British Defence Secretary, Michael Fallon, announced he had signed a statement of intent covering a proposed purchase of 24 Eurofighter Typhoons with his counterpart, Khalid Bin Mohammed Al-Attiyah.

Adding further to the confusion, Qatar signed a major weapons deal with France on December 7, which included 12 Dassault Rafale fighters and nearly 500 armoured vehicles.

Three days later, however, BAE Systems announced that it had received a £5 billion (\$6.67bn) contract to supply 24 Typhoon aircraft to the Qatar Emiri Air Force. New Defence Secretary, Gavin Williamson, said: "The contract will secure work on the production line at Warton into the next decade," with aircraft deliveries expected to begin in late 2022.

Qatar, thereby, became the ninth country in the world, and the fourth in the GCC after Saudi Arabia, Oman and Kuwait, to choose the Typhoon. It brought the total number of Eurofighter Typhoons ordered to 623.

The value of the deal was increased with the simultaneous signing of a £1 billion (\$1.36bn) order for MBDA Meteor and Brimstone missiles.

The contract will include a training and military cooperation package, under which Qatari pilots and ground crew will receive training in the UK, while the RAF and the Qatar Emiri Air Force will work and train together more frequently.

On December 14, Defence Minister Harriett Baldwin revealed that a new UK-based joint squadron would be formed at RAF Coningsby, and that this would temporarily integrate Qatari personnel, including pilots and ground crew, ahead of the delivery of the Qatari aircraft.

Frontline experience

The unit, No12 (Bomber) Squadron, will provide valuable frontline experience to the Qatari personnel, and will be used to provide aerial security during the 2022 football World Cup, which Qatar is hosting.

Qatar's MoD also said that the agreement includes "an electronic warfare system through continuous joint cooperation between the two countries". This is believed to refer to the establishment of a dedicated mission data centre.

The announcement of Qatar's Typhoon statement of intent was greeted by most news sources as being surprising and unexpected. Bloomberg called the deal a "surprise win for the Typhoon fighter jet", while analyst Celine Fornaro at UBS judged that "The market was not expecting a Qatar order for Eurofighter."

But although splitting a 72-aircraft order three

ways would seem like insanity to most western air forces, it actually makes a great deal of sense in a Qatari context.

Procuring three types will inevitably impose higher costs and reduce any 'economies of scale', while also requiring more infrastructure and more complex logistics. But the three types have complementary and slightly overlapping capabilities, meaning that Qatar's multi-type fleet will be more capable than a single-type fleet would have been, while also giving Qatar relationships and leverage with three suppliers, rather than just one.

Qatar's fighter pilots will be able to train and exercise with the Armée de l'Air's Rafale squadrons, with the USAF, and with the Eurofighter partner air forces, and will be able to pick up techniques, tactics and doctrine from all of their new allies.

Such training exercises have already begun. Four Royal Air Force Typhoons from No29 Squadron deployed to Al Udeid Air Base, the home Qatar's Fighter Wing, for joint exercises with the Qatar Emiri Air Force.

Wing Commander James Bolton, who led the RAF detachment, said: "We are delighted to be here to exercise and fly alongside our colleagues from the QEAF. We have been demonstrating the exceptional capabilities of the Typhoon to the Qatari Fighter Wing and the aircrew and the ground engineers from both air forces have been learning from each other's experiences." ■

The UAE wants to acquire the F-35 Joint Strike Fighter, probably as part of a mixed fleet. Jon Lake reports.

UAE banks on Trump to turn F-35 ban upside-down

The Lockheed Martin F-35A Joint Strike Fighter promises to bring advanced operational capabilities to those air forces that operate it, and to allow a previously unknown degree of interoperability and harmonisation with the US Air Force. Advanced sensors, low observability ('stealth') and connectivity combine to give unmatched mission performance and survivability, and the aircraft is increasingly being seen as something that no air force that aspires to 'full spectrum' capability can do without.

At the same time, development of the F-35A has been beset by technical, political and cost difficulties, and Lockheed Martin and the US Government have been keen to export the type in order to recoup the costs and 'share the pain'!

Before President Donald Trump took office, requests for the F-35 from Gulf and Middle Eastern air forces were firmly rebuffed, with the US agreeing to export the aircraft to only one regional air force.

Military edge

The US has followed a long-standing policy of ensuring that only one particular nation in the Middle East maintains a qualitative military edge and has historically provided that nation with the weaponry and assistance required to allow it to defend itself against any combination of regional foes, while denying that nation's neighbours and near-neighbours weapons that might threaten its military dominance in the region. Emirati requests for the F-35 have been rebuffed since 2011.

But the Trump administration has tacitly recognised the importance of the United Arab Emirates as a vital regional ally, which provides basing and port facilities for the US military and which hosts thousands of Americans deployed with the US Air Force's 380th Air Expeditionary Wing.

The UAE is also the only Arab country to have participated in six US-led coalition operations since the 1991 Gulf War, supporting the US in the Balkans and Afghanistan, as well as in the region.

In a recent report, the US-UAE Business Council highlighted the UAE's material contribution to US interests and security in the Arabian Gulf and globally, including counterterrorism.

Danny Sebright, the council's president, pointed out that: "The UAE has become not just a consumer of security, but also a provider of security in the Gulf region and the wider Middle East."

Perhaps even more importantly, the UAE could be of pivotal importance in US attempts to counter nuclear and non-nuclear threats from a resurgent Iran.

But recently there have been strong signs that the UAE could increasingly turn to non-western countries for major military procurements in the future, despite an underlying preference for US weaponry. When the UAE's attempts to procure armed Reaper UAVs were unsuccessful, the Emirates purchased armed Chinese UAVs as a supplement to unarmed Predator drones, while Russia has claimed that the UAE is interested in a potential purchase of Sukhoi Su-35 fighters.

In February 2017, the UAE and Russia signed a letter of intent to jointly develop a fifth-generation fighter based on the MiG-29.

The UAE is among the world's biggest defence spenders, and has long been one of the largest customers for the US foreign military sales (FMS) programme. The US has no wish to lose this lucrative market for its weaponry.

The Trump administration is, therefore, actively pursuing enhanced strategic cooperation with the Emirates, building on the expanded 15-



year US-UAE defense cooperation agreement that was signed in May 2017.

At the same time, Crown Prince and Deputy Supreme Commander, Mohammed bin Zayed Al Nahyan, is understood to have raised the subject of the F-35A during his meetings with President Trump and US Defense Secretary, Jim Mattis, in Washington DC.

Preliminary discussions

At the Dubai Air Show, American and Emirati officials confirmed that the UAE was in preliminary discussions with the US centred around a future purchase of "two squadrons" of Joint Strike Fighters (probably about 24 aircraft). The USAF's vice chief of staff, General Stephen Wilson, said that he expected the UAE would soon be briefed on the F-35, but could or would not provide any information as to when that might happen.

Wilson acknowledged that Middle Eastern nations shared the same threats, interests and responsibilities, and said that the US would: "explore options for those nations and partners to benefit from this capability. So the discussions are on-going now with the new administration on selling F-35s to partner nations that need them and require them. They've started the process.



Emirati requests for the F-35 have been rebuffed since 2011.

Now with that you need discussion bilaterally between nations... so further things on that will have to come from the UAE.”

The UAE Air Force and Air Defence (UAEAF&AD) has made no secret of its interest in acquiring fifth-generation fighter aircraft. Deputy commander, Brigadier General Rashed Al Shamsi, described the need to strengthen the UAE's air capacity during the Dubai Air Show, explaining that the air force “required connected multi-role platforms with the ability to share data, which had enhanced intelligence collection and distribution capabilities, and that were capable of timely and reactive dynamic targeting”.

This, he said, meant that “to have a fifth-generation capability is something of interest to us”, noting that he had “heard that the US could now be willing to sell the UAE the F-35”.

The UAEAF&AD has seen the advantages of fifth-generation aircraft at first hand, training and exercising with USAF F-22As and F-35As on numerous occasions, both in the USA and in the UAE itself. It has watched as regional rivals have acquired the kind of advanced, ‘double-digit’ surface-to-air missiles and integrated air defence systems that threaten the survivability of ‘conventional’ fourth generation fighters and that

make low-observable aircraft worth their weight in gold.

The UAE could use the F-35A as a powerful intelligence-gathering platform, even during peacetime training missions. F-35As could also provide an invaluable deterrent against any overt Iranian aggression, since they would be able to mount limited retaliatory air strikes, without necessarily having to mount a major air campaign to take down all enemy air defences.

Fifth generation environment

Staff Major General Pilot Abdullah Al Hashimi, assistant undersecretary for support services in the UAE Ministry of Defence, explained: “We in the UAE already live in a fifth generation environment and have a fifth generation mind-set, so acquiring the F-35 fighter jet is just a step forward.”

Any Emirati F-35 deal would be limited to the purchase of two squadrons of F-35As (24 aircraft), at least in the first phase. This would require a major restructuring of the UAEAF&AD, perhaps requiring the

procurement of a second aircraft type. A specialised committee is assessing the risks, threats and needs of the air force and to work out how a future fighter force might look.

The UAE has continued to consider a range of re-equipment plans, including the acquisition of advanced fourth generation fighters instead of, or augmenting F-35As. These options include the Dassault Rafale and the Eurofighter Typhoon (now in service or on order with four of the six GCC air forces). In the meantime, contracts have been placed with Lockheed Martin and Thales for upgrades to the Lockheed Martin F-16E/F Desert Falcons and Dassault Mirage 2000-9s now in service.

If negotiations are eventually successful, the UAE would become the first GCC nation to operate a low-observable, fifth-generation combat aircraft. Though other air forces in the region hope to persuade the USA to supply F-35As, it would seem unlikely that a UAE purchase would necessarily lead to approval for other requests.

Following its participation in Exercise Blue Shield in Sudan and Exercise Red Flag in the USA, the Royal Saudi Air Force undertook a further major training exercise, Faisal-11, in Egypt. Jon Lake reports.

**Working together:
Royal Saudi Air Force and
the Egyptian Air Force.**

THE POWER OF TWO...

In recent years, the Royal Saudi Air Force (RSAF) has dramatically expanded the scope and extent of training with allied air forces, and has seen its capabilities and credibility grow almost exponentially as a result.

The RSAF certainly bears little resemblance to the pre Desert Storm force, which had limited operational capabilities and relied heavily on contractors and on personnel seconded from friendly nations' air forces. Today's RSAF has gained extensive operational experience in Yemen and over Syria and Iraq, and has participated in, and led, a number of international coalition operations.

The latest Faisal exercise marked the 11th edition in a series of joint air force training exercises between the RSAF and the Egyptian Air Force. These have usually been held annually, though 'Faisal-10' took place at King Fahd Air Base in June 2013.

Cooperation and ties

Intended to enhance and improve cooperation and ties between the air forces, the exercise involved Saudi F-15C/D and Egyptian F-16C/D fighters, and included live weapons firing.

The Saudi F-15Cs (and at least one two-seat F-15D) were drawn from the 2nd Squadron, part of the 7th Wing at King Faisal Air Base, Tabuk. The Egyptian F-16s are understood to have been drawn from the squadrons assigned to the 272nd TFB at Jiyanklis AB.

Egyptian Defence Minister, Sedqi Sobhi, and Air Force commander, Pilot Lieutenant General Younis Al-Sayed Al-Masri, greeted the participants during a formal welcome ceremony. General Al-Masri stressed that Egypt's military forces were eager to bolster cooperation in joint exercises with what he called "brotherly and friendly countries" and emphasised the importance of such exercises in developing the combat abilities of the air force in order to equip it to better protect Egyptian national security. He stressed the vital importance of cooperation in countering terrorism and maintaining regional development and stability.



An official Egyptian Air Force spokesman said: "The joint training aims to support the capabilities of Egypt, Saudi Arabia and the coalition countries to form a common Arab defence force and to unify our plans and combat current regional challenges."

These thoughts were echoed by Major General Mohammed bin Saleh Al-Otaibi, the RSAF acting commander, who welcomed this opportunity for his force to demonstrate its preparedness and expertise and who expressed pride and satisfaction in what he called "the stunning performance of all participants in the manoeuvres". He said that this "reflected the professionalism and the strength of harmony of the two brotherly countries' air forces".

Finally, he praised Egypt's efforts to uproot terrorism and its role in maintaining regional stability and security.

Saudi-Egyptian relations have grown progressively closer since the removal of Muslim Brotherhood President Mohamed Morsi by the Egyptian Armed Forces on July 3 2013, which gained the backing of most of the Gulf states.

Within days of toppling Morsi, Saudi Arabia pledged \$5 billion in grants, deposits, and petroleum products to boost the ailing Egyptian economy.

Saudi Arabia congratulated President Abdel

Fattah Al-Sisi after his victory in the June 2014 presidential elections and called for "a conference for donor brothers and friends of Egypt to help Egypt overcome its economic crisis".

Egyptian and Saudi aircraft have participated in air operations against Daesh in Syria, and the RSAF is believed to have provided unspecified assistance to Egypt in its own war against insurgents on the Libyan border and in the wider Sinai, fighting against the jihadi terrorist group Ansar Bayt al-Maqdis.

Decisive blow

Since then, Egypt has supported Saudi Arabia in its military campaign in Yemen, which was intended to re-establish the government of President Abd Rabbuh Mansour Hadi, and to strike a decisive blow against Houthi rebels and Al Qaeda in the Arabian Peninsula.

Egypt has denied that any Egyptian troops have been involved on the ground, but has admitted the participation of naval units (deploying four warships to secure the Gulf of Aden), and there also seems to have been some Egyptian participation in the Saudi-led air campaign.

In fact, at least 800 Egyptian soldiers were deployed to Yemen initially, and the Egyptian



Rapid Intervention Force's paratroops have also been involved.

The Egyptian Air Force is also believed to have played a significant part in air operations against Houthi targets, though in October 2016 it was reported that the Egyptian Air Force had withdrawn from the Saudi-led coalition of countries attacking Yemen after 12 months of operations.

While the 7th Wing at Tabuk deployed F-15C/D interceptors to Egypt, the RSAF's Typhoon force (part of the 2nd Wing at King Fahd Air Base at Taif) made its first Red Flag deployment. A reported total of 11 tranche 2 and tranche 3 Typhoons made the 9,000nm journey to Nellis Air Force Base, Nevada, to participate in Exercise Red Flag 17-4, between August 14 and 25.

Though the aircraft involved wore the markings of the Third, 10th and 80th Squadrons, the pilots were reportedly all drawn from the 10th Squadron (the 80th has yet to stand up).

An initial eight-ship formation of RSAF Typhoons left King Fahd AFB on August 1, supported by Airbus Military A330 MRTT tankers from the 24th Squadron, part of the 6th Wing at Prince Sultan Air Base, Al Kharj.

The RSAF Typhoons participated in both Red

Flag and Green Flag exercises in the US, and flew swing-role missions by both day and night, flying against stationary and mobile targets and using electronic warfare to defeat a range of threats.

Major General Mohammed al-Otaibi, the RSAF commander, said these exercises had contributed to raising the combat readiness and morale of air and ground crews, and praising the support received from the government of King Salman bin Abdulaziz and Crown Prince Mohammed bin Salman bin Abdulaziz. He said that the exercise had demonstrated that the RSAF was "comparable to other worldwide air forces in terms of processing and keeping pace with the latest air force systems".

Air combat situations

The deployment commanding officer, Lieutenant Colonel Khalid al-Yousef, proudly agreed, saying that Red Flag would maximise the RSAF's readiness for real air combat situations, enhancing survivability and operational effectiveness. He also suggested that the fact that the RSAF was the only Middle Eastern air force to participate in Red and Green flag exercises six times in a row represented proof that it was one of the best air forces in the Middle East and worldwide!

The Typhoons transited back to Saudi Arabia via Albacete Air Base in Spain, where there was some opportunity for Saudi and Spanish Typhoon pilots to compare notes. One Saudi Typhoon pilot was delighted to find that the RSAF was "some steps ahead"!

Both Typhoons and F-15s were involved in the first major international exercise for the RSAF in 2017.

The RSAF deployed four F-15C Eagles and four Eurofighter Typhoons, all drawn from the 2nd Wing at King Fahd Air Base, to Sudan for Exercise Blue Shield 1. The 12-day exercise, held at Merowe Air Base, about 300km north of Khartoum, saw the Saudi aircraft flying alongside Sudanese MiG-29 'Fulcrum' fighters, Su-25 'Frogfoot' fighter-bombers and Su-24 'Fencer' attack aircraft.

The exercise followed Sudanese participation in the Saudi-led air operations against Houthi targets in Yemen, during which Sudanese Su-24 strike fighters have been deployed to Saudi air bases.

Sudanese President Omar Al-Bashir said the exercise demonstrated the Sudanese military was playing a key role in improving Khartoum's ties with Saudi Arabia and other Gulf countries, and noted "relations between Sudan and Saudi Arabia are progressing".

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Jetex Flight Support's latest building at Dubai South won the FBO of the year title at last October's Aviation Business Awards.

Dave Calderwood went along to find out why and also discovered other excellent facilities along the way.



Southern comfort

DUBAI'S VIP TERMINAL TAKES FBOs TO A NEW LEVEL

As you cross the threshold into Jetex Flight Support's latest FBO at Dubai South, it's like moving into a parallel universe. From the heat, hustle and bustle of the airport, you move into an atmosphere of calm and serenity quite unlike any FBO anywhere in the world.

Jetex really has pushed the boat out at its new, 1,500sqm flagship facility in the rapidly developing aviation district of Al Maktoum International Airport.

Jetex calls the FBO's design 'biophilic', meaning it connects with nature. "Three tall, freestanding wooden structures serve as inviting cocoons, where travellers can recline and feel their cares drift away," suggests Jetex's in-house poet. "Minimalist indoor landscaping and natural light complete the aesthetic, with flower beds, trees and pebble-shaped furnishings combining

to evoke an ambience akin to that of a Japanese Zen garden."

You have to visit to really understand the experience.

The Jetex FBO is one of three at Dubai South's new VIP terminal, along with Falcon Aviation and Jet Aviation. All three were officially opened and doing business at November's Dubai Air Show, each with their own specialities.

Apart from the extraordinary design of Jetex's FBO, there's a full range of bespoke concierge services for passengers, including a fleet of Rolls-Royce cars for airside transfers. There's also everything the air crew might need, from trip support, security, flight planning and even a Mototok Twin 7500 remote control pushback – a first in Dubai.

A new 5,000sqm hangar facility is currently under construction and

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will be available for aircraft storage and maintenance by 2019.

Jet Aviation has added to its FBO at Dubai International (DXB) with its new facility at Dubai South, and expects it to become increasingly busy as business aviation shifts away from DXB.

It's the centre FBO in the new VIP terminal, with 600sqm of dedicated space for three customer lounges, a conference room, crew lounge and operations centre, two prayer rooms and shower facilities. It is also extending its maintenance approvals from DXB to include line maintenance at Dubai South.

Falcon Aviation is a newcomer to the FBO business with the Abu Dhabi-headquartered helicopter-orientated company expanding into fixed-wing business and private aviation.

It's almost a year since Falcon opened its FBO at Dubai South and movements are up to 4-6 per day with a target of 20 by mid-2018.

The FBO is the first part of a three-pronged effort by Falcon to establish itself as a VVIP service leader. Second is Falcon's heliport – the only one certified at Dubai South – and next year will see the third prong, a 15,000sqm business jet maintenance and parking hangar, open at Dubai South.

Extensive mixed fleet

A key strength for Falcon Aviation is its extensive mixed fleet, which includes an Embraer Legacy 600, a Lineage 1000, three Gulfstream G450/G550s and six Bombardier Q400 turboprops.

Its helicopter fleet is equally impressive with 10 Bell 412EPs, four Airbus Helicopters EC130B4s, four AW109S/SPs, two AW189s and two AW169s.

Falcon's state-of-the-art FBO has an Arabic theme and has several key features to make its stand out, according to manager Ahmad Badreddine, a business aviation professional with almost a decade of FBO experience in the region.

"There are two private lounges with en-suite bathrooms, a play area for children, communal lounges, meeting rooms, refreshments, a cigar lounge, duty free and on-site customs and immigration, and a first-class crew area complete with lounge, shower, snooze rooms and work stations," said Badreddine.

All three of the FBOs at the new VIP terminal have gone through the audit process to be awarded the international standard for business aircraft handling (IS-BAH), the set of global industry best practices for business aviation ground-handlers. There's also an in-terminal duty-free area.

Away from the VIP terminal but still at Dubai South, the two other major FBOs, ExecuJet and DC Aviation Al-Futtaim, have both announced they are developing their facilities, in anticipation of business aviation moving from DXB.

ExecuJet is to relocate its entire Dubai FBO and MRO operations to a single facility located at Dubai South. The move will start this year and



MOVING: (From left) ExecuJet's Mike Berry, with Dubai South's Khalid Al Hai, Khalifa Al Zaffin, and Tahnoon Saif.

will be complete by the end of 2019, in time for the start of Dubai Expo 2020.

The brand new 25,700sqm facility will be ExecuJet's regional HQ for the Middle East, home to an FBO, MRO services and support services offices. In the meantime, the FBO and MRO line-team, currently in place at DWC, will continue to provide maintenance support 12/7, supported by a 24-hour aircraft-on-ground (AOG) hotline.

Mike Berry of Luxaviation Group, which owns ExecuJet, said: "The Middle East is a key region for us, with roughly 20% of the Luxaviation Group's overall business stemming from it. It is, therefore, essential that our facilities reflect this demand and it gives me great pleasure to be announcing our relocation to a much larger site at Al Maktoum.

"We began operating in Dubai in 1999 and opened a shared, single lounge FBO facility in 2007 with a team of just four ExecuJet employees. We have come an exceptionally long way in that time and our proposed expansion reflects the ambitious nature of everybody associated with the business. We look forward to welcoming customers to our new facility when it opens its doors in 2019."

Second hangar

DC Aviation Al-Futtaim (DCAF) is a joint venture between Dubai-based Al-Futtaim and Germany's DC Aviation and, during the Dubai Air Show, it opened its second hangar at Dubai South. It was a major function inside the new hangar, attended by sheikhs, senior Dubai government officials, senior management from Dubai South, VVIPs and heads of major aviation companies from across the globe. It was even sponsored by Lufthansa Technik, Bombardier, Airbus Corporate Jet and Airbus Corporate Helicopters.

The new 7,500sqm hangar more than doubles DCAF's hangar capacity, bringing its total land-side plot area to 24,000sqm and apron area to 13,000sqm.

Michael Kuhn, CEO DC Aviation Group, said:

"We committed to Dubai South at a very early stage, in December 2010, when Mr Omar Al-Futtaim signed the land-lease agreement with Sheikh Ahmed bin Saeed Al Maktoum.

"From day one, we were fully aware of the tremendous potential. The opening of the second hangar fits in with our expansion plans and enables us to meet the growing demand for business and private jet operations in the aviation district at Dubai South for years to come."

Once the second hangar becomes operational, DCAF will add multiple single-aisle aircraft maintenance bays and provide space for additional workshop and equipment storage. It also significantly increases the number and size of aircraft that can be accommodated at the facility – up to a Boeing 767-300 – and boosts the cooperation between DC Aviation and Lufthansa Technik.

DCAF is also able to provide line maintenance for the Dassault Falcon 7X following CAR145 approval from the UAE's General Civil Aviation Authority (GCAA).

DCAF is now able to provide B1 (airframe) and B2 (avionics) maintenance services for the Falcon 7X at Dubai South. Other aircraft supported include Bombardier Global Express, Challenger 604/605, Airbus 320 family, and the Global 6000 and Global 5000 Vision flight deck aircraft types.

The importance of Dubai South and its aviation district was emphasised by His Excellency Khalifa Al Zaffin, executive chairman, Dubai Aviation City Corporation. At the DCAF launch, he said: "The aviation district at Dubai South has been designed to support and grow businesses like DC Aviation Al-Futtaim, where the aviation ecosystem enables them to leverage on the synergies with other suppliers and vendors. We look forward to further successful partnerships, which will serve the regional markets and the UAE leadership's vision to make the country the aviation capital of the world."

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-Stéphane Ledermann, Founder & President, Smart Air
Watch Stéphane's story and request more information at
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The revolutionary Legacy 450 transcends all perceptions of what a medium-cabin aircraft can do. Boasting a clean-sheet design and exclusive fly-by-wire controls – previously available only in modern airliners and much larger business jets – this aircraft delivers a truly remarkable union of technology and design from cockpit to cabin. The advanced Rockwell Collins Pro Line Fusion™ platform puts pilots in complete control in a cockpit environment with superior ergonomics and space. Meanwhile, passengers enjoy an unmatched flight experience in the Legacy 450's spacious six-foot, stand-up cabin with a flat-floor design, state-of-the-art in-flight entertainment system, fully berthable seating, generous in-flight-accessible stowage and the lowest cabin altitude in the category. Excellent range, enviable performance, a high-speed cruise of Mach 0.82 and the ability to take off and land on shorter runways further add to the aircraft's exceptional capabilities. Welcome to the Legacy 450 – a new generation of aircraft that is a true testament to the heights that can be reached when your mission is to rethink and redefine what's possible.



CHALLENGE.
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Vista's view: We are your flexible friend

Middle East customers are shifting away from fractional and full aircraft ownership towards charter, according to leading business aviation company VistaJet. Dave Calderwood reports.

A 50% increase in the number of Middle East customers has driven a doubling of the number of flying hours bought over the year – and VistaJet predicts more growth to come.

“Our growth here over the past 12 months has been pretty good,” said chief commercial officer Ian Cooper. “We’ve grown the customer base 50% and it’s been more diverse – we’re booking in more places like Kuwait, Qatar and Egypt, and the UAE has become a very big part of what we’re doing.

“We’re not new entrants into the Middle East but there are so many pockets within the region where we can grow. So the region is a very exciting place for us. We’ve been here for a while so our brand is getting better known and, as most of our customers come from recommendations from our current customer base, we’re seeing this multiplier effect.”

One of those pockets is Saudi Arabia, where VistaJet is to start direct operations this year. The kingdom already accounts for 39% – the largest share – of the company’s Middle East customers, followed by the UAE with 30%, and Qatar, Kuwait and Egypt with 7% respectively. Saudi Arabia has even more potential for growth, particularly since VistaJet decided to abolish positioning fees around the globe – so far it’s the only global operator to make such a move.

Leading the industry

“We are leading the industry and relentlessly strive to deliver an unparalleled global service to our customers,” said Cooper. “With our extension to operate in and out of Saudi Arabia, this will further enable business leaders to travel seamlessly throughout the Middle East and to the rest of the world.”

Globally, the company connects with more than 1,600 airports, including 68 in the Middle East. Dubai is the top destination, connecting with Moscow, London, Nice and Mumbai, the highest traffic drivers. Global companies launching business subsidiaries in the Middle East is one

reason for the growth in the region, with 70% of private aviation flights for business purposes.

Even though the flights may be for business, high levels of service are still required, says Cooper. “VistaJet tailors each flight to customers’ needs. Aircraft need to be able to serve as an office in the sky for customers who want to prepare for meetings and maximise productivity. Additionally, a cabin hostess trained by the British Butler Institute on every flight ensures customers receive an exceptional service, from in-flight entertainment to exclusive menus created by the world’s most renowned chefs.”

Digital membership package

Last year, a digital membership package – VistaJet Direct – was launched. It gives customers priority access to available one-way and empty leg flights via the company’s app and website.

Further developments are planned and, with a recent \$150 million investment from Rhône Capital, valuing the Malta-based company in excess of \$2.5 billion, VistaJet has a large war chest ready for expansion.

It would appear to be a well-placed investment. At the end of November, VistaJet announced record results in its third quarter update, driven by continued demand for the company’s flagship programme membership, with a 38% increase in revenue. The programme segment achieved a record 32% increase of new hours flown compared to Q3 2016.

VistaJet’s distinctive fleet of silver and red business jets has flown corporations, governments and private clients to 187 countries worldwide since being founded in 2004 by Thomas Flohr, who said at the results conference: “Today’s record results are yet another milestone in VistaJet’s history and prove the global demand for our unique model and ability to shake up the business aviation industry. It is clear that in today’s on-demand economy, individuals want the flexibility and cost-effectiveness of the VistaJet program.”

“In today’s on-demand economy, individuals want the flexibility and cost-effectiveness of the VistaJet program.”

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jeppesen.com/BA71.

'Autonomous' is one of the buzzwords around the industry, as scientific and technical advances come together to convert the science fiction staple of unmanned, passenger-carrying aircraft into science fact. Alan Dron has been looking into the subject.

PILOT SCHEMES TO DO AWAY WITH THE PILOT...

Dubai's forward-looking attitude to transport has already hit the headlines this year with its plans for Volocopter unmanned air taxis just a year or so away.

Airbus is also in talks with the emirate's authorities on how autonomous air vehicles could be incorporated into the city's future. The company will also be talking about how innovation will be moving the aviation sector forward even faster over the next few years.

The European manufacturer is looking into the future with several new flight concepts, which are close to becoming reality as several technologies converge and become progressively less expensive.

For example, batteries and photovoltaics that could power the new breed of autonomous aircraft are dropping steadily in price. And, while the 'power density' of batteries – extracting enough energy from them to allow viable flight times and speeds – has previously proved problematic, this is now on the verge of being solved, with many designs of battery-powered aircraft appearing in Europe and the US.

Cause delays

Batteries still take time to recharge and this could cause delays between one user leaving the aircraft and another taking off in it. One way around this is to have battery packs that are quickly interchangeable pre-positioned at autonomous vehicle landing sites, with these being swapped after the aircraft lands.

However, Mathias Thomsen, Airbus general manager for urban air mobility within the organisation's corporate technology office, cautions that, as yet, battery packs are relatively large and heavy and owners, users and regulators are likely to be wary of the prospect of the frequent removal and replacement of such a substantial item.

The European manufacturer is cooperating in the design of a couple of potential autonomous aircraft, but Thomsen says that one of the most obvious problems is finding places for the new



Mathias Thomsen: "The question is how autonomous vehicles interact with non-autonomous vehicles,"

fleets of autonomous aircraft to take off and land. Their vertical-take-off and landing capabilities mean they will be able to make use of a wide range of sites but a large city might need several hundred of them to ensure passengers can take-off and land close to where they need to be. "That could automatically change the way our cities look," noted Thomsen.

"We know there are several new cities planned for the Middle East and greenfield cities are always of interest because of the ability to design something from scratch." Dubai, with its clearly stated ambitions to be at the front of the autonomous flying trend, will be among the authorities to which Airbus will be talking.

"We're looking at working more closely with a handful of cities in the near future. Dubai has already started running that race and we will clearly be talking with its officials."

Another type under development is the four-

person CityAirbus. This will initially be operated by a pilot for certification and market entry purposes, but will, in time, be able to operate autonomously, once the appropriate regulations are in place. Tests of an 'iron bird' ground rig should be completed by the end of 2017, with first flight targeted for 2018.

To compensate for the time required for passengers to get in and out of an autonomous air vehicle, Airbus calculates that it will have to travel at a minimum of around 120km/h (70mph). "We think there will be a premium for higher speeds," said Thomsen.

Although fears have been expressed at the safety risk of not having a pilot on board, Airbus thinks the opposite will be true; aviation accidents, particularly those involving light aircraft, are predominantly caused by human error. Autonomous flight is likely to be a safer solution.

"The question is how autonomous vehicles interact with non-autonomous vehicles," said Thomsen.

Controlled environment

However, airspace has the advantage of already being a very controlled environment and introducing a new technology, such as autonomous flight, is a 'clean sheet of paper' concept, into which safety can be built from the outset, rather than trying to add it to a pre-existing system.

Autonomous vehicles could have a control stick so that a pilot could take control in an emergency. Alternatively, if no trained pilots were present, autonomous vehicles are likely to have a 'land me now' button that would bring the aircraft down as quickly as possible while still being safe.

The role of airports in the use of autonomous aircraft is key, said Thomsen. They have very long planning horizons. "We've already started engaging with some, but there's a lot more work to do."

Traditionally, he added, large airports did not

The CityAirbus: This will initially be operated by a pilot for certification and market entry purposes, but will, in time, be able to operate autonomously. **Inset:** Dubai's much-feted unmanned aerial taxi made its first flight last September.



like helicopters because they did not follow the pattern of movement of fixed-wing aircraft and their presence cut the productivity of the runway. But Airbus believes that a fully autonomous system that did not overload air traffic controllers and used clearly designated corridors could fit into an airport's operational rhythm.

Another innovation that Airbus will be talking about at the show is its Skywise open data platform, which aims to improve operational performance and support the carrier's digital transformation process.

Devised in collaboration with US software and services company, Palantir Technologies, a specialist in 'big data' integration and advanced analytics, Skywise is already improving industrial operations performance throughout Airbus' factories. It facilitates enhanced aircraft and equipment designs, better service and support offerings based on deeper in-service data insights.

Skywise is a cloud platform and has been designed from the outset with a high level of protection from cyber threats, said Airbus. There are several layers of encryption, together with strong firewalls, to prevent users looking at data to which they should not have access.

Skywise will provide all users with a single access point to their data, which will be enhanced over what is available today by bringing together data from multiple sources across the industry into a cloud-based platform.

These sources include work orders, spares

consumption, components data, aircraft/fleet configuration, on-board sensor data, and flight schedules.

Additional data sources that are traditionally shared with Airbus and hosted only on isolated servers will also be integrated into the platform to help operators conduct their own analyses and make decisions. These include items such as parts replacements, pilot reports, aircraft condition monitoring reports and service bulletins.

Improving fleet reliability

Airbus believes Skywise will be able to help airlines support and improve their business models by improving fleet operational reliability through predictive and preventative maintenance, as well as providing rapid root-cause analyses of in-service issues and tracking maintenance effectiveness over time.

Skywise will be free to airlines if they agree to share their data with Airbus, and airlines can set limits on what is available: "It's important to say that in Skywise people only share the data they want to share," explained Jaime Baringo, who heads Airbus' digital business development.

"Yes, there's a leap of faith for people sharing data. That's why we are starting with customers who already work with us – they are our best ambassadors."

Airlines could benefit from benchmarking against others, although information provided to Skywise will be anonymised, so that one

airline cannot get a direct insight into the performance of a competitor and thus gain a competitive advantage. "However, the more you share, the more [benefit] you will get," he added.

And those benefits are potentially much greater today than they would have been just a few years ago. Although in-flight fault reporting through systems such as ACARS has been around for some years, systems like Skywise will hugely increase the amount of data that is downloaded.

"From next year, every Airbus A320 and A330 will have the Fomax modem fitted in its avionics bay. That gives you 60 times more data from the aircraft, data that at the moment you can't see. At present, there are 400 parameters; there will be 24,000 from next year," explained Baringo.

Indeed, every new A350 is already connected to the Skywise system and provides some 60,000 parameters per flight.

With Skywise, operators of Airbus aircraft will be in a position to leverage the cumulative knowledge of the 20,000 Airbus engineers who have tracked the performance of each individual aircraft over its entire operational life.

Moreover, by integrating their operational, maintenance, and aircraft data into a secure and open platform, airlines will be able to store, access, manage, and analyse selected Airbus data together with their own information and global benchmark data without the need for additional infrastructure investments. ■

Bell is predicting a significant market for the 505 Jet Ranger X in the Middle East and Africa, with a requirement for perhaps as many as 200 aircraft in South Africa alone. Jon Lake reports.

Bell's new generation bids to ring-up sales in MENA

Bell displayed its 505 Jet Ranger X mock-up at the Dubai Air Show in the distinctive Day-Glo orange and white colours of the Al Ain-based Horizon International Flight Academy.

However, at this point, orders from such operators are not imminent and would only follow local certification.

The Bell 206 has been a massive success story for the company and, at the time of the show, just four Bell 206L4s remained unsold.

Because of the type's capabilities and versatility, and because spares and components are still being made, the 206 has retained strong resale values for secondary careers and second tier operators.

Maiden flight

The Bell 505 Jet Ranger X is a five-seat aircraft designed to compete with the Robinson R66 and Eurocopter EC120. It has a 'clean sheet' advanced structural aerodynamic design but uses proven dynamic components, including the rotor system of the Bell 206L-4 and a Turbomeca Arrius 2R engine with dual channel full authority digital engine control (FADEC) to maximise safety, efficiency and reliability.

Originally known as the Bell SLS (short light single) the 505 made its maiden flight on November 11 2014, and was certified by Transport Canada in December 2016 and by the US Federal Aviation Administration in June 2017.

Bell hopes that the 505 will achieve significant sales among law enforcement operators and as a military trainer, especially in the MENA region.

The company's other new generation helicopter is the Bell 525, which made its first flight on July 1

2015, though progress was arrested after the fatal crash of the first flight-test vehicle (FTV-1) on July 6 2016.

Bell resumed flight-tests on July 7 2017, and is working towards certification at the end of 2018, with production deliveries scheduled to begin in early 2019.

After a tragic beginning, Bell is confident of a successful future, according to David Sale, the company's regional sales manager for North Africa and the Middle East, since the aircraft promises to be a "true alternative to commercial fixed-wing aircraft," with predictable, guaranteed seat costs per mile under the company's new customer advance programme.

The Bell 525 is a high-technology helicopter. "We feel we're a generation ahead," Sale enthused.

The 525 offers predictive maintenance and Bell is aiming to achieve a figure of just one maintenance man-hour per flying hour. The aircraft is primarily constructed from composites and will be the first commercial helicopter with a triple redundant fly-by-wire flight control system, with tactile cues. The 525 also has a new composite five-blade main rotor system with LIVE rotor hub technology. This is claimed to give the Bell 525 best-in-class quietness and smoothness.

The VIP market will be the initial target in the Middle East and there have already been discussions on configuration and delivery times with a number of high-net-worth individuals, royal flights and VIP operators.

There are three variants of the VIP Bell 525 – a 12-seat corporate shuttle version, a six-seat version, and even a four-seat version.

There are also real opportunities in the offshore oil and gas market, and in supporting oil and gas exploration. The 525 perfectly fits the emerging 'super-medium' size category, competing head-on with the Airbus Helicopters H175 and the AgustaWestland AW189

Sale is bullish about Bell's chances in the Middle East. "We are used to operating in the harshest environments, from the cold, wet and salty North Sea to the Middle East, where helicopters have to cope with hot and dusty conditions with significant sand erosion. We have experience of operating from non-traditional bases – our helicopters are robust, and can sit and bake in the sun for hours and then go and do their jobs. We forward-deploy our customer service engineers like no-one else; our customers know us by our first names."

He is particularly optimistic about the sales prospects of the company's military helicopters – pointing to the recent success of the Bell AH-1Z in Pakistan. He is also an enthusiastic proponent of the combat-proven Armed 407, which he says is simple to fly, easy to maintain and cheap to operate. "Iraq's 407s have demonstrated a 90% readiness rate," Sale said. ■

David Sale in the Bell 505 and, (inset), the Bell 525: "We feel we're a generation ahead".



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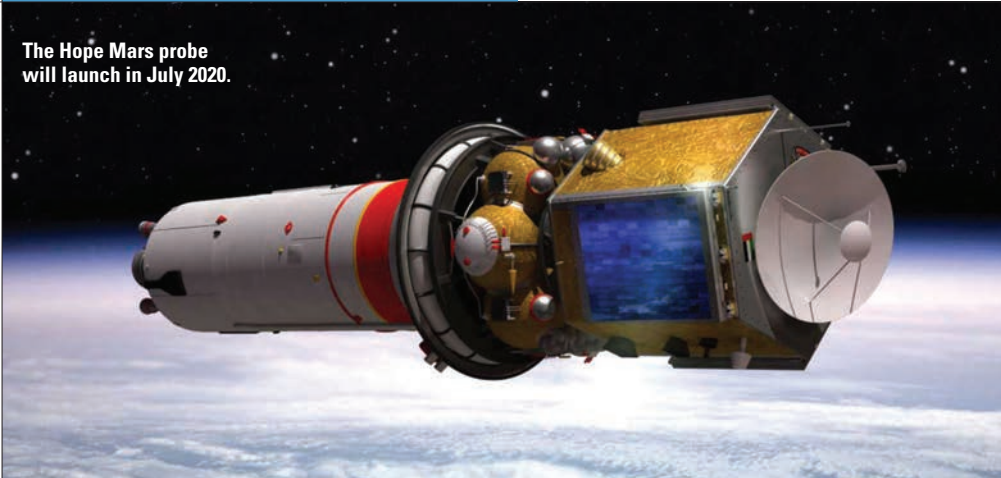


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The Hope Mars probe will launch in July 2020.



*The United Arab Emirates has aspirations that are literally out of this world when it comes to its space industry. In fact, as **Steve Nichols** reports, it has its eyes firmly fixed on Earth's nearest neighbour – Mars.*

Living in the city...on Mars!

The UAE has declared that it aims to establish the first inhabitable human settlement on the Red Planet by 2117. The Mars 2117 project is set to be developed and executed in partnership with major international scientific research institutions.

But why Mars and why now?

His Highness Sheikh Mohammed bin Rashid Al Maktoum, vice president and prime minister of the United Arab Emirates and ruler of Dubai, said: "An Arab official once asked me about the target the UAE wanted to achieve from launching the first Arab probe to Mars. I told him, we want to send a message of hope to 350 million Arabs that we are capable of reclaiming our future."

Sarah Amiri, UAE Mars mission deputy project manager at the UAE's Mohammed bin Rashid Space Centre (MBRSC), and the recently appointed minister of state for advanced sciences, said that Earth and Mars have a lot in common, so understanding Mars is a vital step to understanding our own world.

But there is a lot to be done before Emiratis can set foot on the planet. Announced in 2014, the Hope Mars probe will launch in July 2020, arriving at the Red Planet seven months later after a journey of more than 60 million kilometres.

It should arrive in time for celebrations that will mark the 50th anniversary of the UAE's foundation.

Once in orbit, Hope, which was named after a public campaign, will explore the Martian atmosphere using scientific instruments that include visible, infrared and ultraviolet spectrometers.

Its data should help scientists build a holistic model of the planet's daily and seasonal cycles, and may explain why Mars lost a lot of its atmosphere to space.

Doctor David Brain, of the University of Colorado, said that understanding the Martian atmosphere better will go a long way to helping us predict conditions on up to 100 billion other planets in the Milky Way.

Low pressure

"We don't know much about the early life of Mars, but we do know that its atmosphere is now 95% toxic carbon dioxide at minus 55 degrees Celsius on an average day. The planet's low pressure means liquid water can't exist for more than a few minutes."

But making Hope a success won't be easy. MBRSC has to hit its launch target precisely if the spacecraft is to rendezvous with the Red Planet. Missing the deadline will mean the Earth and Mars will be moving away from each other, making the journey even more complex, or downright impossible.

Mars missions are statistically some of the

hardest to accomplish. NASA figures show that 50% of them over the past 50 years have ended in failure. Many of these have occurred on missions that took upwards of 10 years or more to plan and design. So there is no room for complacency, especially as the UAE will have only had six years from conception to getting Hope into orbit around Mars.

There is also a wider goal behind both the Hope mission and Mars 2117 project – to inspire and develop youngsters in the UAE to become the next generation of scientists and engineers.

The Mars 2117 project is the final step in a long line of Mars-based science projects that include Hope and the building of a Dubai-based space habitat to simulate how the colonisation of Mars could work.

Omar Sharaf, project manager, Emirates Mars mission, MBRSC said: "Naming our 2021 probe mission to Mars 'Hope' sends an inspiring message to our young people.

"If we can reach Mars within 50 years you can do so much more than that.

"There are 100 million young people in the Arab region. You can either emigrate, which doesn't help the region, or stay and help us develop. The Mars 2117 project says to our scientists and engineers that we can guarantee you a job for 100 years."

He said that, in the past, the UAE has invested



No place like dome: MBRSC has unveiled plans to build Mars Science City – a space habitat on Earth to mimic what life would be like on a manned mission to Mars. The habitat will comprise a series of futuristic domes.



a lot in developing engineers, but there were fewer opportunities for scientists.

“These occupations complement each other,” Sharaf said. “A creative and knowledge-based economy needs both.

“Since Mars 2117 was launched, we have had a team devoted to science, technology, engineering and mathematics (STEM) education. We have three universities now offering space and science courses and are seeing students opting for that over business courses.”

HE Dr Ahmad Belhouli, minister of state for higher education and advanced skills and chairman of the UAE Space Agency, said: “We are now seeing rising interest in youngsters wishing to study STEM subjects.

“We recently held an event to encourage youngsters to think about STEM-based careers and had a target to try and attract 400 people. We eventually had more than 2,000 people attend. The momentum for STEM is there.”

Sharaf agreed, adding that the successful colonisation of Mars would need secure supplies of food, water and energy.

“These are also exactly what we need in the UAE, so there is much cross-fertilisation. Whatever technology is developed for the Mars mission will benefit us as well,” he said.

And, although the manned colonisation of

Mars is still around 100 years away, the UAE is already planning how its explorers might survive in the hostile environment they will find on the Red Planet.

MBRSC has unveiled plans to build Mars Science City – a space habitat on Earth to mimic what life would be like on a manned mission to Mars.

The habitat, which will comprise a series of futuristic domes, is to be built next to MBRSC in Dubai and include a visitor centre and space museum.

Specialised science laboratories

Work on the AED500 million (\$136m) Mars Science City has already started and will be completed in less than two-and-a-half years. The project includes specialised science laboratories for food, energy and water, as well as agricultural testing and studies about future food security. It will also contain a Mars museum.

Salem Humaid Al Marri, MBRSC’s assistant director general for the science and technology sector, said: “The habitat will be able to support humans living in it in isolation for up to 12 months. It is a unique project and will form part of the Mars 2117 project to transport people to the Red Planet and establish the first mini city in the next century.”

The city will sprawl across 177,000sqm and will explore and feature new ways to manage food, energy and water. UAE Prime Minister, His Highness Sheikh Mohammed bin Rashid Al Maktoum, described it as “an extraordinary national project”.

It will also feature walls made with 3D printed sand gathered from the Emirates’ deserts.

Reports say that researchers hope to build on work already completed on space agriculture involving plants such as lettuce, strawberries, and tomatoes – three foods already shown to have thrived when grown in space.

Al Marri said that he could envisage the first real habitats being delivered to Mars in the 2040-2050 timeframe.

But why do we need to leave Earth in the first place?

Speaking at the Dubai Air Show, Apollo 15 astronaut, Al Worden, said of Mars 2117: “A trip of a thousand miles starts with a single step. The Sun will have burned all its fuel sometime in the future – it will happen. We’re going to have to find a liveable planet somewhere for when we can’t live here any more.

“Mars 2117 is a mission for the whole world. The way we will get to Mars is to build on the work of people who are still youngsters today. The whole of humanity must unite for this task, which is a unique and worthwhile challenge.” ■

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EgyptAir has just announced a major re-equipment programme to help meet its objectives. EgyptAir Holding Company chairman and CEO, Safwat Musallam, talks to Alan Dron about fleets, routes, and prospects.

IT'S GETTING BETTER ALL THE TIME...

Like all Egyptian airlines, the national flag-carrier has had to deal with the downturn in traffic that occurred after a series of security-related issues and the US and UK bans on personal electronic devices being carried in the cabins of aircraft departing from Cairo.

Those situations have now been resolved, or are on the way to being fixed, and the airline is looking forward to the future.

EgyptAir took centre-stage on two separate occasions at the Dubai Air Show in November. It filled outstanding requirements for new aircraft in three categories – wide-body, narrow-body and small narrow-body.

Long-term operating leases

Its wide-body needs were met through an order for six Boeing 787-9s, which are being acquired on long-term operating leases from Ireland-based lessor AerCap and will be delivered in 2019. They will come from the lessor's existing order book and will be powered by Rolls-Royce Trent 1000 engines.

The airline may look for a second batch of the Boeing twin-aisle aircraft, although this may come from another lessor.

Its narrow-body requirement was filled by another leasing deal with AerCap for 15 Airbus A320neos, which will use CFM International's LEAP-1A powerplants and are scheduled to be delivered in 2020. These will also come from AerCap's existing orders with the manufacturer.



“The Egyptian market is getting better, day by day.”
SAFWAT MUSALLAM



CONTINUED FROM PAGE 63

Separately at the air show, it announced that the 'small narrow-body' category would be filled through a letter of intent with Canadian manufacturer Bombardier for 12 CS300 regional jets, with options for a further 12.

It is EgyptAir's first order with the Canadian manufacturer: "We undertook a thorough evaluation process of our fleet and realised that the CS300 would fit perfectly into our business plans and growth strategy," explained EgyptAir Holding Company chairman and CEO, Safwat Musallam.

"We selected the C Series aircraft because its excellent range will allow us to best serve domestic and regional destinations, including neighbouring Arab cities and the Middle East, as well as several European destinations. This is in addition to the CS300 aircraft's exceptional economics and outstanding cabin. We look forward to expanding our network with the CS300 and we are happy to see that the partnership announced with Airbus will bring added support to the C Series programme."

Domestic and regional

The C Series aircraft will replace 12 Embraer 170 regional jets, which are approaching 10 years in service with EgyptAir. These operate both domestic services and regional services, as well as longer, thinner routes to places as far afield as central Europe on behalf of the mainline airline.

The Embraers will be sold, said Musallam at the Arab Air Carriers Organization (AACO) AGM in Sharjah in late November. "The best time to get rid of them is before they are due their C-Check," the heavy maintenance session that aircraft normally undergo after 12 years. "This will be our strategy in future," he added.

The new Boeing 787-9s, meanwhile, will replace the carrier's existing fleet of six Airbus A330-200s, which are also around the 12-year-old mark.

The A320neo order initially seems a less obvious choice; although EgyptAir has around 10 A320-family aircraft in service (split between A320s and larger A321s), it is just completing deliveries of around 30 Boeing 737-800s. The new Airbus order will eventually give the company around 30 of each, said Musallam.

There are obvious cost penalties in terms of maintenance and spare parts inventories, but Musallam said that the two fleets would be sufficiently large to each have critical mass.

The company's cargo division has also benefited from recent equipment renewal:

“Africa is our target. We have very, very strong plans for Africa in the next five years.”

SAFWAT MUSALLAM

EgyptAir operates three dedicated Airbus A300-600F freighters, but these will be replaced by the same number of the European OEM's A330Fs, the first of which was delivered in June 2017.

In addition, it intends to operate single examples of both the A320 and the Boeing 737-800 in the cargo role: "These will allow us to cover all airports," explained Musallam. "Some airports in Africa can't accept the A330."

When all the new aircraft have arrived, the enlarged fleet will be used to open up new routes, as well as to increase frequencies on existing ones.

EgyptAir is already expanding its route map; the increasing number of tourists from China is boosting the passenger numbers of several Egyptian airlines and the country's flag-carrier is no exception. It already flies to Beijing and Guangzhou and was due to start services to Shanghai by the end of 2017.

However, the company is also looking west and south for its major expansion plans: "Africa is our target," said the chairman and CEO. "We have very, very strong plans for Africa in the next five years."

Rapidly increasing flights

This will see EgyptAir increasingly competing, not only against the Gulf 'Big 3', which are rapidly increasing flights throughout Africa, but also against Turkish Airlines, which is on record as saying it wants to be the largest carrier on the continent. Turkish is a fellow Star Alliance partner, which opens up the possibility of cooperation between the two.

EgyptAir also has a codeshare agreement with one of the 'Big 3', Etihad Airways, and there are already plans to extend this beyond the Cairo-Abu Dhabi route.

Under stage two of the codeshare, Etihad will gain access to major cities across Africa on flights operated by EgyptAir via its Cairo hub. In turn, EgyptAir will be able to access routes to

Australia and the Far East served by Etihad from its Abu Dhabi hub.

A third phase will see Etihad's EY code placed on EgyptAir domestic flights across Egypt.

Cairo Airport is likely to play an increasingly important role in EgyptAir's plans. The carrier has, for some time, looked at establishing the Heliopolis site as a major transit point that could compete with the Gulf hubs and the completion of Cairo's Terminal 2 in mid-2017 gave it an expanded annual capacity of around 20 million passengers.

Musallam said that the airport was a "magical location to connect Europe with Africa" and even potentially to act as a hub between the US and Africa.

Bombardier predicts that African intra-regional traffic will grow by 4.6% annually over the next 20 years. It argues that the continent's fleet of 60 to 150-seat aircraft will grow by 2.4 times to meet growing traffic demand; the manufacturer's C Series, of course, spans the upper half of that category.

Tourists starting to return

Meanwhile, "The Egyptian market is getting better, day by day," said Musallam. Tourists are starting to return – at the time of writing, an agreement to allow the resumption of Russian tourism to Egypt was thought to be imminent – and leisure traffic is a major component of EgyptAir's business.

Apart from tourism, however, the national carrier can tap into two other major revenue streams: around 11 million Egyptians live outside the country, which provides a steady flow of passengers going back and forth between their jobs and their homes for vacation breaks. And religious tourism between Egypt and Saudi Arabia provides an unending stream of traffic as pilgrims head for Mecca to perform the Hajj and Umrah.

Not all route news for EgyptAir has been good recently. The decision by the governments of Egypt, Saudi Arabia, Bahrain and the UAE to break off relations with Qatar meant that the Cairo-Doha route has been suspended since June. Musallam was philosophical at the loss: "It was a golden route for us but, at the end of the day, we just have to deal with it."

On the ground, EgyptAir also intends to expand the activities of its maintenance and engineering division: "Our technical company is already the largest in Africa and we have cooperation with Pratt & Whitney, Rolls-Royce and General Electric. More than 80 airlines in Europe, the Far East and Africa use us." ■

Egyptian exports rely heavily on the freight system. Alan Peaford met with Captain Bassim Gohar to explore how the EgyptAir cargo division is meeting expectations.

Meeting the freight of expectation

Captain Bassim Gohar will be celebrating 40 years' service with EgyptAir next year, having begun his career with the national carrier flying Fokker 27s. He actually became a captain way back in 1988.

"Even as a child, I knew I wanted to be a pilot. I used to travel a lot with my parents and there was never any doubt about what I would do," he said.

Today, as CEO and chairman of EgyptAir's cargo division, Gohar still gets into the left-hand seat of the Airbus A330 each month to retain his currency and stretch a flying career that saw him rise through the ranks to chief pilot, then vice president of operations for the airline, and VP safety for the holding company, before taking the CEO role with the cargo carrier.

"I was delighted to make the move to cargo," Gohar said. "As VP of safety I learned about all of the different subsidiaries doing audits. I learned a lot about the cargo operation and found it very interesting."

Advantages and prospects

Gohar is very relaxed as he extols the advantages and the prospects for the cargo carrier.

"It is certainly much easier dealing with freight rather than passengers," he said with a laugh. "One hour delay could mean a million complaints on the one hand, but one hour in cargo operations is acceptable. And, of course, cargo does not eat and drink."

But even without passengers, there are still challenges.

The US is one of them. Cargo operations were banned from Cairo after the Metrojet incident in 2015. But Gohar is hoping the ban will be lifted.

"The Transportation Security Administration (TSA) has visited Egypt on four occasions and has seen us implement new systems and make a lot of improvements to our whole approach to security. They have confirmed that we are complying with the security measures



It is certainly much easier dealing with freight rather than passengers.

CAPTAIN BASSIM GOHAR

and have filed their report," he said.

America is an important market for Egypt's textile industry and represents a potential 30 tonnes of freight daily between Cairo and JFK Airport in New York.

Another major market for Cairo is the European Union, where the demand is for fresh produce.

Agriculture is big business in Egypt. EgyptAir Cargo flies five times a week to Cologne in Germany and Ostend in Belgium with perishable goods; a passenger Boeing 777 also fills its belly with produce for the UK market with its daily flight to London Heathrow.

"In this past year we have seen a 30% increase in the export of vegetables from Egypt," Gohar said.

Benefit of new products

The benefit of new products in the passenger side of EgyptAir is permeating through to the cargo side, with four of the A330-200s being assigned from the passenger fleet to the cargo fleet. They will be undergoing conversion to freighters by Airbus subsidiary EFW as launch customer for its A330-200P2F passenger-to-freighter conversion programme.

The first two aircraft were delivered to Dresden for the conversion with another two to follow once EgyptAir receives its first Dreamliners.

The two A330-200F aircraft will replace the existing ageing A300B4 freighters. They will provide an additional 33% payload, with substantially improved range capabilities and significantly reduced carbon dioxide emissions, coupled with extensively improved noise footprints.

"They will be capable of flying direct to New York or Guangzhou," Gohar said.

There are also plans to extend the 40,000sqm warehousing and freight terminal at Cairo by 15,000sqm to open by 2019. It will include a cold area to allow for the consolidation of perishable goods.



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EgyptAir has received its ninth and final Boeing 737-800NG on a lease deal from Dubai Aerospace Enterprise (DAE). Alan Peaford talked to airline chairman, Captain Sherif Ezzat Badrous, about the deal and a new approach for the Egyptian carrier.

EZZAT AND THE GENERATION GAIN

EgyptAir's Sherif Ezzat has been busy lately. The chairman and CEO of the group's flag-carrier has been looking forward to the latest additions to the fleet with the orders for the Boeing 787 Dreamliner and the A320neos – but there has also been some unfinished business.

The airline had made a commitment to Boeing for the 'next generation' 737-800s when it began developing its fleet renewal plans in 2016. It placed an order for nine of the type in a deal worth at \$864 million through Dubai-based DAE Capital. All nine were handed over during 2016/17, with the latest arriving in Cairo in mid-December.

This brought the airline's total passenger fleet to 53 (excluding EgyptAir Express) with some 29 of them being the 737-800 workhorse.

Ezzat said the new addition would seat up to 154 passengers divided into 16 seats for business cabin and 138 for the economy class – but this latest 737 represented the start of a new cabin standard for the Egyptian carrier.

Ezzat said that, for the first time, the aircraft is featuring an audio/video-on-demand system (AVOD), a refreshed interior and the signature elements of Boeing's innovative Sky Interior, with modern sculpted sidewalls and window reveals, and LED lighting that enhances the sense of spaciousness.

"The design offers larger, pivoting

overhead stowage bins that add to the openness of the cabin. The bins give more passengers room to store a carry-on roll aboard near their own seat, adding both extra convenience and extra legroom that reaches 48 inches," said Ezzat. "The business-class cabin is also provided with electricity outlets for recharging personal computers and cellular devices, in addition to the personal in-flight entertainment (IFE) system that offers our customers a variety of recent documentary and newly released movies, as well as radio channels."

Playing catch-up with the IFE is a key target for EgyptAir.

Next generation aircraft

"We have got behind the curve but, with the new orders and the recently delivered aircraft, we are making the move. We have 10in screens for economy passengers and have plans with On Air and Panasonic in place. Our next generation of aircraft will all have the latest in cabin technology for our customers."

The recent history has been tough for the airline.

"We had been in a promising position back in 2007 but, with events like the global economic slowdown, the Arab Spring, the revolution and so on, the airline was affected. You cannot split from the national economy.

"In 2010, the EgyptAir group had 84

aircraft but the fleet was getting older. Today it is a fleet of 69 and the plan is that it will be back up to 84 by 2023. Things are getting better."

Under the terms of its government ownership, the airline was unable to cut jobs as part of any restructuring and had to focus on other savings. "We worked our way through it. We didn't cut salaries either and we are coming out stronger," said Ezzat.

A key performance indicator for Ezzat is the airline's on-time-performance. It was bumping around at about 70% but has now increased to 81.6%, putting it just outside the top 50 best performing global airlines. "This past month we have been above 85% and we aim to be above 92%," he said.

With the new additions to the fleet, Ezzat sees new destinations coming on line – or indeed some old ones.

"We lost Libya, Syria and Yemen but, this year, we see Shanghai and other Chinese cities, and also a return to Japan," he said.

Africa is another key market. "We want to have an open market with the whole of Africa. There is strong competition from Turkish Airlines and Ethiopian, but our new fleet will help us. We can't open the high-frequency routes now with our limited number of aircraft, but over the next three years we will compete."

It looks like Ezzat is going to be busy for a few more years yet.

“ We have got behind the curve but, with the new orders and the recently delivered aircraft, we are making the move. ”
SHERIF EZZAT



Airspace, safety and security are key issues for the Middle East and North Africa. The United Nations body for civil aviation, ICAO, has its regional headquarters in Cairo, where Alan Peaford met regional vice president, Mohamed Rahma.

Mohamed Rahma has seen the challenges facing aviation from all sides. Following a successful career at EgyptAir he became an advisor to the Egyptian Minister of Civil Aviation and then Undersecretary of International and Internal Affairs at the ministry, where he sat on the board of the Egypt Airports Company. Now he heads ICAO's activity for the MENA region.

"Aviation is critical to the economies and success of the MENA region," Rahma said. "There are 2.4 million jobs and \$157 billion in gross domestic product (GDP) that has been created in the region."

Rahma strongly supports the "No country left behind" (NCLB) strategy, which he believes is essential if the Middle East and Africa are to realise their potential, and collaborate to raise the standards of efficiency and safety across the entire region.

Muscat Declaration

Rahma was joined by ICAO Secretary General, Dr Fang Liu, and the directors general of some 17 civil aviation authorities at Muscat, Oman in November, where they signed the Muscat Declaration. This sets out to drive the necessary political and financial momentum to achieve ICAO compliance by states across the region with collaboration at the heart of the initiative.

"This is a fast-growing region. We know air transport will double in the next 15 years, maybe even sooner than that. Geographically it is only a small part of the world but has 10% of the world's air traffic at any time. There is not only civil aviation but also military and unmanned aircraft. We need to optimise the space but also make it even more safe – that has to be our number one priority," Rahma said.



Cooperation the key to a safer future for all

Egypt hosted a special ICAO meeting at Sharm el Sheikh in the summer. "Twenty-seven ministers were there from all over Africa and the Middle East," said Rahma.

The meeting ratified ICAO's global aviation security plan (GASep), which Rahma said is vital for the region to defeat the threats to safety.

"Civil aviation has been a target for terrorism. By enhancing collaboration, we need to prioritise the states that need assistance to improve their systems. Other states can help with financial resources or hands-on support," he said.

Successes enjoyed

Rahma cited the successes that Egypt and Jordan have enjoyed. Both countries were in the area of "serious concern" on the ICAO scale of its universal security audit programme (USAP), which provides a proactive indicator of levels of security performance.

"Both were around 52-53% on the scale, but Jordan hit 82% and Egypt 84% and

have the right procedures in place for audit and inspections. ICAO is transparent about the level of oversight and implementation of the 12,000 standards and states can view this on line," Rahma said.

"The safety of all of us depends on us reaching the standards and knowing where the challenges are."

He added that maintaining safety and security is not easy. "Systems are becoming more complex; we are seeing emerging risks with the increase in air traffic and, of course, smart terrorism. We recognised that we need to be more proactive."

Rahma sees ICAO playing a vital role in pushing the message for cooperation and collaboration. "It is so important that we understand why states should work together."

Rahma will be one of the key speakers at April's Aviation Africa summit, which takes place in his home town. "Bringing airlines, airports and regulators together is a great opportunity to take the message further and help us see results," he said.

It is so important that we understand why states should work together.

MOHAMED RAHMA



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Nile Air, Egypt's largest privately-owned airline, is exploring several avenues to ensure its continued growth in the challenging economic climate. Alan Dron reports.

REACHING NILESTONES

The past year has seen a series of initiatives by Nile Air to cope with the difficult economic circumstances faced by the nation's airlines. And the pace of change is due to be maintained in 2018.

All Egypt's airlines had to restructure to cope with the sudden 2016 loss in value of the nation's currency. "We, for example, became more aggressive in the domestic market and added new domestic services to Luxor and Aswan in December 2016," said Nile Air CEO, Ahmed Aly.

Hurghada and Sharm El Sheikh were also added to the company's Egyptian route map earlier that year.

Domestic services now make up 25% of Nile Air's flights, but the most extensive section of its route map still lies between Egypt and Saudi Arabia, with 15 routes to 10 Saudi destinations. However, although the Middle East remains very much at the core of its activities, it is starting to look further afield.

New route

It has expanded into what is technically Europe, with a new route to Istanbul, while a second new service to Port Sudan is the first stage in what Aly hopes will be a new chapter of growth in Africa. The latter region has particular problems, however.

Nile Air is very committed to expanding in Africa. "We see it as a unique but challenging opportunity," said Aly, who intends to start a new route this year to an as-yet unrevealed African destination, currently not served by any carrier from Cairo.

The costs of operating African routes are considerable, with airport charges, taxes and a visa regime for intra-African travel that needs to be overhauled. All these pose hurdles for airlines that want to expand in the continent.

Tentative steps are being taken to try to

create a European-style visa-free zone and a new, pan-African passport has been launched but, as yet, very few countries have adopted it.

Local governments have to understand that airlines need a support mechanism that allows them to nurture new routes, said Aly. "If you look at a destination like Kigali, for example, there isn't a pre-existing market; there isn't natural traffic between Egypt and Rwanda – whether it's investment, or business or labour movement, or tourism – so it does need time to develop.

"To make Africa work, we're going to have to rely on partners. This winter, we're launching two codeshare agreements, with Flydubai and Pegasus Airlines of Turkey. Flydubai has a huge crossover in its Saudi networks, while Pegasus gives us that network into the European market to test the waters."

The next major milestone in Nile Air's evolution will come later this year, when the company will issue an initial public offering (IPO). There is a family ethos around the company, said Aly. The intention is that all Nile Air's staff will receive stock in the privatised airline, making them shareholders rather than employees.

Over the past year, Nile Air has invested heavily in several behind-the-scenes infrastructure projects aimed at ensuring the airline's future, and that investment will continue this year.

"It's very important to invest in a structure that's going to allow us to grow in a safe and efficient manner," said Aly. "We announced last year that we were the first Middle East airline to take the full suite of Amadeus products and we're launching a frequent flyer programme in March based on the Amadeus system."

And, despite having launched its first website just two years ago, this spring will see a completely new online platform

opening to the public, together with an app. "It will be a fully interactive website as we drive further traffic towards it. Today, web sales account for just 15% [of the total]. We're aiming to quickly get that up to 30-35%."

New personnel have also been recruited to improve customer service in a drive to make this area "a real, significant point of differentiation" compared to other airlines.

Allied to this, the airline has launched a subsidiary, Nile Academy, 50% of whose students will study aviation-related subjects. This, hopes Aly, will develop a new pool of talent that understands the complexities of the airline business and will form a recruiting ground on Nile Air's doorstep.

Outstanding team

Even before the academy comes on line, however, Aly is more than happy with his staff. "I have a really genuinely outstanding team here. I was blown away when I arrived; people were so committed and so loyal."

By way of example, he pointed to the company's 92% on-time performance record: "People think that's just a number, but it comes about as a result of a huge amount of hard work."

Another indicator of the quality of the personnel, he said, was the fact that Nile Air undertook an 'enhanced' IATA operational safety audit (IOSA) in 2016 and became the first Egyptian airline to achieve that standard without a single 'finding', or fault, being raised by the auditors.

The airline has also recently established another daughter company, Nile Air Catering. Ground was broken in December 2017 for a new building to house this business and Aly hopes it will be up and running by summer this year.

The decision to set up its own catering division was taken firstly to give Nile Air

• The intention is that all Nile Air's staff will receive stock in the privatised airline, making them shareholders rather than employees. •

AHMED ALY



Ahmed Aly: "To make Africa work, we're going to have to rely on partners."



Nile Air carried the Egyptian national football team on its route to the World Cup finals.

full control of its catering, particularly in terms of flexibility and quality: "There are no viable, independent catering organisations. The only one we have is LSG in Egypt, but that is 70% owned by EgyptAir," he explained. That is a profitable business, he noted, with catering for non-aviation customers bringing in even better yields than those for airlines.

Nile Air has a current fleet of five Airbus A320s and two larger A321s, with the second A321 added in 2017 and bearing a special colour scheme promoting investment in Egypt.

Continue expanding

The company plans to continue expanding by at least two additional aircraft a year over the next few years, with the newcomers most likely to be leased further examples of the two European types.

In April 2017, Nile Air became the first Egyptian airline to order the neo version of the A320 family when it converted an existing order for two A321neos to A321neos. Deliveries are planned for 2020.

Despite the country's recent problems, Aly said he is confident that the situation is improving in terms of political stability. Tourists and investments are returning: "We're not out of the woods yet, but we're certainly moving on the right track," he said.

"The good thing about Egypt is, despite all the problems, it's a country full of opportunity. If you're committed for the long term, you will see fantastic returns – not just in aviation." ■



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As EgyptAir made major equipment announcements at the Dubai Airshow, Egypt's aviation minister, Sherif Fathi, talked to Alan Dron at the show on prospects for the national carrier and the development of the country's aviation industry.

FATHI KEEPS FAITH WITH HIS VISION...

As someone with three decades of experience in the aviation industry, Sherif Fathi says his background is undoubtedly an advantage in his job...but also causes him occasional anguish.

"It requires a strong will to prevent yourself from getting involved in the detail. It takes great effort to force yourself to allow the CEOs and chairman under you to work freely and make their own decisions, without intervention.

"I do the vision, the strategy and high-level target setting. We have scheduled reviews where they come and present where they are and the achievements so far and next steps."

He admits, however, that occasionally, "I get involved in nitty-gritty that I shouldn't get involved with, because I know the answers."

Naturally, state-owned national carrier EgyptAir forms a major part of Fathi's responsibilities. Despite difficult times since the 2011 revolution, which has seen passenger numbers dip on several occasions, he believes the airline has managed its difficulties very well. Financial losses have been contained and its strong network in the Middle East had given it the ability to cope.

Aggressive strategic plan

"However," he says, "EgyptAir, even before the revolution, did not have an aggressive strategic plan that would allow it to cope with the big change and growth of competitors in the Middle East and Africa." Some airlines were adding new aircraft and frequencies every month while EgyptAir growth was much slower, with some markets being under-served, or not covered at all. And the fleet requires modernisation. Not that it is old – 60% is quite young – but the plan we have will have an impact as of 2019-20." Just 24 hours after making these comments, the airline announced a series of major orders for aircraft.

During Dubai Air show 2017 EgyptAir announced a 3 deal for a total of 45 new aircraft of the latest types including B787 Dreamliner, A320 neo and the new Bombardier C300, while last year the company added nine B737-800NG.

One lingering shadow over EgyptAir is the fate of flight MS804, an Airbus A320 that crashed into the Mediterranean in May 2016 as it neared Cairo on a flight from Paris Charles De Gaulle airport.

The accident investigation is still underway, so there are strict limits on what Fathi can say. However, he says that the Government has dealt with the tragedy with "complete transparency and followed best practices for such cases. We've kept the public aware of all the developments that can be shared."

When explosive traces were found on the wreckage, the incident changed from a technical to a criminal investigation, with the prosecuting authorities occasionally asking for clarification of aspects of the case.

Inevitably, many people want definitive answers to aspects of the crash and Fathi says he understands their frustration at not receiving them. However, he adds, "Let's be realistic. I haven't seen an accident like this resolved within a year or so." The wreckage had to be retrieved from the seabed and he twice extended the length of the mission of the vessels searching for the remains of the Airbus deep beneath the waves.

Logic and best practice suggested that the report issued on the first anniversary of the crash could be realistically assumed to be the last word on the affair, "but we've not done that. We've kept it open until further conclusions can be reached by our procedures."

Beyond EgyptAir, Egypt has a small but active private airline sector. However, Fathi would like them to be more adventurous. "Most of the private companies are very much focused on operating to Saudi Arabia, Kuwait and Dubai," he notes.

There are great opportunities in Egypt's tourism sector, with flights operating direct into Upper Egyptian and Red Sea destinations such as Luxor, Sharm El-Sheikh and Hurghada. Some companies are tapping into this, with strong traffic flows between Germany and Hurghada, for example, while others are going as far afield as China and Japan to bring in visitors, with their much-needed foreign

currency, but not quickly enough. "They need to shift their focus from places like Saudi Arabia and Kuwait to different parts of the world," he says.

In a geo-politically sensitive part of the world such as the Middle East, there is often conflict between the civil and military aviation authorities over allocation of airspace; this is particularly a problem in the Gulf. However, Egypt has avoided such problems, says Fathi. "I can't complain about that at all. We work closely together and have an efficient process, in my opinion. We consult each other and work together." He cannot recall any delay to any civil aircraft that can be put down to problems with defence airspace.



A man with vast experience

Sherif Fathi has held several senior positions with major European and Arab airlines, including KLM and the now-defunct US carrier Northwest. He also served as regional director of the International Air Transport Association (IATA) in the Middle East and North Africa. He is a former CEO of Air Cairo and played a key part in the development of the region's major low cost carrier, Air Arabia where he was chief operating officer. He had chaired EgyptAir since August 2015, before being appointed to his ministerial post on March 2016. ■

Halting flights

A major issue Fathi had to deal with has been security. This was raised following the crash of a Russian Metrojet Airbus A321 shortly after departing from Sharm El-Sheikh in what was almost certainly a terrorist attack, although Egyptian investigators have not conclusively ruled out other causes. This led to Russia and the UK halting flights to Red Sea airports; The two countries still have a flight ban in place, although the Russian restriction may have been partly lifted by the time this article is published. But shortly UK resumed flights to Hurghada and Luxor in addition to the never-stopped Cairo operation and rated Sharm El Sheikh airport as one of the best airports in the region with regard to security measures.

The security issue re-emerged in 2017 when the US and UK banned the carriage of large personal electronic devices (PEDs) such as laptops and tablet computers in aircraft cabins from several Middle East countries, following fears that these could be used to hide explosives that could bring down an airliner.

When the ban was announced, Fathi suggested to passengers boarding UK-bound aircraft in Egypt could show their PEDs to security staff and have them individually tested for explosive residues before taking them into the cabin. He also raised the widely-voiced concern among airlines and aviation



“ I do the vision, the strategy and high-level target setting.”

SHERIF FATHI

safety specialists over the wisdom of placing large numbers of lithium batteries, used to power PEDs, in the cargo hold.

“That wasn’t accepted initially,” he says, but eventually the ‘solution’ arrived at by the US & UK authorities were precisely the one he had suggested at the start of the episode.

“Egypt airport security was among the top 20 nations in ICAO’s security rating however we had adopted a new approach to the way we manage, assess and develop it by using quality management principles,” he said. “We have reviewed the leadership, people, organization, training, documentation & registration and sit developments plans accordingly.

“In addition to the above, we have invested heavily in technology and upgrading the infrastructure of our airports by adding the latest security equipment, biometric, CCTV and radar systems.”

Aviationsafety

ICAO has awarded Egypt with the ICAO Council President Certificate, in recognition of Egypt’s recent commitments and actions to address aviation safety oversight priorities and improve the Effective Implementation (EI) of ICAO Standards and Recommended Practices (SARPs).

Fathi is also proud with the recent achievements of Cairo International Airport for receiving the best 2017 air safety award in Africa by Airports Council International (ACI) for its continuous efforts in increasing safety levels as rated by the Airport Excellence (APEX) that aims to improve safety levels in line with ICAO Standards and recommended practices. ACI has also ranked Cairo Airport first at the African level in air cargo as it accounted for 340,000 tons of the total African cargo and Cairo Airport secured the second position in passenger traffic in Africa, behind South Africa’s O.R. Tambo airport.

In addition, the award for excellence in Air Cargo for Africa was given by the *STAT Times International* to Cairo International Airport. ■



The last couple of years could not have been a more difficult time to run an airline in Egypt and even now, it's a tough job, says the managing director of Nesma Airlines, Ashraf Lamoulou.

"Last year was traumatic. All businesses were negatively impacted by inflation and the currency floating," said Nesma Airlines MD Ashraf Lamoulou.

The situation is slowly being restored to normal, but airlines such as Nesma are not clear of danger yet: "European operations have resumed, but what is the yield? We are chartering the aircraft to travel agents or brokers and they are consolidating the flights but, even then, you're selling your aircraft at the lowest price."

For the moment, said Lamoulou, Nesma is prepared to operate the aircraft on those services so long as they cover their operating costs and at least part of their fixed costs.

Nesma Airlines is unusual in that it splits its operations between two countries, Egypt and Saudi Arabia. The company has been able to take advantage of the liberalisation of domestic air services in Saudi and has stationed a group of four ATR 72-600 turboprops in Hail, in the north of the country. From there, they serve a small network of secondary northern airports, some of which cannot handle jets. Operations began in November 2016.

Found favour

Traditionally, turboprops have not found favour with passengers in the Gulf, who have tended to prefer jets. However, said Lamoulou, reaction to the Franco-Italian aircraft has been good. "The range between Hail and the other airports is very short, so we're not facing any performance problem."

The lukewarm attitude towards turboprops is not just a problem in the Gulf, but throughout the wider Middle East, explained Lamoulou. However, if an airport is underserved by scheduled flights and the turboprop can demonstrate good on-time performance – which the ATRs have – people accept them.

Nesma is preparing to step up its operations in Saudi Arabia by bringing in some of its four Airbus A320s, partly to offer enough capacity on heavily trafficked routes such as Jeddah-Riyadh and partly to be able to offer longer, international services from the kingdom.

The A320s will offer a small, business-class area of four seats. This will be European style; with the four-abreast configuration achieved by folding down the middle seat in each row of three

STEP BY STEP TO RECOVERY

standard seats to give business-class passengers more elbow room and privacy – useful if someone is working on documents that he would prefer not to be seen by someone sitting close to him.

This row of seats will have 36in pitch, with the next few rows set at 30 inches and the rest at 29 inches. This may seem tight but, as Lamoulou pointed out, it is the same seat pitch used in many major European carriers' aircraft and it is considered acceptable.

The Egypt-based A320s, meanwhile, will concentrate mainly on services between Cairo and Saudi Arabia during weekdays, with charter flights – particularly to Germany – occupying the weekends.

Nesma's fleet plans include adding at least one or two ATRs in 2018, together with another pair of A320s from the airline's Egyptian AOC.

Currently Nesma's fleet is dry-leased but, from this year onwards, it plans to acquire new units on a lease purchase basis.

Charter flights

The Egyptian A320s mainly concentrate on scheduled services from Cairo to Saudi destinations during the week, then revert to charter flights between Egypt and Europe – notably Germany – at weekends.

Indeed, Lamoulou believes that expansion for the Egyptian side of the business will come from charter, rather than scheduled, work.

In the early part of the decade, Nesma operated to most western European countries. It was only after Egypt's political upheavals began that tourism started to drop away, as Europeans started to worry about the security situation in the country. But, after the 2015 crash of Russia's Metrojet Airbus A321 over Sinai shortly after taking off from Sharm El-Sheikh, European flights ceased completely.

Lamoulou would like to see the previous situation restored. European services started again in April 2017. Over this winter season, charter services to Italy and Switzerland are getting under way.

Ideally, he would like to see an equal split between charter and scheduled services.

Like many Egyptian carriers, Nesma has the advantage of a large, inbuilt market of pilgrims wishing to travel to Saudi Arabia to perform the Hajj and Umrah. The latter, in particular, lasts for 10 months in the year and provides guaranteed volumes of high-yield passengers.

Foreign workers

In addition, there are huge numbers of foreign workers in Saudi Arabia, who need transport to and from their home nations at the end of contracts or for vacations. Many of them – from Bangladesh, for example – currently do not have direct flights home and have to travel via Gulf hubs such as Dubai and Doha, at additional cost.

An A320 has the necessary range to reach Pakistan and most of India. If something with more range and capacity is required, Lamoulou favours the Airbus A330. The new A321 neoLR would also have the necessary range, but the managing director believes the new generation aircraft are too expensive, especially for passengers at the economy end of the market. The A330 will be a lower-cost platform to operate initially, he believes, although he does not rule out the neo at some time in the future.

On the staffing front, Nesma is unusual among Egyptian carriers in that it trains its own co-pilots. It naturally hopes that eventually these co-pilots can be promoted to captain but, at the moment, Egyptian regulations stipulate that co-pilots must undertake a minimum of

The company has been able to take advantage of the liberalisation of domestic air services in Saudi.

Ashraf Lamloum: holding his nerve.



4,000 hours before being considered for the left-hand seat, unlike most other jurisdictions, which require only 3,000.

The Egyptian regulation equates to roughly two more years before a co-pilot gets his fourth stripe, which is causing something of a bottleneck in promotions.

Nesma is hopeful that a change in the rules is on the horizon. New captains from outside the company usually come to the airline with the appropriate type ratings and just need route training before assuming command.

Nesma can boast a dispatch reliability rate of more than 98%. Partly this is down to a maintenance contract with respected provider Lufthansa Technik, but partly also to the airline's policy of carrying an engineer on board all its services.

Over-cautious

This may seem either over-cautious or wasteful – the engineer is, after all, taking up a seat that could be used by a fare-paying passenger, but Lamloum believes the benefits outweigh the disadvantages.

Apart from anything else, Egyptian regulations stipulate that an engineer, not just a pilot, should be on board, so “It's more efficient to have an engineer sign off the pre-departure checks. It's best to have one of our engineers do it, rather than a side contract [with an outside company] and it helps cope with any unforeseen problems.”

The airline has Part 145 certification to carry out all of its own line maintenance, up to ‘C’ checks. It also has its own wheels and brakes workshop and can carry out minor structural repairs. For the heavier maintenance ‘C’ checks, it goes to the open market, usually entrusting its aircraft to Joramco in Jordan or Lufthansa Technik in Malta, although it also uses EgyptAir's facilities on occasion.

With the security situation at Egypt's Red Sea airports now gradually being given the all-clear by European nations, and tourists starting to return, 2018 will hopefully be less nerve-racking for Lamloum and his management colleagues than recent years have been. ■



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Tiger Aviation Services (TAS) started its ground-handling services with just four staff in a small office at Cairo International Airport nearly three decades ago. As Marcelle Nethersole discovered, it's been progress most of the way since then.



Tiger wants the Russians to roar

Tiger Aviation Services (TAS) is, today, looking forward to moving into a huge office block to accommodate its 350 staff.

"The company started in 1989 with just a few qualified traffic officers and handled its first flight at Sharm El Sheikh International Airport. Since then, it has been a fascinating journey for everyone to be part of the travel practice," said chairman and CEO, Hussam El-Talawy.

The company offers services from ground-handling, fuel, global flight support, crew and logistics – including having its own crew lounge, VIP services, catering, cargo, and TAS Travel – a sister company to TAS.

"From the moment the aircraft approaches its parking until the chocks are off, TAS will supervise the process every step of the way," said El-Talawy.

The company currently has 26% of the market in Egypt and deals with 1.5 million passengers a year. However, passenger numbers have dropped since Russia's Metrojet flight 9268 fell from the sky over Sinai in 2015.

"In 2010 we had 2.5 million passengers," said El-Talawy. "These were mainly Russians as we handled 90% of the Russian work, making up 30% of tourists coming here. Now not as many come after the incident over Sinai.

"However, our Government and the airports have taken a big leap to clear all the concerns tourists have, including security. For instance, Hurghada International Airport has very strict security now, using new fingerprint machines at security."

El-Talawy added that tourists have only recently started to come back to Egypt.

Hussam El-Talawy (above): Passenger numbers have dropped since Russia's Metrojet flight 9268 fell from the sky over Sinai in 2015.

"The Germans and the British have already started to come back," he said. "We just need to see the Russians."

El-Talawy said he is looking forward to seeing passenger numbers increase and the company further expanding.

"Besides a new office block, we have started our own kitchen company here in Cairo providing catering for both business and commercial flights," said El-Talawy.

"We offer cuisine literally fit for kings and queens as we have already served many royal parties."

The company is also looking into starting its own tour operation.

"As aviation and tourism returns to normal here, we want to further increase our services," said El-Talawy. "After all, our business is aviation and aviation is tourism." ■

EAS DOES IT BY KEEPING ITS FEET ON THE GROUND

For more than a quarter-of-a-century Egyptian Aviation Services (EAS) has been playing a vital ground-handling role at Egypt's major airports. Today it serves Cairo, Alexandria, Luxor, Sharm-el-Sheik and now the new airport at Marsa Alam, in which it holds a 50% shareholding along with Kuwait's Kharafi Group.

"We have an impressive list of customers and have a good relationship with them," said chairman and managing director, General Mohamed Kamel Mostafa.

EAS has won gold awards from British Airways as best performing station and best information provider, and reached the five crown awards for KLM for three consecutive years.

General Kamel said the company had also been developing its capabilities with private aviation as well.

"We manage two VIP lounges at Cairo Terminal Two and have been working with



Saudi Arabian private aviation companies as well. We have a three-pronged approach to what we do – security, safety and quality."

Kamel said that security remained a major priority in Egyptian airports, adding that the systems were solid. However, he urged that

EAS owns more than 2,000 ground-handling equipment pieces.

investment should continue. "It affects everyone in our industry," he said.

EAS owns more than 2,000 ground-handling equipment pieces and has its own maintenance workshops, a contributor to the impressive on-time performances achieved by the company, according to its chairman.

Holding the International Air Transport Association (IATA) safety audit of ground operations (ISAGO) certification, EAS is also training others and intends to raise the levels of expertise both within the company and externally.

"We plan to open up job opportunities in the new and military airports being used for civil aviation through our Marsa Alam partnership," said General Kamel "We will also open areas of the security service training in the light of increasing demand for security procedures applied at airports." ■

WHY ZAS IS BULLISH ABOUT THE FUTURE

Omar Zarkani, managing director, of ZAS Aviation Services (ZAS), is looking forward to seeing more business growth in Egypt after “some years of problems” in the country.

“I am very optimistic that Egypt is seeing light at the end of the tunnel,” he said. “We are finally starting to see more flights come into the country.”

ZAS offers ground-handling and flight support at Cairo, Hurghada, Sharm El Sheikh and Marsa Allam International Airports, as well as at smaller airports in the country.

The family-run company has been operating since 1976 and today 40% of its business is in corporate flights, 40% in charter flights and 20% in cargo – depending on the season.

Zarkani said the company is looking to expand, adding that while EgyptAir and the Egyptian Aviation Authority provide the ground support equipment (GSE) at the airports in Egypt, ZAS is interested in operating its own GSE.

“We are more than ready to provide our own equipment if we were offered a licence,” he said.

While the company also offers charter flights in the UAE, its main focus is on Africa,

where it has services in Sudan and South Sudan.

“Africa is more in line with the type of company we have set up to be – working in areas where the facilities are not up to the standards of what we operate,” explained Zarkani.

“When we first got to Juba it was very difficult to find people with experience in the industry, so we brought in our training department and they perform training every three months for the locals. We also own the handling equipment there.”

Zarkani added: “There were two things we looked for in Juba – trained staff and the airport facilities. Initially, for example, there was no airport follow-me car – it was actually a guy on a bicycle heading in front of the aircraft – so the first thing we did was provide the airport with a follow-me car. We also donated a proper X-ray machine.”

In Khartoum the company hires the equipment from Sudan Airways but Zarkani said the company is in the process of applying for a licence.

ZAS is also looking to expand in other African countries, including Somalia, Tanzania and the Congo. ■



Omar Zarkani: “We are finally starting to see more flights come into the country.”



Captain Mohamed Roshdy Zakaria: “We lost a lot of our market after the revolution ... It has picked up over the past year.”

Smart move for VIP operator

With more than 30 years’ aviation experience, Captain Mohamed Roshdy Zakaria knows the airline business from top to bottom.

When he became EgyptAir CEO in 2012, he had already been a chief pilot examiner and instructor on the Airbus 300-B4, the Boeing B767 and B777, and he had been instrumental in creating and building the airline’s integrated operation control centre (IOCC).

Consequently, when it came to stepping down from the airline’s hot seat, Zakaria knew early retirement was not an option. Instead, he took up the reins at Egypt’s first private aviation company, Smart Aviation.

Stepping into his office in the Ministry of Civil Aviation building, it was clear that Zakaria is hands-on... very hands-on.

“We need fuel in the Gulfstream now and where are the crew?” he barked down the telephone.

He had picked up on a charter opportunity for a Gulfstream G450 managed by Smart. “We have just one-hour-and-a-half to get crew, catering, fuel and permits,” he said.

Zakaria has been tasked with turning around the loss-making charter business, which was formed in 2007 and operating in the VIP sector since 2009. ■

“So far it is working,” he said. “We have seen losses reducing each quarter and I am confident that we will now be turning into profit when the 2017 results are out.

“We have seven aircraft in the fleet, six Cessna Citation Sovereigns – one is managed by us and the others owned – and the Gulfstream, which we manage.”

The operator is part of the Avinode network and is seeing its international charters increasing.

“We lost a lot of our market after the revolution and it hasn’t recovered,” said Zakaria. “It has picked up over the past year but is probably only to 80% of what it was before.”

The Sovereigns are ideal for medical evacuation activities and two of the fleet have been made ready for medevac operations.

“These are the only real air ambulances in Egypt,” Zakaria said.

Smart also operates a King Air 350 for inspection and calibrating navigational aids. “We have worked on the systems at most Egyptian civil and military airports and also won contracts in Oman and Saudi Arabia. We have also begun working in South Sudan,” he added. ■



A new corporate livery marks a fresh beginning for Air Cairo as it emerges from the troubles of the past few years and prepares to expand once more.

Air Cairo aims to stand out from the crowd

Like most of Egypt's airlines, Air Cairo was badly affected by the double blow of the floating of the Egyptian pound, which saw its value halve against the US dollar, the currency in which the international aviation community operates, and by fears of terrorism.

The airline had planned to move from a fleet of seven Airbus A320s at the end of 2016 to 20 by the end of the decade. Progress has slowed, but chairman and CEO, Yasser El-Ramly, is hopeful that the delay will not be too great.

"We now have nine A320s and we're going to increase that to 12 by the summer this year. We're behind our plan, but I think we will reach our new business plan by around 2021."

Despite the company's title, it conducts relatively little business from the Egyptian capital. A single aircraft is dedicated to the Cairo market and has a business-class cabin to complement the economy-class seats, but the rest of its Airbuses operate with a single-class configuration.

The airline specialises in serving Gulf nations from secondary Egyptian airports, handling labour, visiting friends and relatives (VFR) and religious traffic.

Tourism market returning

The bulk of the airline's business comes from Europe. "The tourism market is returning and we had a good summer," said El-Ramly. Air Cairo flew around 250,000 tourists to Egypt over the summer 2017 season on roughly 65 flights a week, more than double the previous year's number of services. Those were split roughly 75/25% between scheduled and charter flights; load factor was around 78%. This he regards as healthy, considering that on its routes from Germany it typically faces competition from five or six airlines, including many of Europe's major low-cost carriers.

"We wish to have more than that, of course, and we're planning by summer 2018 to have increased the frequency to Europe to around 90 flights a week.



We've been operating in Europe since 2003 and I think we have a good name with tour operators as a charter carrier." However, El-Ramly believes that the airline is not as well-known among travellers in Europe as it could be and plans a marketing campaign to make its name more visible.

A more distinctive colour scheme for its aircraft is being introduced, to help it stand out from the crowd.

The chairman is confident that, by next summer, tourists will be reassured that

Yasser El-Ramly:
"We are the largest private airline in Egypt, but still only have 10 aircraft."

security has been tightened at Egypt's airports. In fact, he says that Sharm El Sheikh and Hurghada, the two airports over which security concerns were raised by foreign governments, are now some of the most secure in the world.

"Every [passenger] is checked twice. You receive a pat-down even if you do not set off the alarm."

Air Cairo is starting to branch out in new directions. It has instituted a new Sharm El Sheikh-Yerevan service to the Armenian capital and, by the time of publication, Milan should also have been added to the route map, with Stockholm and perhaps Azerbaijan following shortly.

There is no doubt, says El-Ramly, that Egyptian airlines such as Air Cairo can and should be taking a bigger slice of the market when it comes to transporting tourists to their home country. "Before the [2012] revolution, we had around 12 million passengers a year coming through Sharm El Sheikh and Hurghada and the market share of Egyptian airlines was less than 1% of this."

Increase fleets

He believes that Egyptian airlines should increase the size of their fleets to improve that figure: "We are the largest private airline in Egypt, but still only have 10 aircraft and the rest of them have not more than around 25 in total."

European low-cost carriers, with their huge fleets and rock-bottom prices, remain the main threat to airlines such as Air Cairo.

The halving of the value of the Egyptian pound against the US dollar due to the floating of the currency meant that yields went through the floor. Obviously airlines like Air Cairo could not simply double their fares to compensate – "The market wouldn't accept that immediately" – but it has been slowly inching up its fares to recover yield levels.

El-Ramly remains "very optimistic" and is confident that within the next year Air Cairo will have returned to the levels of success seen before political unrest started to affect the country in recent years. ■

As Egypt's leading hospital expands, it is also helping save the lives of African patients through its overseas medical programme.

Located just 10 minutes from Cairo International Airport is the EgyptAir Hospital. It was established in 1986 for the sole purpose of providing healthcare for staff and all civil aviation employees and their families.

Now the hospital offers healthcare to a number of medical insurance companies and, through its medical tourism programmes, to customers and patients from all around the world. It is Egypt's leading hospital.

It is most famous for its sophisticated and specialised medical care through advanced surgeries including spinal cord, laser-eye, brain, and open heart, plus liver and kidney transplant, as well as cardiac catheterisation.

It also boasts expertise in gastroenterology and is the only hospital in Egypt to provide surgery and interventions for gastroesophageal reflux (GERD).

Private hospital

"We are an EgyptAir company but work as a private hospital for all Egypt and for surrounding companies," said Dr Adel Mazrou, chairman. "When the hospital was first established, there were just 12 beds in the intensive care unit (ICU) and now there are 40, making it the largest state-of-the-art ICU department in Egypt.

"We have also renovated the eye department in the last few years."

The hospital has comprehensive medical, surgical and diagnostic facilities, including laboratories, radio-diagnosis and nuclear medicine units, nephrology, neonatal units, operating theatres and dental clinics.

It is most noted for its laser-eye surgeries, heart surgeries, and liver transplants.

"In seven years we have performed 750 open-heart surgeries with a success rate of 93%, and 248 liver transplants with a success rate of 87% – these are some of the most successful figures in the world," said Mazrou.



The EgyptAir medical team.

OPERATION THAT'S A PARTNERSHIP IN HEALTH

All EgyptAir staff benefit from the hospital, with full medicals every three months.

"We serve pilots, cabin staff, engineers and airport staff with full medicals and we also look after their families," said Mazrou.

The hospital has 230 Egyptian doctors and offers 24-hour emergency room services. An air ambulance serves the tourist destinations around the country and the hospital's preventative medicine section works in close cooperation with EgyptAir to monitor the hygiene standards of the aircraft and food catering services.

Medical clinics

The hospital also has medical clinics at Cairo International Airport for emergencies. However, a new project – part of the 2030 Vision – is getting under way in the shape of a new hospital.

"We are in the process of building an extension to EgyptAir Hospital that will be near the airport," said Mazrou. "It will be 35,000sqm with about 600 beds – a huge hospital that will serve the ministry of aviation and all the companies under its supervision."

While the hospital staff are Egyptian,

Mazrou said it often invites doctors from abroad as experts when they are needed, although he pointed out: "Egypt has some of the best doctors in the world.

"We also have a very important agreement with one of the best academic advanced hospitals in Paris – the Georges Pompidou Hospital," he said.

EgyptAir Hospital is also extending its links overseas with various medical programmes with the help of EgyptAir and the group's travel arm, Karnak.

This includes a new tailored medical programme that started earlier this year that is specialised for countries in Africa, which so far have included Nigeria, Sudan and Chad.

"We want to be able to offer our hand of help abroad and not just in Egypt, when we can," said Mazrou. "With the help of our national airline and Karnak, patients are offered discounts to come here for surgery.

"We are proud to say that, since the programme started earlier this year, 20 patients from Africa have been successfully treated. They have mainly come for eye surgery, cardiology, and liver transplants."



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EgyptAir Holding Company's tourist arm – Karnak – is working hard to put the country firmly back on the visitor map. Gamal ElGazzar, VP tourism, explains the steps it needs to take.

A MAN WITH A TOURISM PLAN

People need to understand that Egypt is not a field of war, said Gamal ElGazzar, VP tourism, Karnak. “If it was, why would I live here with my family, along with 95 million other Egyptians?”

Of course, ElGazzar was referring to the country's problems of the last few years that have seen a slump in tourism. However, he pointed out, 2017 had already seen that beginning to change.

“Tourist figures jumped to 10 million in 2017, up 30% compared to 2016,” said ElGazzar.

“I believe we should be seeing 60 million visitors a year in the next 10 years – but we have a lot of homework to do before that happens.”

Karnak, which was established in 1955, arranges tours and packages both inside and outside Egypt, as well as Hajj and Umrah pilgrimages.

Ambitious plans

ElGazzar has only been at the helm since July, but he has ambitious plans to make Egypt a top tourism destination once again.

“Since July, along with EgyptAir Holding, we have started a new plan to offer a good product, restructuring the standards of tourism operators and moving towards digital marketing,” said ElGazzar. “We are currently implementing an online travel agency, which will help potential visitors easily fulfil a trip here.”

Egypt is famous for its ancient heritage, with two of the seven wonders of the ancient world – the Great Pyramid at Giza and the Lighthouse at Alexandria – located there.

Over the years, people have come in their droves to visit the country's famous sites.

Dating back to the pharaohs, millennia-old monuments sit along the famous Nile River Valley, including the pyramids and Great Sphinx, as well as Luxor's hieroglyph-lined Karnak Temple and Valley of the Kings tombs.

Cairo is home to Ottoman landmarks like the Muhammad Ali Mosque and the



Egyptian Museum, as well as its Coptic Christian heritage sites.

Then there is the Red Sea – well-known for its diving.

However, ElGazzar said there is “so much more to see and do”.

“Around 70% of people want to see the pyramids and the Sphinx, and 35% the light and sound show at the pyramids,” said ElGazzar.

“However, we also have places that not many people know about, such as the west of Egypt, home to the stunning oasis

towns of Siwa, Dakhla, and Kharga. The beaches and mountains in Sinai are beautiful and in the eastern desert the nature is fantastic.

“There are a lot of monuments and landmarks that need to be highlighted and I am working on it. We want to promote the delights outside of just the pyramids.”

Karnak is working closely with the government to achieve its tourism potential.

“We are working on projects under the umbrella of the government, including focusing on digital marketing,” said ElGazzar.

“In the last two years, Cairo has seen 2,000 hotel rooms added, as well as four hotels that have been renovated. We are also working with the Government on a big project to be ready in the next 10 years to receive up to 30 millions visitors. We believe Egypt will be a booming tourist destination by then.”

Business hub

Currently, Egypt's main tourists come from Arabian countries, followed by North Africa and Europe. The country also caters well for meetings, incentives, conferences and exhibitions (MICE) visitors and is thought of as a business hub for North Africa.

“We also have tourism programmes for business travellers,” said ElGazzar. “Even if you only have eight hours to spare, you can choose a short tourist option, or tailor-make your own. We have a 24-hour transit office at Cairo International Airport to meet, assist and arrange quick tours.”

Another special project Karnak and the government are looking into is educational tours.

“We want to sponsor educational trips, especially for the departments that teach Egyptology – the theoretical study is there but now it need the practical side and we would like to put that in place with sponsors,” said ElGazzar.

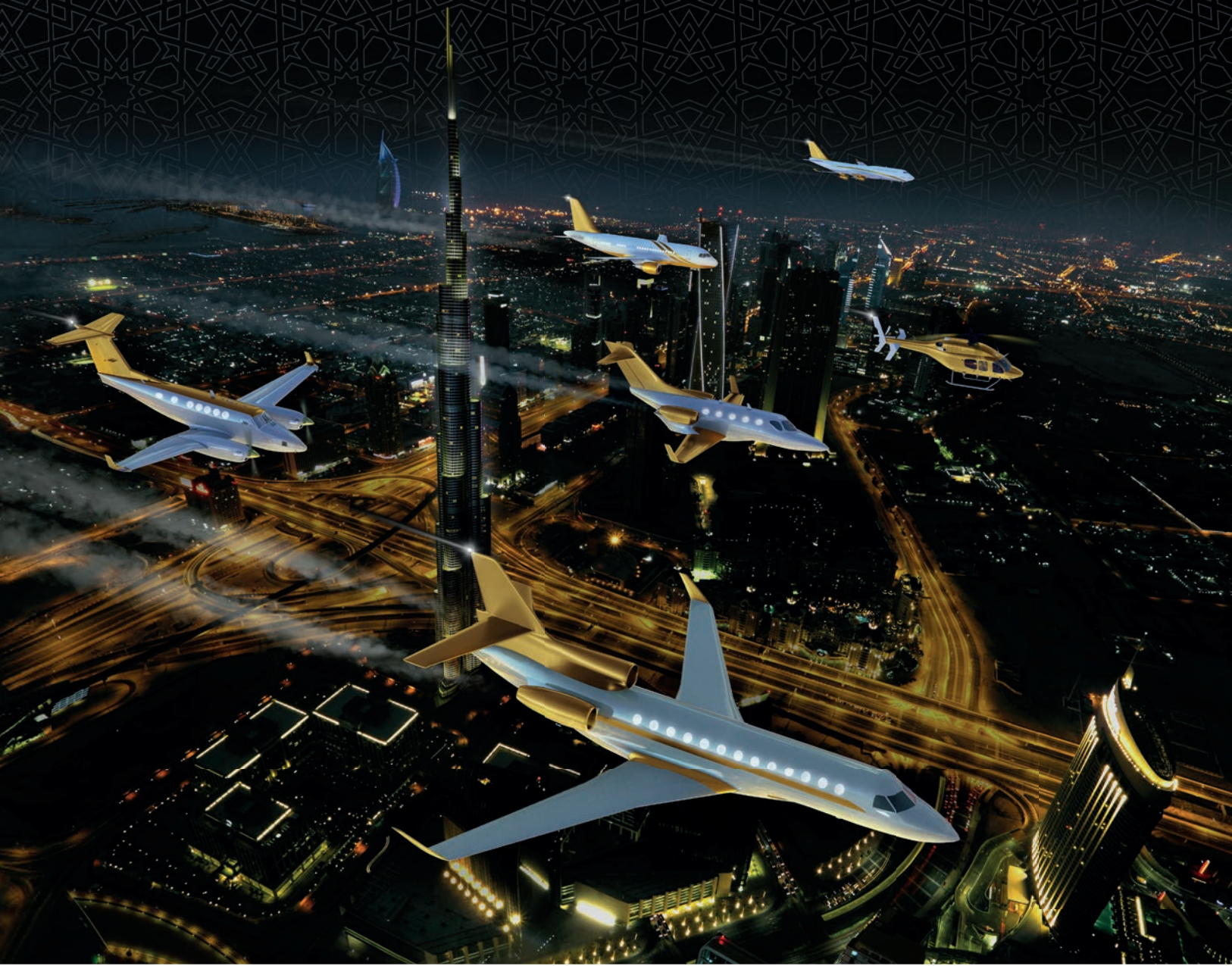
“Egypt is one of the oldest civilisations known to man – it is simply a must-see destination.”

Gamal ElGazzar:
“There are a lot of monuments and landmarks that need to be highlighted and I am working on it. We want to promote the delights outside of just the pyramids.”

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Mohamed Moneir had been retired for five years and was growing citrus fruit on his farm when he was given the chance to cultivate something rather different than oranges and mandarins... an airline.

MONEIR'S BACK IN BUSINESS, BEARING FRUIT FOR AIR LEISURE

The airline that Mohamed Moneir was called back from retirement to oversee was Air Leisure. Previously known as Air Memphis, an Egyptian charter airline that had been operating for 20 years, it had been bought by new owners in 2013, renamed and given a new role of operating long-haul charters.

"The vision of the airline is to operate long-haul routes, concentrating on Asia," explained Moneir who, before he became Air Leisure's chairman, had a long career with EgyptAir including as vice-president, commercial of EgyptAir Holding Company and several regional manager roles around the world.

One advantage of focusing on Asia, he said, was that the region (with the exception of Japan) was not so sensitive to the Middle East's geopolitical problems and so did not suffer from sudden dips in tourist traffic. Another was simply to break away from what he described as "cut-throat competition" in the shorter-haul charter market.

Focuses on China

Air Leisure particularly focuses on China, with charter services operating from more than 10 Chinese cities. Chinese tourists tend to want to sample different aspects of Egypt, combining time at the historical sites of Upper Egypt with a few days' relaxing at Red Sea resorts, such as Sharm El-Sheikh or Hurghada, followed by a stay in Cairo.

From January to the end of September 2017, Air Leisure flew some 60,000 Chinese tourists into Egypt. This market is particularly attractive, not only because of its size – Boeing has estimated that 130 million Chinese took foreign holidays in 2016 – but also because the country's tourists tend to be high spenders.

The two main seasons for Chinese tourists are January to March and July to September. In those periods, Air Leisure typically operates 10 to 14 flights weekly to China.

And the focus on overseas markets means that Air Leisure is pulling in hard currencies, so the company has been less

affected by the drop in the value of the Egyptian Pound than have many of the country's other airlines.

Air Leisure's initial equipment consisted of three Airbus A340-200s, acquired from EgyptAir from late 2014. This made it, at one time, the world's last commercial operator of the initial variant of the European four-motor wide-body.

In 2017, it moved on to the more economical twin-engined A330-200, with three former Emirates Airline examples acquired via lessor Dubai Aerospace Enterprise on 10-year finance leases.

Latterly, the A340s were modified internally into a single-class 283-seat layout, to suit them for religious tourists heading for Mecca on the Hajj or Umrah pilgrimages from long-haul points such as Malaysia and Indonesia. However, the type was finally withdrawn in July 2017.

Air Leisure is now in negotiations to acquire more A330s and has also signed a memorandum of understanding with Russia's Sukhoi Civil Aircraft Corporation (SCAC) for four

SSJ100 Superjets. The latter would be used for domestic charter flights and to cater for the Chinese and Japanese tourists, who like to make multi-sector visits, basing themselves in Egypt but making short side-trips to destinations such as Athens.

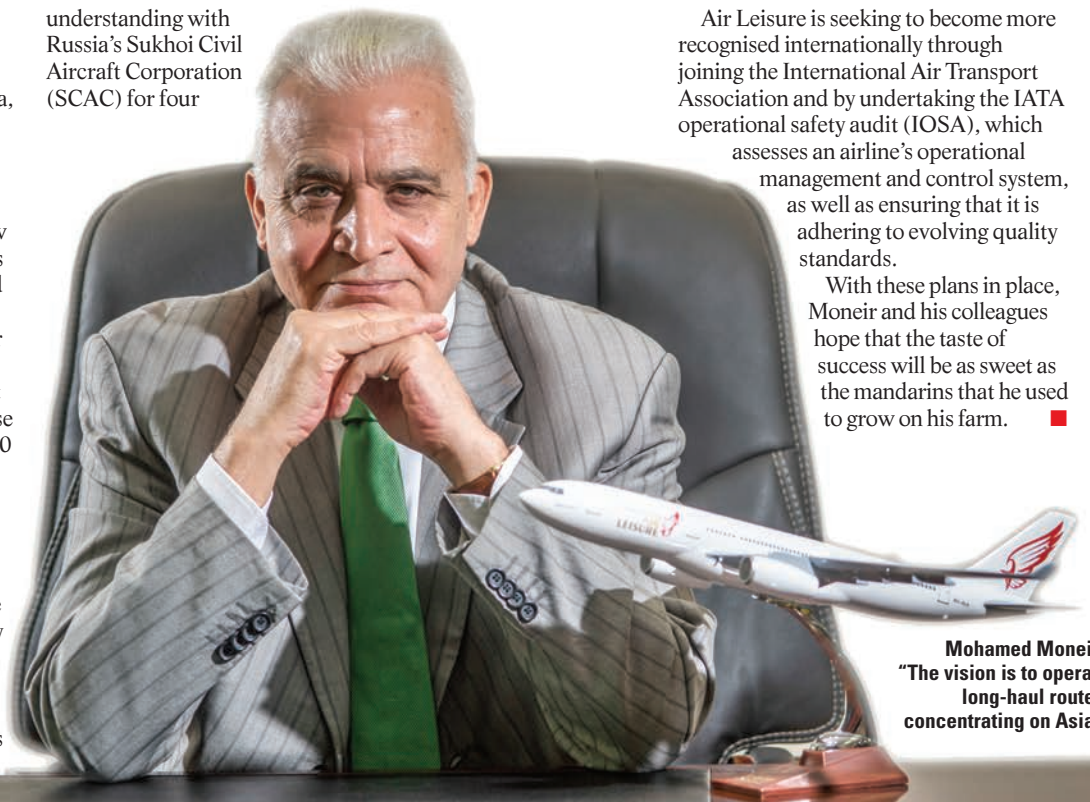
Russian pilots

If the Sukhoi deal goes ahead – and SCAC president Alexander Rubtsov was hopeful at the Dubai Air Show that it would – the aircraft would initially be operated by Russian pilots, said Moneir, while Egyptian pilots were trained on the type.

Airbus had been surprised that an A330/340 operator would not take on examples of its A320, he added. It was possible that the European narrow-body could yet be procured and operate alongside the SSJ100 – it all depended on the right markets becoming available to the carrier.

Air Leisure is seeking to become more recognised internationally through joining the International Air Transport Association and by undertaking the IATA operational safety audit (IOSA), which assesses an airline's operational management and control system, as well as ensuring that it is adhering to evolving quality standards.

With these plans in place, Moneir and his colleagues hope that the taste of success will be as sweet as the mandarins that he used to grow on his farm. ■



Mohamed Moneir :
"The vision is to operate long-haul routes, concentrating on Asia."

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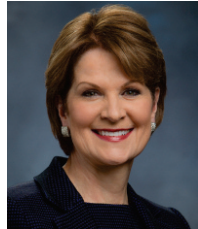
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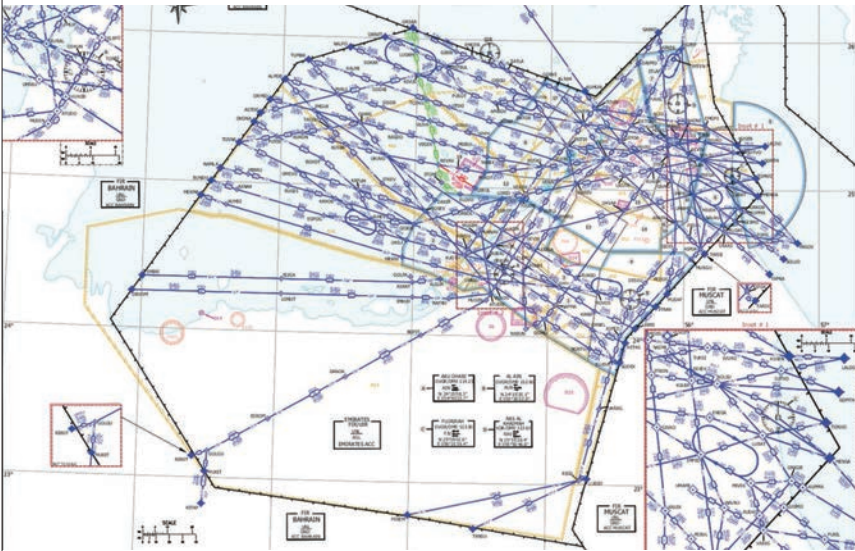


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A new air traffic control system to speed traffic flow through the Arabian Gulf's increasingly congested airspace has been introduced by the UAE's aviation regulator. Alan Dron reports.

ATC revolution boosts traffic flow in Middle East



This chart shows the Emirates flight information region following the introduction of performance-based navigation on December 7.

For the past decade, the success of the three major Gulf airlines – Etihad Airways, Emirates Airline and Qatar Airways – has had the side-effect of adding considerably to the congestion of airspace in the region.

As the airlines' fleets have mushroomed, so the area's air traffic controllers have had to fit more and more aircraft into a finite space.

While the hardworking controllers have coped admirably so far, average delay due to traffic congestion is now 29 minutes and this figure is forecast to double to 59 minutes per flight in the next few years unless something is done to alleviate the situation.

On December 7 2017, the UAE's General Civil Aviation Authority (GCAA) implemented what it describes as one of the largest airspace changes ever seen in the region.

That date saw the completion of the UAE airspace restructuring project (ARP), which transformed the Emirates flight information region into the world's first airspace structure to be completely based on performance-based navigation (PBN) with a navigation specification of RNAV-1.

PBN is a system that uses satellites and computerised on-board systems. This offers considerable advantages over traditional sensor-specific navigation based largely on fixed, ground-based beacons that guide aircraft along published routes via waypoints defined by those beacons.

Primarily, the airspace change aims to increase the UAE's airspace capacity to meet forecast air traffic demand for 2022, as well as increase access to all the UAE's airports and generally improve efficiency for both customers and air navigation service providers. It will also reduce the environmental impact of the region's increasing air traffic by allowing it to move more efficiently.

The restructuring project was the culmination of several years of analysis, development and collaboration across the UAE's aviation community to develop one of the world's most advanced navigational systems.

"The implementation of the ARP is not only impressive from a technical perspective," said GCAA director-general Saif Al Suwaidi. "To achieve collaboration on such a large-scale change required teams of project management and technical experts with dedicated representation from the six UAE air navigation service providers (GCAA, DANS, Abu Dhabi ANS, Fujairah, Ras Al Khaimah and Sharjah), 15 core agencies (including the UAE national airlines, UAE airport authorities, UAE military, regulatory representation, IATA and the National Center of Meteorology and Seismology) and the five surrounding international air traffic service providers.

"Implementation of the UAE ARP has demonstrated our capability to safely meet the capacity requirements for the forecast 2020 air traffic demand and beyond, but also to deliver environmental efficiency and fuel savings exceeding \$15 million to airline customers within the first year after implementation," said Al Suwaidi.

"These sustainable annual fuel savings further translate to around 100,000 metric tonnes of CO₂, supporting a significant contribution towards the UAE's environmental policy and responsibilities towards 'greener' aviation."

Major milestone

The project got under way in 2013 and a major milestone was achieved in July 2016 with the integration and implementation phase, which saw international consultants help ensure the transformation of the ARP concepts into a workable solution.

Overall, the project required more than 120,000 working hours to bring to fruition, said the chairman of the project steering group, Ahmed Al Jallaf. Multiple 'fast-time' and real-time simulations were staged in the UAE, Italy and the UK to validate the design of the revised airspace network. The ARP also required more than 250 air traffic controllers to undertake simulation and theoretical training to allow them to handle the new system.

Additionally, more than 200 instrument flight procedures had to be redesigned and 30 new airways had to be incorporated.

As well as handling planned traffic increases out to 2022, the new system is designed to provide a basis for 'future-proofing' the UAE's airspace as far into the future as 2040. This will ensure that the expected traffic increases engendered by the expansion of Al Maktoum International and Abu Dhabi International Airport can be catered for.

It will also help ensure that aviation will continue to play a major role in the growth of the UAE's economy for the foreseeable future. ■



GCAA director-general Saif Al Suwaidi: the new system will improve efficiency, increase capacity and bring environmental savings.

As Iraq emerges from the shadow of Daesh, it is pouring considerable effort into restoring and improving its civil airports with help from international organisations.

Alan Dron reports.



Erbil International Airport needs substantial repairs to restore it to fully functioning status, but is at the centre of a stand-off between the central Iraq and regional Kurdistan governments.

IRAQ: A LAND OF OPPORTUNITY AS IT REBUILDS AFTER WAR

In April, an exhibition and conference will open in Baghdad, allowing aerospace sector companies to showcase their capabilities and new technologies as the country embarks on a major initiative to improve its airports.

The Iraq Airports Aviation Forum (IAAF) 2018 will feature more than 70 exhibitors, while the conference held alongside it at Baghdad International Airport is due to host 200 delegates and 1,500 trade visitors from almost 20 countries.

The opportunities for vendors are considerable. The nation's airports at Baghdad, Basra, Najaf, Nasiriya, Erbil and Sulaymaniyah are undergoing expansion, while the IAAF's organisers say there are also investment opportunities at Dohuk, Kirkuk, Mid-Euphrates and Diwaniya airports.

Indeed, some improvements at Iraq's airports are already under way. In 2014, the government announced plans to invest \$50 billion in the country's aviation industry, partly via the construction of new or expanded terminals, air traffic control facilities and all the essential behind-the-scenes activities that allow an airport to perform efficiently.

Several specific contracts to improve airport facilities have been announced since then, such as an order for 12 new passenger boarding bridges at Baghdad International's Samara and Babylon terminals. And a complete new airport, Karbala International, some 60km southwest of the capital, is under construction.

The backdrop to these ambitious plans has been the bitter battle to retake a large swathe of the country from the Islamist Daesh forces, which have slowly been dislodged from virtually all the territory they once held.

The fighting – and the huge financial cost involved in waging it – has obviously hampered some of the country's airport development plans. In September last year, for example, the *Baghdad Post* newspaper reported that Mosul International Airport was still in poor condition, despite having been liberated from Daesh eight months earlier.

When the Islamists controlled the area in 2014, they

systematically ploughed up the airport's runways and strewn rubble along them to prevent any airborne assaults taking place. Worse, the *Post's* report quoted local residents as saying that the occupiers had destroyed virtually every facility at the airport and that reconstruction would require millions of dollars before it could even think of re-opening its doors to passengers.

The airport's chairman, Haider Mohamed, was quoted as estimating \$50 million and two years would be required to reconstruct the facility.

This task has been made more difficult by the huge sums required to complete the destruction of Daesh, at a time when oil prices are still at relatively low levels, limiting the government's income.

Some international bodies have stepped in to assist. In late October 2017, for example, the World Bank approved a \$400 million financial assistance package for Iraq, some of which is earmarked for airport improvement, with Mosul being singled out as the subject of studies for a public-private partnership to rebuild and operate the facility.

The airport resurgence is attracting some major international names. In July 2017, Erbil International Airport (EIA) in the autonomous Kurdistan region, signed a partnership agreement with Lufthansa Consulting to support its plans to develop the facility.

At the most basic level, repairs to the terminal roof and across the airfield are being undertaken. The airport will also seek to bring on line a \$6.5 million, four million gallon capacity fuel farm that will provide much-needed storage capacity, while a water treatment plant will cater for the increasing number of passengers using the facility. Additionally, the airport's grounds will be the subject of a \$17.5 million landscaping project.

However, in September, the Iraqi Government imposed a ban on international flights to Erbil and Sulaymaniyah, in a reaction to Iraqi Kurds having voted in favour of independence in a referendum. This ban was still in force at the time of writing; it remains to be seen what effect it will have on the refurbishment plans.

Opportunities for vendors are considerable. The nation's airports at Baghdad, Basra, Najaf, Nasiriya, Erbil and Sulaymaniyah are undergoing expansion, while the IAAF's organisers say there are also investment opportunities at Dohuk, Kirkuk, Mid-Euphrates and Diwaniya airports.



CAE and SNCA sign the agreement at last year's Dubai Airshow.

CAE TO OPEN

A new dawn for aviation in Saudi Arabia – and a further indication that greater liberalisation in the kingdom is gaining pace – came when CAE and the Saudi National Company of Aviation (SNCA) announced they are to open a new CAE authorised training centre in Damman to train both Saudi and non-Saudi commercial pilots.

Although there are already training academies within Saudi Arabia, the new Damman base has promised to train both men and women pilots on the same curriculum.

It was only in September last year that it was announced that women could now drive in the kingdom.

The new centre will be funded by SNCA, with CAE providing all the training elements under its Oxford Aviation Academy. It will be located at King Fahad International Airport on a dedicated 40,000sqm site.

“Developing the pilots of tomorrow is our priority and, as the leading worldwide training organisation, CAE is the most suitable partner to help us with the launch of this project and to accompany us on this journey,” said SNCA

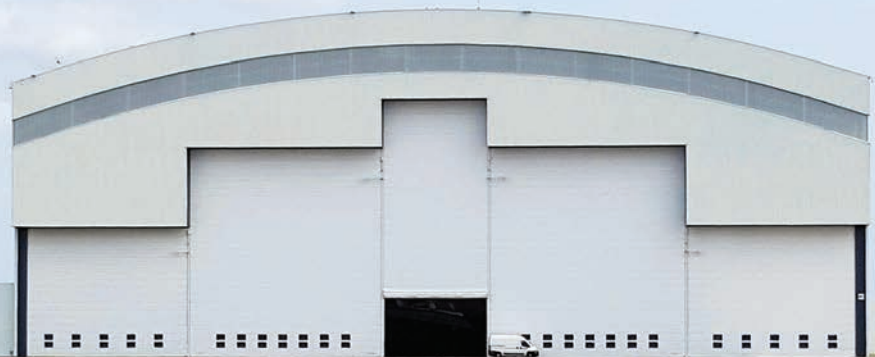
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UNISEX PILOT TRAINING CENTRE IN SAUDI

president and chief executive, Othman Al Moutairi.

“This centre gives us the ability to supply locally trained pilots to our growing regional and global airlines, while also providing a highly skilled career opportunity for students.”

Nick Leontidis, CAE Group president of civil aviation training, said: “We are honoured to support our partners in the aviation industry to establish new training centres. This new centre is testament to our commitment to shaping the future of pilot training.”

The announcement follows a decision by Saudi Arabian Airlines, the kingdom’s national carrier, to consider sending qualified women on scholarships to study to become pilots abroad.

Dubai newspaper, *Gulf News*, reported an airline source saying that the move “would help shatter taboos that stood for decades”, relating it to the decision of Saudi women gaining the right to drive in the kingdom.

No law existed preventing women from becoming pilots. However, social and cultural taboos, as well as meagre job prospects, held them back from embracing a career in aviation.



Hanadi Al-Hindi is an inspiration for Saudi women.

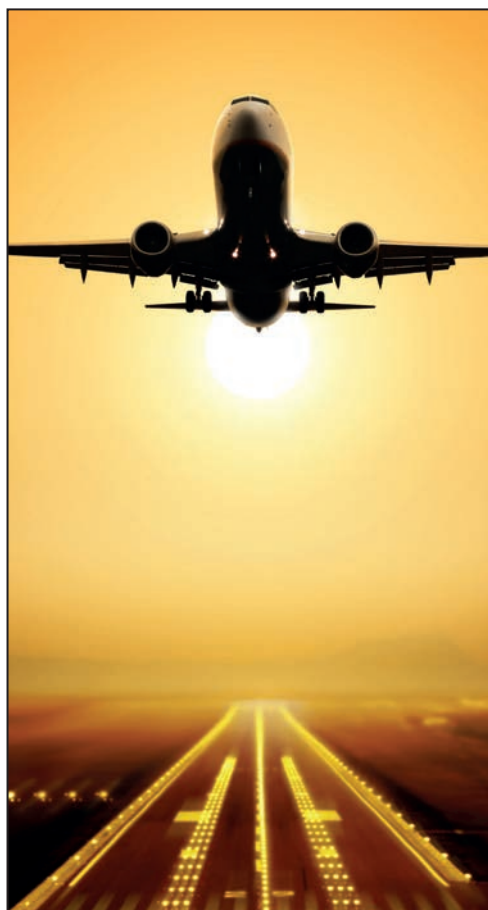
Nonetheless several succeeded where others feared to tread.

Hanadi Al-Hindi received her pilot’s licence in 2006, after completing her training in Jordan. However, she wasn’t able to find work or fly within in the kingdom until 2014, when she was hired by Prince Al Waleed Bin Talal’s Kingdom Holding Company. “That was really difficult, being a pilot who cannot fly in her own country,” Hindi told the British Broadcasting Corporation (BBC) in an interview.

According to Al Moutairi: “Men and women will be taught the same curriculum in the academy and we do have future plans to have female instructors and aviation trainers.

“The academy is a private entity but there are numerous financial aids. We have a number of partnering banks and companies who are willing to give interest-free loans.”

“The academy completely adheres to the standards of the General Authority for Civil Aviation. Only 40% of pilots in the Saudi job market are Saudis and only two of them are women. We aspire to have 60,000 pilots and technicians over the next 20 years.”



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Together for better aviation



Emirates officially opened its brand new flight-training academy at Dubai South during the Dubai Air Show. Dave Calderwood was there.

ACADEMY THAT'S IN A CLASS OF ITS OWN

Emirates Flight Training Academy (EFTA) will offer training for both UAE cadet pilots and others from around the world.

It's taken 10 years since the idea for the academy was first mooted and five years since given the go-ahead was given, but what an astonishingly brilliant facility it has turned out to be.

The state-of-the-art training organisation breaks new ground with cadets learning to fly on the very latest glass cockpit Cirrus SR22 G6 single-engine piston aircraft, then transitioning straight to jet flying on the Embraer Phenom 100EV, again the latest model.

It also caters for both male and female cadets, something that's only just happened in the male-orientated world of aviation.

Landside building of the EFTA was completed in mid-2017 and the first batch of cadets, who are on the Emirates UAE national cadet pilot programme, is well on its way through training.

As well as training for an airline transport pilot's licence (ATPL), EFTA offers foundation courses including English language. The standard ATPL course is 21 months long but can extend up to 43 months, including foundation courses.

Abdulla Al Hammadi, vice-president of EFTA, is a former Emirates Boeing 777 captain,

and also worked on Emirates' national cadet pilot programme, which led up to EFTA.

"The academy is spread over 164,000sqft, equivalent to an area the size of 200 football fields," he said.

"The facility includes 36 ground school classrooms, ground-based simulators, a young and modern training aircraft fleet with 22 Cirrus SR22 G6 and five Embraer Phenom 100EV aircraft, an 1,800m private runway with modern navigation aids and lighting, an independent air traffic control tower, rescue and fire-fighting service, and a maintenance centre.

Recreational facilities

"The academy also provides accommodation to all cadets, along with modern sporting and other recreational facilities.

"Emirates designed the academy to promote advancements in four key areas of pilot training – interactive learning for theoretical subjects in classrooms, practical learning in the most capable training aircraft, practical learning in advanced flight simulators, and airline-focused line-oriented flight training."

What makes the academy truly unique is its innovative approach to training.

Cadets start training on the single-engine piston Cirrus SR22 G6 and then move directly to

learning to fly the jet-powered Embraer Phenom 100EV, as against the conventional approach where cadets move from single-engine piston aircraft to twin-engine piston and then to jet aircraft. This eliminates an additional step, as well as allowing for more experience on jet aircraft.

"The Cirrus SR22 G6 is an ideal single-engine piston aircraft choice for ab initio pilot training," said Al Hammadi. "The aircraft incorporates a modern composite airframe, two large 12in flight displays, a flight-management system with a keypad controller and an integrated engine indication, and crew alerting system.

"Embraer's Phenom 100 range of aircraft are also an obvious choice for airlines preparing cadets for multi-jet operations. The Phenom 100EV features state-of-the-art avionics and the industry's first ever touchscreen glass flight deck designed for light turbine aircraft, providing graphical flight planning training for cadets.

"The aircraft's cockpit philosophy, prioritising human factors, and its integrated on-board maintenance computer, offer cadets the highest level of preparation for airline flight operations. The Phenom 100EV will allow cadets to benefit from airline-grade technology and performance during their training.

"Inside the classrooms, cadets will be trained using the most modern, effective and engaging



Cadets learn to fly on this very latest glass cockpit Cirrus SR22 G6 single-engine piston aircraft, then transition straight to jet flying on the Embraer Phenom 100EV (left), again the latest model.



The new academy, inside and out.

techniques using the latest technology. The curriculum is completely paperless and all cadets are issued tablets, which they use for learning.

“We have partnered with Boeing, who have provided an integrated software system to manage cadet learning and training flight operations. Our curriculum is based on a competency-focused approach and will ensure that cadets complete at least 1,100 hours of ground school and 315 hours of flight school, exceeding all regulatory requirements.”

Simulation training devices

EFTA has also announced that it has agreed a deal with TRU Simulation, a Textron company, for six flight simulation training devices (FSTDs) with mini-motion systems for the academy, the first of their kind in the aviation industry and a new product line and class of simulators for TRU.

Three of the devices will be configured as Cirrus SR22 G6 FNPT2 and three as Embraer Phenom 100EV FTD Level II/MCC.

“The EFTA is committed to harnessing the latest in aviation technology to provide an immersive, engaging and more realistic training experience for our cadets,” said Adel Al Redha, Emirates executive vice president and chief operations officer.

“We’ve invested in some of the most advanced flight-training aircraft for our cadets; investing in an innovative and robust training platform for flight simulation is the next logical step,” he added.

Ian Walsh, TRU president & CEO, said: “From ab initio devices to simulators for larger aircraft that serve the air transport market, TRU looks forward to a long-term partnership in providing a total training solution to the EFTA. We’re confident that the fidelity of our SR-22 and P100EV devices will provide a superior training environment for the students.”

No cost has been spared in the creation of EFTA, and the academy also recognises that it needs to widen its intake to supply the numbers of pilots required in the years ahead. The latest International Air Transport Association forecast suggests passenger flying will double by 2036, with as many as 30,000 new pilots required every year.

So, UAE students who pass an aptitude test common to airline pilot selection, will be funded by Emirates. International cadets applying to EFTA will either have to be sponsored by an airline or self-fund their course.

With a planned capacity of 600 cadets training at any one time, EFTA looks set to spark a revolution. ■

Man at the top

Captain Abdulla Al Hammadi started his flying career in the 90s, beginning with Gulf Air, where he worked until 1999.

“That was when I joined Emirates,” he said. “I spent my first four years in the company as a first officer and the next 12 as a captain in the Boeing fleet.”

“From 2004, I also worked on aircraft technical acceptance for the Boeing 777, handling the provision of flight operations, liaising with various functions including engineering, procurement, flight operations technical staff, fleet, manufacturers and vendors for the selection, evaluation and procurement of aircraft equipment and implementation of current and future aircraft equipment and systems.”

“From July 2007 until November 2015, I also worked with the national cadet pilot programme for Emirates, supporting the airline in its vision for developing a state-of-the-art flight-training academy.”

“I’m passionate about training future aviators and, through my current role managing the Emirates Flight Training Academy, I hope to inspire the next generation of pilots, who will power the aviation industry.” ■

It isn't the most obvious connection in the world. However, the relationship between Lincoln-based Inzpire and the Royal Jordanian Air Force (RJAF) appears to be going from strength-to-strength, as Alan Warnes recently discovered.

INZPIRING JORDAN



RJAF F-16 pilots are now using Lincoln-based Inzpire's GECO (Air) tablet in the cockpit to increase their situational awareness.

In 2013, British company Inzpire, which supplies defence managed services and cutting-edge technological solutions, delivered its first GECO (Air) tablet-based mission system to the RJAF.

It came within a year of both sides meeting at the Farnborough International Air Show in July 2012.

With a combination of military-grade software, hosted on powerful commercial-off-the-shelf (COTS) hardware, the system offers impressive avionic, mission and training capabilities.

GECO (Air) is a full touchscreen mission system, easily operated with a gloved hand that can be hand-held, knee-mounted or platform-mounted.

As an additional cockpit multi-functional display (MFD) it can be either stand-alone or integrated with the aircraft systems.

Initially, it was used across the RJAF's helicopter force,

which includes Hughes 500s, EC-635s, AH-1 Cobras, AS332 Super Pumas and UH-60 Black Hawks.

Having been impressed with the benefits of the system, trials took place in 2014 to assess the utility of GECO (Air) on the RJAF's F-16s.

The air force's fleet of around 30 F-16AM/BM (MLU) jets are based at the sprawling Al Azraq Air Base, where Nos 1, 2 and 6 Squadrons have played a major part in the Arab coalition fighting Daesh.

Trials examined the capabilities and moving map performance of the GECO (Air) in augmenting the avionics of the F-16 cockpit. The system met the RJAF's requirements and was delivered in August 2015. It means the RJAF can now capitalise on the benefits the tablet brings for situational awareness, safety and mission effectiveness for its fast-jet force.

In mid-October, several RJAF personnel visited the Inzpire site to attend tailored cyber, intelligence, unmanned air systems (UAS) and intelligence, surveillance and reconnaissance (ISR) training courses.

Inzpire's unmanned and intelligence, surveillance, target acquisition and reconnaissance (ISTAR) division employs experts once at the heart of the UK Royal Air Force's UAV and ISR capabilities, while the cyber, intelligence and counter-terrorism division is made up of experts who were instrumental in building the RAF's cyber defence capabilities.

Cyber defence capabilities

During October, Inzpire assisted the RJAF's on the first steps of developing its own cyber defence capabilities, by providing a week's advanced cyber training for senior RJAF delegates. This was focused on the advantages of enhancing users' understanding of current hardware, as an alternative to buying additional costly cyber-security hardware.

Students from the RJAF's recently formed ISR wing visited Lincoln. The unit operates Air Tractors AT802s, Cessna 208 Caravans, Schiebel S100 Camcopters and Chinese CH-4 UAVs. The group received training based on UAS and ISR missions and processes.

Inzpire training manager, Andy Bain, delivered the ISR and UAS aspects of the training and said: "Jordan sits at the heart of a complex regional situation that concurrently involves live operations, a large-scale humanitarian disaster and major counter-terror operations. Combine this with long borders and vast open areas and Jordan faces a complex and dynamic security situation.

"Managing and integrating the assets, processing the huge amounts of collected data, getting that data to the right people at the right time, and then acting upon it, is a complex and specialised task that the RJAF must undertake."

And there's more...

Inzpire and Al Mafrq-based Golden Eagle Aviation Academy (GEAA) signed a memorandum of understanding at September's DSEI exhibition in London.

The new agreement will see Inzpire provide UK-military trained expertise as well as its newly launched helicopter flight simulators to the newly formed academy.

Established in collaboration with the RJAF, the GEAA is a new commercial venture, which will provide military-standard helicopter flight-training programmes for both military and civilian pilots. Inzpire is working with the GEAA to create an innovative flying school that provides basic through to full operational training in Jordan.

A first five-week phase saw the first training sortie, in a Robinson R-44, take place on November 16, when a Central Flying School-qualified Inzpire helicopter pilot flew with a RJAF pilot. ■



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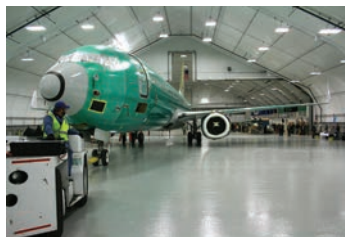


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The centre suites have a 'virtual' window so you can still see what's happening outside.

A window on Emirates' updated First Class world

Mohammed Ali Ahli takes a look at the latest game-changer for the first-class cabin.

Emirates used the Dubai Air Show to unveil a new standard in first-class cabin design. The four-year development project will appear initially on the remaining examples of Emirates' Boeing 777-300ER order, with eight or nine in service by the end of 2019.

The cabin design will then transition to the new Boeing 777X that the carrier has on order for delivery from 2020.

Emirates' president, Sir Tim Clark, said that installing the new cabin in the airline's Airbus A380s was "a work in progress" and was "a formidable undertaking".

Completely enclosed

The new cabin on the 777-300ER will have six, completely enclosed, first class suites in a 1-1-1 configuration, compared to the eight seats at present.

The centre suites, which would normally not have an outside view, will be equipped with virtual windows on to which will be projected high-definition images of the outside world from cameras mounted on the aircraft.

Many of the design ideas came from Mercedes-Benz, with Rockwell Collins manufacturing much of the hardware.

The new cabin's colour palette will be a mix of soft greys, cream and champagne. Combined with a new ceiling that Clark described as "cathedral-like", the aim is to maximise a light, airy feel.

The new suites will each have up to 40sqft of space and a full-height sliding door. Passengers will be able to communicate with cabin crew through a video screen and food or drinks can be delivered through a small hatch, if the passenger wants maximum privacy. They will have a 32in high-definition television and Emirates' already vast in-flight entertainment system will have its capacity doubled.

Replying to comments from journalists that many airlines were removing their first-class cabins, Clark said: "Demand for first-class on Emirates... remains very strong."

Ticket prices for the new first-class suites would not be increased: "We may simply be discounting less." ■

INMARSAT LANDS 777X CONNECTIVITY DEAL



Emirates 777 cabins will be adding AVANT IFE.

Emirates and Thales have signed an agreement to equip the airline's Boeing 777X fleet with Inmarsat's GX Aviation broadband global in-flight connectivity.

The airline already had an existing multi-million-dollar deal in place to fit its 777X fleet, due for deliveries to start in 2020, with a Thales AVANT in-flight entertainment system.

When that deal was announced, Patrick Brannelly, Emirates' vice-president of customer experience, in-flight entertainment and connectivity, said it hadn't made a decision on the connectivity provider, but it would have to provide a "gold standard of service for our passengers and crew".

"It isn't just about the headline speeds, but the

service's reliability and ability to support a lot of users at once," Brannelly added.

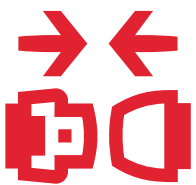
Over the years, Emirates says it has invested more than \$200 million to equip its aircraft with in-flight connectivity. It says demand for Wi-Fi on board has been steadily increasing and, today, more than 800,000 passengers per month connect while in flight.

Inmarsat says GX Aviation is the world's first in-flight connectivity solution with seamless, reliable high-speed global coverage provided through a single operator.

The 777X deal was also good news for Honeywell Aerospace, which supplies its JetWave fuselage-mount antenna and equipment for GX Aviation. ■



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Building trust every day

Yahsat is working on launching its own in-flight connectivity solution, developed in partnership with Hughes Network Systems, Carlisle Interconnect, Du and Etihad Airways Engineering. Steve Nichols reports.

Yahsat joins the battle for in-flight connectivity



Stephan Keil, of Etihad Airways Engineering (left) and Yahsat's Salim Al Alawi, aboard the Etihad Engineering Airbus A320 flying test-bed.

Inset: Yahsat CEO Masood Mahmood: "We are incredibly proud to have brought together leading Emirati and global companies to achieve this milestone."

UAE-based Yahsat and Etihad Airways Engineering say they are working on gaining supplemental type certification (STC) for the in-flight connectivity equipment that was installed and demonstrated on the latter's Airbus A320 flying test-bed at the Dubai Air Show.

Amit Somani, Yahsat's chief strategy officer, said: "We are in partnership with a UAE company on getting the equipment certified. We can then ensure the system is complete and ready to fly. We also need to work on getting our business model in place."

Somani said Yahsat is also working on ensuring the in-flight connectivity platform could be redeployed on Hughes' or other operators' satellites under a form of "roaming agreement".

I managed to test the system on day one of the Dubai show and, while browsing the web and viewing videos, found it to be snappy and reliable. An iPad speed test app recorded download speeds of around 25Mbps, with Yahsat showing a peak of 56.3Mbps.

Yahsat CEO, Masood Mahmood, said that the company was talking to a number of satellite and other providers about its options for any future worldwide capacity.

Mahmood added: "We are incredibly proud to have brought together leading Emirati and global companies to achieve this milestone. It paves the way for Yahsat to bring further breakthrough technologies to the markets and segments it serves, adding another key pillar to our portfolio of market-leading services and solutions."

"We look forward to transforming the in-flight connectivity experience for passengers."

In 2015, Mahmood told *Arabian Aerospace* that Yahsat was looking at a number of options for in-flight connectivity, including different configurations, dual Ku/Ka-band antennas and coverage, and potential partnerships with others in the sector.

"We've been looking at the possibility of in-flight connectivity over Yahsat's satellites for some time," Mahmood said. "We now have extensive experience of providing Ka-band coverage to a wide range of users, including the UAE Government and military."

The company's first satellite, Yahsat Y1A, was launched in April 2011, and the second, Y1B, in April 2012. Yahsat will launch its third satellite, Al Yah 3, early this year, extending its coverage to Brazil and an additional 19 markets across Africa.

While it is still early days for the Yahsat/Etihad system, it shows promise as a competitor to existing Ka and Ku-band satellite solutions, especially as Yahsat already operates its own satellites and is based in a region with airlines actively looking for in-flight connectivity.

Hughes, which manufactures the system's antenna, has a number of Ka-band satellite platforms, including the Hughes EchoStar XVII and EchoStar XIX over the Americas.

In March 2017, Thales announced a number of agreements with SES and Hughes Network Systems to enhance the delivery of its FlytLIVE Ka-band in-flight connectivity solution. Interestingly, a group of senior staff from Thales InFlyt Experience were seen testing the Yahsat system aboard the flying test-bed in Dubai.

Also in March 2017, Hughes Network Systems unveiled its Jupiter aero system, capable of supporting speeds in excess of 400Mbps and operating on both Ka and Ku-band frequencies. A new satellite, specifically designed for the needs of Thales FlytLIVE and manufactured by Thales Alenia Space, is also due to be launched in 2020.

These platforms and others could well form the backbone of a regional/global Ka-band Yahsat/Thales solution.

The battle between in-flight connectivity providers is hotting up as airlines and passengers now see it as a "must have".


A survey conducted by Inmarsat and market research company GfK in 2016 showed that 92% of passengers would like to access in-flight connectivity and 54% would prefer it to in-flight meals.

The comprehensive survey of airline customers worldwide also revealed that passengers now expect broadband services to be offered as standard during flights. ■



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*How much do engineers in the field and in MRO shops contribute to shaping current and future programmes? Plenty, say those who know. **Chuck Grieve** reports.*

Feedback's crucial role in designing better aircraft

Climatic conditions in the Middle East are notoriously hard on machines. The summer heat, humidity, salty and grit-filled air – and do – damage aircraft and aero engines when they are operating and when they are static.

In few other environments is the feedback loop between MRO and line engineers and original equipment manufacturers (OEMs) as important in maintaining airworthiness.

When Boeing's David Longridge, vice-president commercial services, said the Seattle airframer would be able to design "even better aircraft" by expanding its aftermarket presence, he was overlooking the 'virtuous circle' that already exists between manufacturers, operators and those who regularly see what happens to aircraft after they leave the factory.

Feedback is a "constant in the industry", whether it comes from an MRO or OEM facility, said Nick Weber, maintenance director of ExecuJet Middle East.

Anne Lilywhite, director of engineering for Honeywell Aerospace, said feedback plays "a critical role in the R&D process. It encourages new ideas and helps us deliver on our promise of continuous innovation."



Nick Weber, Anne Lilywhite, and Dr Oliver Reichel-Busch: Feedback is a constant in the industry.

And Dr Oliver Reichel-Busch, head of corporate idea management at Lufthansa Technik (LHT) added: "Engineers want to make things better. It's in our DNA."

Feedback from engineers has led to innovative new programmes and systems. It also prompts improvements in current programmes, notably through new service bulletins and airworthiness directives (ADs).

ExecuJet has instigated several of each since 2006, when the company, part of the Luxaviation Group, established MRO facilities for a range of business jets in Dubai. They were based on issues

found and reported to the relevant OEMs, said Weber.

"We regularly provide information back to OEMs," he said. Any work outside the approved maintenance data needs approval and guidance; once raised, an issue will receive OEM attention until it's resolved.

The Middle East climate is known to cause corrosion across all aircraft types. Windshields appear to be particularly vulnerable, said Weber, suffering higher failure rates in the region than elsewhere due to grit in the air.

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on Page 98

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Surface treatment and exterior refurbishment suppliers are also looking at improved ways of protecting surfaces in general, he added.

More generic fleet issues are also detected. "We found an issue with the flaps of an aircraft operating in the region," said Weber. "The flap's bushings/bearings were migrating. We reported this back to OEM. This led to an advisory.

"When the OEM started looking into it, it uncovered several more aircraft with similar problems. Now there's a global campaign to rework the area."

For Honeywell Aerospace, feedback from engineers is hugely important in product development. "We're constantly challenging our engineers to come up with new ideas," said Lilywhite.

You can't rush engineering feedback, especially with technologies as advanced as Honeywell's SmartPath ground-based augmentation system and the connected weather radar. "Time can be the difference between sharing a technology that's ready for use after testing and sharing something that won't meet the customer's goals," she said.

Innovation events

It's important enough for Honeywell to have formalised the process in Europe with an innovation council and innovation events. Company engineers can present ideas to the council to win funding for further development. The innovation events update leadership teams on new ideas.

"This kind of open forum ensures recognition of ideas and allows research to be shared among relevant teams," said Lilywhite. "More often than not, we incorporate engineer feedback and ideas into Honeywell technologies."

One example is the traffic collision avoidance system (TCAS). "The engineering team turned it into a competitive product by adding coupled autopilot, a feature that predicts dangerous collisions in the vicinity and automatically steers the aircraft away from them.

"The automated concept ensures a quick change in route, without harming passengers with an aggressive dive or climb."

Processes also benefit from shop-floor feedback. LHT realised it saves around €40 million (\$47 million) a year by implementing creative ideas from its technicians, so in 2016 it formalised a programme of encouraging creative thinking and called it 'my ideas'.

"It's important to us that all those involved in the company, from the idea generators to the experts and company executives to top management, devote the necessary attention to the topic," said Reichel-Busch. "Only then can the enormous potential of employee ideas be made permanently available to the company."

The new idea management concept uses streamlined processes and modern IT to make it easy to submit an idea, verify it and decide on its implementation. LHT expects it to be rolled out internationally this year.



Engineers in the ascendant

There's never been any doubt about the important role that engineers play in aerospace at all levels, outside and inside the airframe.

Once the indispensable third person at the back of the cockpit, engineers today are regaining a visibility in line with the extent of their contribution. Today they're as likely to be immersed in code as metallurgy and tooling.

Honeywell's Anne Lilywhite, writing in the Farnborough International News Network (FINN), said modern cockpit systems are the result of engineering design blending physical hardware. "Innovation thrives by thinking differently," she said.

"Although engineers do not fly the aircraft themselves, having a deeper understanding of what the pilot and flight crew require for better planning and a safer journey is a key factor in building and delivering the most advanced, innovative cockpit technologies.

"We focus on learning, adapting and working to find the best solutions for the challenging issues we face."

The leading work of Honeywell engineers in avionics, mechanical components and propulsion systems has led to what the company calls the 'connected aircraft'. It's a suite of interconnected services and applications, through which operators can manage and control their satellite communications and connectivity network from an online portal or mobile device.

"We live in a world of growing connectivity and a seemingly endless amount of information," said Lilywhite, "and the cockpit systems we design help lead the way in a connected aerospace world."

Results from 'my ideas' spread quickly, said Reichel-Busch. When a laborious process for recording data from damage analyses frustrated a team of LHT mechanics in Hamburg, they developed an app that combined several steps into one. The new app takes one to three minutes, instead of up to 10 minutes per process with the old approach, to link a photo taken on a tablet PC to a barcode from the order sheet and add them to the report in the system.

More than 50 departments are already using this in-house development. With thousands of recordings like these every year, the savings potential is enormous.

Boeing, in addition to advancing its understanding of what happens to aircraft when they leave the factory, sees logic in wanting to increase its aftermarket presence. Its aircraft account for 50-60% of the global fleet, said Longridge, while its share of the aftermarket is estimated at 7%.

Direct involvement

There is evidence that airlines are not entirely happy about the big civil aviation prime contractors increasing their direct involvement in MRO. "We don't support it," Heiko Holm, chief technology officer at Wizz Air, was quoted as saying. "We'd rather maintain competition."

Although global consultancy ICF International foresees "a more consolidated market" with OEMs taking a larger share of MRO, Airbus argues that Boeing and itself are actually "medium-sized players" in MRO.

Laurent Martinez, senior vice-president for services at Airbus, observes that the aftermarket is more fragmented and competitive than aircraft manufacturing.

And far from pushing smaller players out of the MRO market, Boeing expects to be teaming up with them.

"We need help around the world for our airline customers to actually implement the work we're planning, so we use MROs globally to achieve this and will continue to do so," Longridge told an audience at MRO Asia-Pacific in November. "I would advocate that there is plenty of room [in the wider aftermarket] for everyone." ■

“ We found an issue with the flaps of an aircraft operating in the region. The flap's bushings/bearings were migrating. We reported this back to OEM. It uncovered several more aircraft with similar problems. Now there's a global campaign to rework the area. ”

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Abu Dhabi's Turbine Services & Solutions (TS&S) is counting on market demand to guide its development, and advanced technology to make it a success. Chuck Grieve reports.

Expansion on the horizon for Janahi and TS&S



Mansoor Janahi:
“We aim to expand our product portfolio in line with emerging market demands.”

Growth is on the cards for the new deputy chief executive officer of Turbine Services & Solutions (TS&S), Mansoor Janahi, who joined the Abu Dhabi MRO in November.

As the new head of a team of 300 employees, Janahi is already pursuing opportunities that will expand TS&S Aerospace's scope of operations and the way it works.

“We recently signed some exciting memoranda of understanding (MoUs) with global companies that promise to transform our future,” he said. Chief among these are MoUs with IBM for the development of smart systems for service optimisation and predictive maintenance, and with Honeywell for capability on three Honeywell auxiliary power units (APUs).

Partnership agreement

Janahi also drew attention to TS&S' entry into the Southeast Asian market with a new partnership agreement between TS&S Industrial – the sister business unit to TS&S Aerospace – and Pt Multi Fabrindo Gemilang (Multifab) of Indonesia. He said: “While this is specifically an oil and gas-related project, I look forward to expanding our client base across other industries and countries.”

Janahi said the TS&S business has “expanded significantly” since 2011. He watched its progress from his position as asset manager at Abu Dhabi Aircraft Technologies, another member of the Mubadala Group, which he joined in 2008 after graduating from Embry-Riddle Aeronautical University.

Before his new appointment, Janahi was vice-president of Mubadala's aerospace, renewables and ICT platform, where he spearheaded the unit's business development and asset management activities. Among his responsibilities was leading the Al Ain-based composite materials

manufacturing joint venture project with Solvay.

He said: “We aim to expand our product portfolio in line with emerging market demands. Our focus is on implementing advanced technology solutions that optimise service offerings.”

Among plans are the establishment of a state-of-the-art facility for servicing new generation engines, such as the General Electric GEnx and Rolls-Royce Trent XWB, via an agreement with Mubadala and in partnership with current original equipment manufacturer (OEM) partners.

The MoU with Honeywell will bring capability on three Honeywell APUs to the Middle East and allow TS&S to focus on different aspects of MRO, including spares pool management, predictive maintenance and associated connectivity, all of which “would bring advanced technologies into our services portfolio”, said Janahi.

Cooperation with Honeywell may present opportunities with other Mubadala aerospace businesses, he said. “We intend to explore aircraft engine and component leasing, as well as next generation air traffic management solutions and the manufacture of advanced materials in the region.”

Leverage synergies

This means there is potential to leverage synergies with Sanad Aero Solutions, an aviation leasing and financing company, and Strata Manufacturing PJSC, an advanced aero-structures manufacturing company. Such leverage is an integral part of promoting Abu Dhabi's ambition of becoming a major aviation and aerospace services hub.

“TS&S actively supports the Abu Dhabi Vision 2030 in creating a knowledge-based economy in line with the nation's diversification efforts,” said Janahi.

The company also takes seriously its duty to help bring young Emiratis into the industry. Since 2015, it has been in the vanguard of this effort with a two-year training programme called ‘Fani Wa Aftekher’ – ‘I am a proud technician’ in Arabic – that encourages young Emiratis to explore vocational education in applied aviation technical training.

Working in partnership with Abu Dhabi Polytechnic, TS&S piloted the programme to attract secondary school graduates and encourage them to continue into higher education. Fani Wa Aftekher offers participants accredited vocational training at specialised institutions, as well as on-the-job training at TS&S workshops in Abu Dhabi.

“As of today, we have 25 students enrolled in the programme,” said Janahi. “Our aim is to encourage and develop Emiratis by providing them with training opportunities to gain solid engineering and technical skills en route to becoming qualified aviation technicians.”

Janahi said he was “inspired” by the capability and dedication of the TS&S workforce. “There is no doubt that TS&S is among the leading MRO providers for turbines in the region, and it has given me great pride to join its leadership team.”

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Abdul Khaliq Saeed: "We are proud to play an active role in Abu Dhabi's vision to be a global aerospace hub in the years to come."

How EY Eng makes light of heavy checks

Etihad Airways Engineering (EY Eng) has reached another milestone in heavy maintenance with the completion of its first six-year (ILS) C-check of an Airbus A380 for a European third-party customer.

Chuck Grieve reports.

The A380 from Lufthansa's fleet arrived at the EY Eng facilities beside Abu Dhabi International Airport at the end of October and was expected to be back in revenue service early this year.

EY Eng is part of the recently launched global Airbus MRO Alliance and one of 12 international facilities able to undertake heavy maintenance on the A380 in cooperation with Airbus, which provides a dedicated working party and Airbus parts on site.

The company has built a reputation as a centre of excellence for A380 maintenance, from routine checks to complex structural examinations, working on the A380 fleet of Etihad Airways, one of the world's biggest.

Bruno James, head of business development and projects for Airbus customer services, said the collaboration between EY Eng and Airbus allowed the partners to offer A380 operators around the world "efficient turnkey solutions", including heavy maintenance checks and upgrade installations, under one roof. He told *MRO Network* that market demand could lead to the collaboration being extended to other Airbus types.

As the largest commercial aircraft MRO provider in the Middle East, EY Eng will be able to work on up to three A380s simultaneously.

James said the EY Eng base gives A380 operators greater choice for their heavy MRO airframe services and an outsourcing option should their own in-house facilities be fully booked.

The third-party A380 six-year check capped an eventful year for EY Eng, which included welcoming new chief executive, Abdul Khaliq Saeed, former head of the Mubadala Group company Turbine Services and Solutions (TS&S). He succeeded Jeff Wilkinson, who had led EY Eng for 11 years.

Saeed brings to his new role more than 35 years of international experience in the MRO industry, plus knowledge of the regional aviation market. He now leads a multinational team of more than 3,000 people serving

regional and international customers at the state-of-the-art facility in Abu Dhabi.

With its Abu Dhabi base at the heart of one of the world's fastest-growing aviation markets, EY Eng is leading the emirate's drive to become a global aerospace hub. In doing so, it plays a crucial role in supporting economic growth and diversification in the UAE.

EY Eng's investment in new technology, skills and MRO capability has enabled it to offer services for Boeing 787 and Airbus A380 aircraft. The company is building capability for new platforms, including the Airbus A350 and the Boeing 777X, to support the world's leading fleets.

First organisation

It was also the first organisation in the Middle East to be granted an extended Part 21J design organisation approval by the European Aviation Safety Agency (EASA) to undertake major cabin design and modification.

Last year, it extended its capabilities by becoming the first MRO outside Europe to gain EASA production organisation approval, under EASA Part 21G.

The new approval allows EY Eng to manufacture interior parts such as seat covers, carpets, curtains, decals and markings, alongside composite and other cabin structures, and release them with an EASA airworthiness certificate. This will allow these parts to be installed on aircraft registered in Europe or in any country recognising EASA certificates, such as the UAE and other countries in the Gulf.

"We continue to build our position as a world-class MRO offering industry-leading aircraft maintenance and engineering solutions to customers from around the world," said Saeed. "By consistently expanding our MRO capabilities, leveraging strategic industry partnerships, deploying innovative technologies and nurturing the next generation of aviation professionals, we are proud to play an active role in Abu Dhabi's vision to be a global aerospace hub in the years to come."

*Maturity is a word being heard currently in reference to Middle East aviation, in particular the maturity of airlines and fleets. As **Chuck Grieve** reports, it signals a shift in emphasis for some carriers from all-out growth to sustainability and the inevitable focus on cost-savings.*

HEICO PLAYS ITS PART IN COST CUTS

As Jim O'Sullivan, vice-president of sales and business development for parts supplier HEICO Aerospace, sees it, competition has become more intense, especially for the 'big three' Gulf carriers – Emirates, Etihad Airways and Qatar Airways – as their European and North American rivals become more customer-centric and price-focused.

"The big three used to compete against the world; now they're competing with each other," he said. "Much of their differentiation comes in the customer experience. You can never compromise; services have to be maintained and continuously improved.

"When you look for cost savings, maintenance operations enter the picture. Here we've seen a huge increase in the appetite for alternative solutions."

That's music to the ears of HEICO. The US-based company, which describes itself as the world's largest supplier of commercial, non-OEM, FAA-approved aircraft replacement parts, has been championing the benefits of alternative parts (PMAs) for more than 20 years in the region.

Demand for HEICO's products is increasing, said O'Sullivan. Customers who historically did not look for savings in maintenance are now seeing it from a different viewpoint.

Surge in demand

He said the company is seeing a surge in demand for cabin interior products – a logical result of earlier investments lavished on unique fittings, particularly in the premium cabins. Having established ultra-high cabin standards for brand differentiation, airlines have to maintain them – often at substantial cost.

A lot of interiors are being changed out more frequently for cosmetic reasons, he said. "This creates a huge burden on operators' maintenance costs."

Another development, he said, is fleet maturity and the increasing maintenance costs of ageing, out-of-warranty aircraft. Their utilisation is huge – probably 12-15 hours a day, every day. That takes a toll on aircraft systems, most of which are subject to replacement either on condition or 'hard removal' times.

The dynamic has shifted to supporting aircraft in hangars, said O'Sullivan. Naturally, as a fleet faces more heavy maintenance checks, the demand for replacement materials and spares will increase.

Buying replacements from the original interior supplier can be prohibitively expensive; OEMs are set up to supply complete shipsets, not small batches.

Even without the big three, the region contains players of significant size. Some, such



Jim O'Sullivan:
"We've seen a huge increase in the appetite for alternative solutions."

as Saudia, have invested heavily in new technology and aircraft. Under the kingdom's Vision for 2030, Saudia's maintenance arm, Saudi Aerospace Engineering Industries (SAEI) is looking to become a centre of excellence to support other Middle East carriers.

HEICO is agnostic in its support. The company has no manufacturing capability in the

Middle East but always has an eye open for opportunities to invest where there is a market need. "We're a publicly-owned company, responsible to our shareholders. We're interested in strategic alignment to react to market demand," said O'Sullivan.

The company stockpiles spares based on a carrier's forecast usage of parts. "If they say they're going to have 25 aircraft in the hangar undergoing D-checks and forecast a need for, say, seat arm caps, we'll manufacture them up front. When they're needed, we ship the parts for delivery the next day.

"Typically, OEMs can't do that. They aren't set up to carry that inventory. The customer's lead time becomes elongated – often unacceptably – if there is no alternative to the OEM starting up production again."

HEICO relies heavily on customer projections to make sure inventory is in place. "We may hold 100 pieces for a customer's unique cabin design, or 10,000 pieces common to a type," said O'Sullivan. ■

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*The burgeoning amount of operational data pumped out by the global commercial fleet looks set to become a windfall for MRO providers. However, as **Chuck Grieve** explains, first, operators have to learn to interpret the data.*

Stats the way to do it: Harness the data deluge

Studies suggest more than 38,000 new aircraft will be in operation worldwide by 2025, each of them producing some 50 times more data than current types.

All this data is designed to make commercial operations more efficient by constantly monitoring the behaviour of aircraft systems and engines in flight.

However, it's not about the data your fleet is churning out – it's about what you do with it. That's the opinion of Ken Sain, Boeing's vice-president of digital aviation and data analytics, and he should know.

Sain is in the thick of things at the Seattle airframer, whose new types produce thousands of data points per minute while flying.

"Our industry is still at the start of applying analytics on a wide scale basis," he said in an interview with *MRO Network*.

Boeing has been using data analysis for decades to improve its aircraft. It launched AnalytX software last June and plans to expand into 'self-service analytics' for its customers.

Airbus is also making a pitch for global data management with its Skywise platform, launched last June, which it says "aims to become the single platform of reference" of all major aviation players.

Skywise claims several major international airlines as early adopters. They have so far used the platform for fleet events tracking and resolution, turnaround-time analysis, operations analytics, predictive maintenance, reliability analysis and benchmarking, and maintenance decision support.

A growing number of systems OEMs have strategies in place to collect the increasing amounts of data generated by their products. This has been made possible by the faster speeds of data transfer in next-generation aircraft such as the CSeries, Boeing 787 and Airbus A350.

The Pratt & Whitney engines on Bombardier's CSeries jetliner are said to generate up to 10 gigabytes (GB) of data per second; this would add up to 432 terabytes (TB) per engine on one 12-hour sector.

Rolls-Royce and General Electric (GE) collect similar amounts of data, especially from their most modern engines on the global fleet. Major avionics OEMs such as Rockwell Collins and Honeywell are also actively capturing and using data.



Ken Sain: Aircraft produce thousands of data points per minute while flying.

An immediate benefit is the ability of maintenance teams on the ground to detect any abnormalities and prepare to deal with them at the earliest opportunity.

As an MRO provider working across platforms, Lufthansa Technik (LHT) has taken an ecumenical approach to big data. It has created an open, modular and neutral platform called Aviator that offers a variety of digital MRO products and services by combining multiple apps in one place, independent of OEMs, MRO service contracts or, indeed, itself.

A spokesman said LHT expects Lufthansa Group airlines to adopt Aviator for fleet management. Discussions continue with airlines in all regions.

LHT takes a collective approach by welcoming developers who want to connect their apps to the platform.

Users can select the products they need.

While each app is valuable in a standalone version, it is the interlay of those apps that gives Aviator its value.

The platform started with seven apps that gave users an overview of their fleet and key performance indicators in real time. Through analysis of data from their fleets, users can predict maintenance needs ahead of time.

Savings in time and cost

Big data provides a predictive MRO tool to better plan shop visits, parts logistics and fleet management, all of which will result in savings in time and cost.

Sami Ben-Kraiem, MTU Maintenance's vice-president marketing and sales for Middle East and Southeast Asia, explained it is "challenging to create a general cross-industry approach" because, while there are common data parameters, the hardware and software to process and analyse data varies considerably.

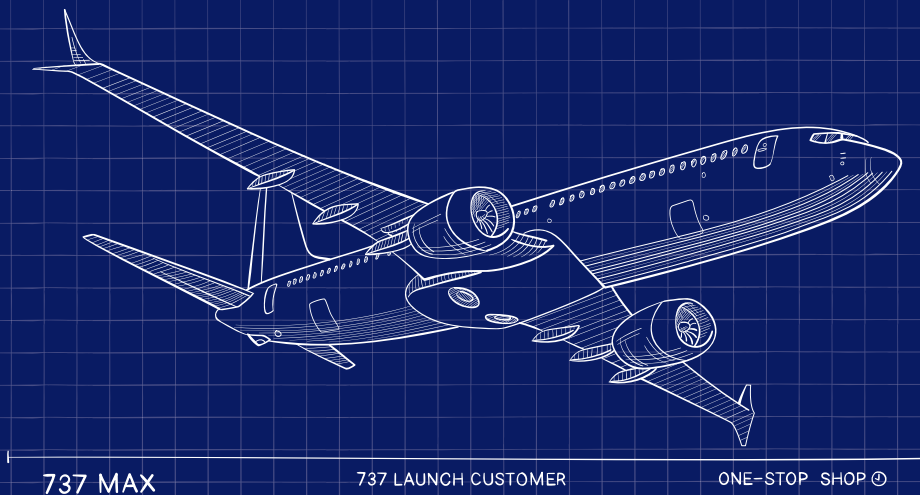
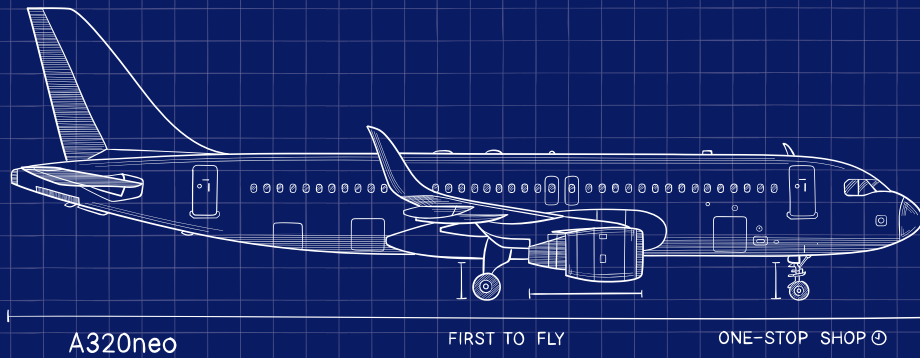
MTU Maintenance works with data directly from operations through its engine trend monitoring (ETM) programme.

"As MTU is an independent service provider, our ETM system is not based on a single engine system," said Ben-Kraiem. "This means that we can, for instance, monitor a customer's GE90 and V2500 fleet with the same tool, which is particularly helpful for engineers and technical managers and unusual in the industry.

"We are also exploring the possibilities this opens up for predictive maintenance."

Our industry is still at the start of applying analytics on a wide scale basis.
KEN SAIN

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New industry standards, shorter asset lifespans, and a new generation of technologically advanced aircraft have constantly kept operators and maintenance providers on their toes.

James Elliott explains how airlines and MROs need granular insight into every part of every asset as new maintenance and planning models enter the commercial aviation industry.

NEW BUSINESS MODELS PUT AIRCRAFT MAINTENANCE CENTRE STAGE

Commercial aviation maintenance models have changed drastically over the last 20 years. Back then, aircraft maintenance was a rigid A, B, C, D check process based on a batch of maintenance tasks executed at specific times in an aircraft's lifecycle. When an aircraft came in for D checks, there could be more than 1,000 maintenance items, meaning it could be out of service for six weeks.

Fortunately, the industry then migrated to a more flexible model, MSG-3 – packaging up individual maintenance items in any way an airline wanted. For example, if there was an opportunity to carry out D check maintenance during a C check, this could now be done. Fleet usage was optimised and balanced because maintenance could be managed more fluidly – no tasks were missed and there was no unnecessary duplication.

Phased programmes

New generation aircraft – such as the Boeing 787 or the Airbus A350 – have been designed with MSG-3 in mind. These aircraft are now supported with 'phased' maintenance programmes, with the aim of achieving the shortest possible turnarounds.

When launching the A350, Airbus aimed for the aircraft to be maintained under its "usage parameter" concept – based on flight hours, flight cost and other parameters rather than traditional checks – to ensure optimised utilisation of available resources.

The base check interval of the A350 has extended to 36 months, meaning the average number of base checks over 12 years has halved to just four, compared to previous generations of aircraft.

But with fleets expanding and more routes being flown than ever before, this presents a challenge for operators as they are now looking at maintenance windows on an aircraft-by-aircraft basis. For any fleet with more than 100 aircraft, managing a maintenance plan and schedule for all aircraft becomes a complicated issue.

Resource constraints, such as hangar availability and the number of available technicians, also



CONTINUED FROM PAGE 107

influence the ability to carry out maintenance. Airlines must also manage known requirements, such as seasonal fluctuations – fleet utilisation and air passenger traffic is much higher during holidays.

The question then becomes, how do operators move hundreds of aircraft through MRO hangars during these busy spells?

Maintenance planning tools must look to align flights, optimising fleets for usage and yields, then individual aircraft going into hangars for as little time as possible.

Alongside this, MRO is currently in a boom period – older fleets are yet to retire, while new aircraft are being delivered at a rapid rate.

Global management consulting firm, Oliver Wyman, estimates a steady 3.8% compound annual growth rate MRO market growth, with 58% of fleets being new-generation aircraft by 2027.

However, legacy aircraft aren't as old as they used to be – the lifespan of a narrow-bodied jet used to be 25 years; now it's closer to 14. At MROs and airlines, technicians undergoing training to deliver staged maintenance services are the younger generation – millennials – for whom using technology in the workplace is a necessity, not an option.

Maintenance is no longer about simply 'turning wrenches' – some of those technicians who have been around longer aren't as interested or as fast at learning new software techniques as the younger generation. Some MROs are responding with new services, such as mobile technology and applications. For example, the Hong Kong Aircraft Engineering Company

(HAECO) now has a mobile team that can work anywhere without a hangar.

Historically, maintenance plans and schedules were certificate-based and, ultimately, the responsibility of an airline to report its practices to the Federal Aviation Authority (FAA) or the International Air Transport Association (IATA). This schedule was then translated into the task cards to use for the tools, licences and parts required for maintenance. The 'wrench turning' required in the airline's plan could be outsourced to an MRO, which would take the task cards and execute them according to the airline's parameters.

Highly competitive arena

Now, OEMs and MROs are transitioning towards new business models to take the whole maintenance aspect away from the airline. In a highly competitive arena, airlines want to concentrate on flying passengers, selling tickets, managing fuel costs and beating competition from international and low-cost airlines.

Commercial aviation is following the defence model of in-service support – contracting out maintenance to OEMs or third-party providers.

Outsourcing of line maintenance was one of the top three 2017 MRO trends outlined by market research company Technavio, while Boeing and Airbus have set up their own MRO divisions, where they are looking to generate £50 billion in annual revenue.

But OEM contracts are taking a while to be introduced, as airlines are reluctant to be locked into an expensive in-service support contract. Independent MROs are realising they occupy a competitive position to provide fleet planning

and the 'wrench turning' associated with meeting that new model.

Regardless of the chosen model, the end goal is to reduce aircraft maintenance windows – the number one competitive differentiator between maintenance providers. From a planning perspective, what used to be called 'out of phase maintenance' in the days of ABCD is now the industry standard – whole maintenance programmes are planned with individual tasks in mind.

This requires MRO software, which recognises and packages individual tasks where they fit best according to scheduling parameters – flight hours, flight cycles etc.

Software with a component-based view offers significant advantages by getting part numbers and granular detail into each maintenance programme. That information should then be packaged into the required maintenance format – task-by-task, component-by-component. This means, as maintenance models and standards continue to shift, the software can easily adapt to keep track of all components.

As commercial aviation MRO continues to move forward, those who adapt fast will remain competitive in a consolidating market. But these opportunities cannot be realised without component-centric support, providing the granularity required to react and take advantage of new maintenance models. ■

■ **James Elliott works for multinational enterprise software company, IFS, as its aviation and defence business unit director, MRO product line.**

AMMAN SERVICE CENTRE BOOST FOR MILITARY

One of the military helicopter sector's most commonly employed engines is to receive additional support with the opening of a new service centre in Jordan.

Late last summer, US aerospace giant Honeywell signed a licence agreement with Jordanian Aeronautical Systems Co (JAC) to set up the new facility in Amman. JAC personnel are in the final stages of training and obtaining OEM certification and the facility is already accepting the engines.

The facility is intended to allow Middle Eastern and African operators of types such as the workhorse Bell UH-1H Huey, the Huey II and attack helicopter AH-1H Cobra, to have their Honeywell T53 range of powerplants serviced without having to dispatch them to Europe or further afield.

There are an estimated 230-250 T53s in the Middle East and Africa, flying on approximately 200 aircraft, says Honeywell.

The new service centre will undertake a wide range of MRO services. "As the Middle East and Africa region continues to grow, we recognise the need to offer a more accessible regional repair and maintenance option," said Honeywell Aerospace's director, Middle East and Africa, Mosab Alkubaisy. "The new location means quicker turnaround and less downtime so [operators] can stay flying for longer."

JAC CEO, Ziad Abuain, added: "In addition to the technical and practical benefits, we are investing in



The facility will allow operators to have their Honeywell T53 range of powerplants serviced without having to dispatch them to Europe or further afield.

the local workforce and resources, which means reduced operational costs such as shipping."

The JAC service centre is a wholly owned subsidiary of the Royal Jordanian Air Force (RJAF) and the new agreement to service T53s builds on a long-standing Honeywell relationship to provide support for several types in the RJAF inventory.

A Honeywell spokesman said the US company had been assessing the marketplace and evaluating

candidates for a new service centre for several years. It opted for JAC due to its experience in supporting the RJAF's T53s and its track record of quality engineering and workmanship: "The two factors together made them an attractive option for Honeywell," said the spokesman.

JAC will be able to handle depot-level repairs; it will use a network of approved specialist shops for non-depot level procedures. ■

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The Dubai Air Show scored late winners and, as an Arabian Aerospace team reported throughout the week, had something for everyone. But it didn't all go quite as planned, as Alan Peaford reports.

THE LATE SHOW

Boeing steals the limelight early but Airbus has final spark

Dubai's biennial air show has traditionally begun with the latest order from host carrier Emirates and, while it didn't disappoint, it wasn't quite the order everyone expected.

Preparations were all in place for the latest – and much-needed – boost; orders for the Airbus A380.

With more than 100 of the superjumbos in service or on order with Emirates, it is the programme's biggest customer by a country mile and Airbus is reliant on the Gulf carrier to continue investing.

All the smart money was on Emirates ordering another 30 for the show's big announcement.

Photo opportunities

As had happened previously in Dubai, Boeing and Airbus PR people were in the same press conference room and models were ready for photo opportunities when suddenly the Airbus people took a whispered message and left the room, along with their papers, models, and prepared speeches.

Instead, Boeing took the limelight with an order for 40 Boeing 787-10s, worth \$15.1 billion at list prices, which put an end to Airbus' hopes of selling the A350-900 to the Dubai carrier.

Deliveries will begin in 2022 and



Boeing deal: Emirate chief Sheikh Ahmed at the show opener.

continue through the decade. Some will be used to replace older aircraft in the Emirates fleet; others will be for expansion.

Boeing Commercial Airplanes president and CEO, Kevin McAllister, said the aircraft – the largest model in the 787

family, one of which was also on the show's static display – had a range that would bring 85% of the world's population within reach of Emirates' Dubai hub.

Things had all gone very quiet at the Airbus chalet. Rumours suggested that the A380 deal had faltered at the last minute, as Emirates demanded a guarantee of 10 years more production of the type, while Airbus could not offer such guarantees. Most agree, though, that this is a deal that both the airline and the manufacturer need.

Lack of mega headlines

As the show headed towards its final days, many executives had left and reporters were bemoaning a lack of mega headlines, when things all changed.

EgyptAir announced its CSeries orders (12 firm and 12 options) as the Middle East and North Africa's launch customer.

Then, suddenly, Airbus swept in with its biggest ever aircraft order for a record \$49.5 billion signing for 430 A320 jets for Indigo Partners' portfolio of low-cost airline customers.

Dubai's own hybrid carrier, Flydubai, also came to the late party with a Boeing order for 225 737-800s.

In all, it finally totalled an incredible \$115 billion worth of business at the show. ■

UAE orders five Airbus C295s

The UAE Air Force ordered five Airbus C295s as the show came to a close.

Deliveries of these medium-transport aircraft are set to begin in the fourth quarter of 2018.

More than a quarter of the C295s on order are for the MENA region and two were on display in Dubai.

The first was a C295 ISR (intelligence, surveillance and reconnaissance) version, which was delivered straight after the show to Saudi Arabia; while the other was Airbus' company-owned C295, shown for the first time with a comprehensive range of weapons for armed configurations of the versatile twin-engine transport.

This included Roketsan's L-UMTAS anti-

tank missile – the next to undergo airborne carriage trials – Cirit laser-guided missile and Teber-82 laser bomb guidance kit, plus Rheinmetall's BK 27 auto-cannon, targeted by Escribano's door gun system.

Expal was also displaying its CAT-70 (2.75 inch) rocket and Mk 82 warhead alongside the C295, and Equipaer its CAT 70 multiple rocket launcher.

Four hardpoints will be installed on to new-build versions that want the armed option, Miguel Candeal, head of airborne ISR marketing, said.

While it would be viable to retrofit existing examples of the aircraft, Airbus is only targeting new-build requirements with the armed ISR version. ■



More than a quarter of the C295s on order are for the MENA region and two were on display in Dubai.

Instructors laud Grob trainers

Dubai's static park featured Grob G120TP trainers belonging to the Royal Jordanian Air Force (RJAF), whose instructor pilots were keen to praise the new aircraft's capabilities.

The RJAF has now completed two instructor-training courses, and the first ab initio pilot training course is well under way.

Student pilots fly about 92 missions in the G120TP before progressing to the Pilatus PC-21, together with 20 sorties in the simulator.

"The sim is a real game-changer," said Lieutenant Colonel Ahmad Hiari. "Students come to the flight line better prepared."

He said early concerns that the G120TP might be "too much aircraft" for ab initios had proved to be misplaced, with student pilots adapting easily to the aircraft's glass cockpit and impressive performance characteristics. In fact, the 'chop rate' on the G120TP promises to be lower than it was on the Slingsby T67Ms previously used.

The RJAF is also appreciative of Grob's support. "The company are very helpful; they are always there. They give good support and we have experienced great maintainability," Hiari said. ■



Lieutenant Colonel Ahmad Hiari:
"The sim is a real game-changer."



Window cleaner that's aiming to clean up...

Mohammad Hariri with the Tanana.

One first time exhibitor, Apath was hoping to clean up at the show as it demonstrated a tethered window-washing UAV concept that it hopes to bring to market in the next 18 months.

A scaled prototype was on display, with a full-size design expected to be approximately double in size when fully developed, said Mohammad Hariri, CEO and founder of the company.

The Tanana – Arabic for Hummingbird – will initially be marketed in Apath's domestic Saudi Arabia market, as well as the UAE, with further expansion into other markets planned once the system has gained traction.

The tethered design will provide unlimited endurance and allow the Tanana to use pressurised air, steam, or water to clean glass. The cable adjusts accordingly as the UAV moves, providing it with flexibility, Hariri said.

A mapping software is being worked on at the moment, which will be used to provide the UAV with knowledge of the building in which it is operating, so that obstacles don't affect it. ■



WATER PERFORMER...

Umbrellas are normally only needed in Dubai to fend off the sun's rays, but they were strongly advisable for anyone standing close to the runway while Russia's Beriev BE-200ES was showing off its capabilities during the Dubai flying display.

The party trick of the 'ES' (for 'emergency services') was to drop 12 tonnes of water in a few seconds in its fire-fighting role, which makes for a spectacular sight when performed at an airshow. ■

The aircraft can fill its internal water tanks in 14 seconds by deploying four retractable water scoops on its underside and then hydroplaning on its aft fuselage along the surface of any convenient body of water. It can also carry fire-retardant chemicals for mixing with its water load.

The first ES was delivered to Russia's Emergency Situations Ministry early last year; earlier versions of the waterbomber have helped douse wildfires throughout Europe over the past decade. ■



Mahmood Hussain, Falcon's managing director, Michael York, the VP commercial of leasing company Milestone Aviation, and Gian Piero Cutilio, Leonardo Helicopters' MD.

Falcon adds AW169s

Falcon Aviation added three Leonardo AW169s to its helicopter fleet during the Dubai show, in preparation for an offshore contract that will start from early this year.

The deal was signed at the show by Mahmood Hussain, Falcon's managing director, Michael York, the VP commercial of leasing company Milestone Aviation, and Gian Piero Cutilio, Leonardo Helicopters' MD.

Falcon Aviation has logged 500 incident-free flying hours with the AW169 since 2016, taking private charters and fulfilling an offshore contract with oil company Total.

TEAMING UP FOR TRAINING

CAE and Abu Dhabi Aviation (ADA) announced a new Embraer ERJ145 pilot training programme at the show.

The pair will train Falcon Aviation's pilots and other regional operators at ADA's brand-new facility in Abu Dhabi, starting this year.

CAE's latest 7000XR full-flight simulator, equipped with the company's innovative Tropos-6000XR visual system, will be part of the training.

Captain Ramandeep Oberoi, Falcon Aviation chief operating officer, said: "We have built our reputation for delivering safe, high-quality products and services and offering excellent customer service. We are delighted that our pilots will receive a world-class training experience."

Why the KAF is elevating its hunt for a LIFT

After ordering so many new fighters over the past couple of years, the Kuwait Air Force (KAF) has a need for a new lead-in-fighter-trainer (LIFT), according to its air chief, speaking on the sidelines of the Dubai show.

With 28 Eurofighter Typhoons ordered in September 2016 and another deal for 28 F/A-18E/F Super Hornets being finalised, the KAF is looking at all options.

Kuwait Air Force chief, Major General Abdullah Al-Foudri, said: "We are looking at options for a solution. We intend to get our Hawk and Tucano fleet operational again, once funding becomes available."

For the last few years, the nine surviving BAE Systems Hawk Mk64s, acquired in 1985/86, have been grounded at Ali Al Salem, along with a majority of the air force's 16 Shorts Tucanos, purchased in 1995.

BAE Systems submitted a proposal to the KAF to return the aircraft to the air in 2015,

which would have seen them all flying within two years.

The Hawks and Tucanos will act as an interim solution until a new LIFT is acquired within the next few years.

"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," said Al-Foudri.

He continued: "We have evaluated the [BAE Systems] Hawk T2, [Leonardo] M346, Korean Aerospace Industries (KAI) T-50 and [Hongdu] L-15 but we will not acquire a new aircraft until finances are available. We also like the new L-39NG, which wasn't evaluated but it is an aircraft we need to consider. It is a good aircraft for a reasonable price."

The chief has also been looking at a new intelligence, surveillance and reconnaissance (ISR) aircraft and evaluated the Sierra Nevada Beech 350ER as well as several UAVs.



Major General Abdullah Al-Foudri: "We intend to get our Hawk and Tucano fleet operational again."



Blake Scholl: "Boom is looking for a site with previous aerospace influence."

COULD UAE BECOME THE BOOM TOWN?

Boom Supersonic can see potential demand for its supersonic jet in the Middle East and is planning to build at least 100 new aircraft a year.

It sees a market of between 1,000 and 2,000 aircraft over 10 years for its 55-passenger airliner, which will cruise at supersonic speeds up to Mach 2.2 – 1,451mph.

Speaking at the show, the US-based start-up says it already has 76 orders from airlines around the world, even though the earliest the aircraft will enter into service is the mid-2020s.

Boom has started the process of finding a place to build its factory, marking a shift from developing its two-seat XB-1 supersonic

demonstrator, due to fly by the end of next year, to series production of the full-size airliner.

"The company requires a manufacturing footprint capable of supporting airliner-rate production, a location that can attract a community of thousands of thinkers and builders, and easy access to existing shipping networks and supply," said Blake Scholl, founder and chief executive.

"Boom is looking for a site with previous aerospace influence and potential to develop further."

He hinted that the UAE could have that potential.

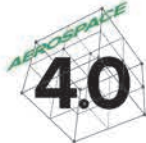
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KAWASAKI DEBUT

The UAE is said to be taking a close look at Japan's Kawasaki C2 medium-size transport aircraft, which made its international debut at Dubai. After the first of two prototypes flew for the inaugural time on January 26, 2010, four of nine aircraft on order are now being operated by the Japanese Air Self Defense Force.

With a maximum take-off weight of 141 tonnes, the aircraft fills a niche between the 74 tonne Lockheed Martin C-130 Hercules and 249 tonne Boeing C-17. ■



Dubai charts Pilgrim's progress

While much attention was being focused on the Calidus 250 at the show its sister ship, the Novaer T-Xc Sovi military trainer, was also making its air show debut in Dubai.

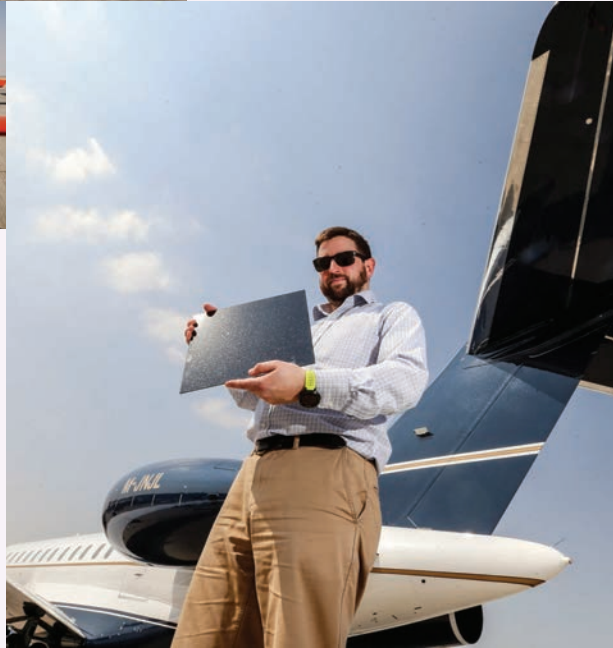
The aircraft was exhibited jointly by its Brazilian creators, Novaer, and local Emirati firm, Calidus.

Novaer has developed two related aircraft – the T-Xc side-by-side two-seat military and civilian aerobatic trainer (originally known as the Pilgrim) and the U-Xc Stardream, a four-seat civilian utility aircraft.

The Pilgrim was developed with a BRL25 million (\$11 million) grant from the Brazilian Government's FINEP research and projects financing agency.

Both the T-Xc and U-Xc are fitted with a conventional, retractable tricycle undercarriage, and both feature extensive use of carbon-fibre composites in their primary and secondary structure, giving very low weight (the Pilgrim empty weight has been given as 870lb), and are powered by the 315hp Lycoming AE10-580-B1A engine, giving 205kt performance.

The T-Xc prototype flew for the first time on August 22 2014. The aircraft was renamed as the Sovi on September 4 2014, and a pressurised, turboprop-powered intermediate trainer, known as the Sovi MTP, is under development. ■



Twinkle, twinkle little star

Diamonds are a girl's best friend sang Marilyn Monroe... and now they could be an aircraft's favourite finish too.

Being given its sparkling public debut at the Dubai show was a Bombardier Global Express private jet coated with Sun King diamond coating, created by Luxembourg company Jean Boulle Luxury.

The aviation-grade coating is produced from ethically sourced natural gem diamonds, and developed with partner paint specialist AkzoNobel.

If you catch the jet's twinkling finish from different angles you will see amazing multichromatic reflections. There's a choice of colours available and, for the well-heeled owner who wants uniformity across his transport, the Sun King coating is also available for superyachts and supercars. ■



Dominique Mineo: Feedback has been very positive.

Making pilot training more animated

A French company launched a new aviation mobile service (AMS) product for pilot self-training, which was seen as "genuine game-changer" by airlines and training schools.

Building on the animation used in air crash investigations, CEFA-AMS unveiled the new software at the show.

It uses information from the aircraft's flight data recorder (FDR) and quick access recorder (QAR), downloaded via an airport's Gatelink system, to produce 3D movies with high levels of detail and accuracy.

Using an Apple iPad or Microsoft Surface Pro tablet, a pilot is presented with a list of his or her recent flights in terms of take-offs, landings, go-arounds, or any other 'alert' that was recorded.

Any flight can be selected and, within minutes, the cloud-based software converts the flight data into a movie that can be streamed to a tablet.

Pilots can "replay" key elements of their flight to understand their actions and the consequences. The whole system is ID and password protected so that only the pilot can view his or her own flights.

CEO and founder, Dominique Mineo, said: "The CEFA AMS system has been in use by 3,000 pilots with All Nippon Airways (ANA) since March. They have viewed tens of thousands of videos during that time and the feedback has been very positive – around 90% rated the service as 'good' or 'excellent'. ■



CHINESE TWIST AND SHOUT

Chinese industry has been making plenty of noise about its desire to compete with US sales capabilities in the Middle East and brought its aerobatic display team to demonstrate its J-10 fighter.

Flying every day at the show, six Chengdu J-10s from the People's Liberation Army Air Force's (PLAAF) August 1st aerobatic team performed in formation over Dubai, demonstrating the capability of the multirole fighter.

Despite being formed in the 1960s, the aerobatic team only made its international debut in 2013 during the MAKS air show in Russia. It now uses the J-10 as its aircraft of choice.

The aircraft are based at Yangcun Air Base, and are part of the 24th Fighter Division.

The J-10 has been in operation with the PLAAF since 2003, while Pakistan has expressed interest in acquiring its own FC-20 version of the aircraft, but the order was subsequently cancelled. ■

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With a theme of 'Time to Transform', the Arab Aviation Summit took place in Dubai in December. Asma Abdullah reports.

Challenge of transforming aviation in the Arab world



Air Arabia's Adel Ali (right) leads a VIP team to view the Little Engineer programme.

Addressing sustainability challenges and opportunities for the regional aviation sector, the seventh Arab Aviation Summit, held under the patronage of HH Sheikh Ahmed bin Saeed Al Maktoum, the chairman of Dubai's civil aviation authority and Emirates airlines, attracted more than 200 industry participants from 15 Arab countries

Summit chairman, Air Arabia Group CEO, Adel Ali, said: "We gather every year to debate the ever-changing state of the aviation industry and its complexities. Arab aviation is highly affected by the evolving geopolitical situation, the global economy, technological developments and others. The region is witnessing constant development and the theme for this year's edition, 'Time to Transform', reflects this fact.

"Today, we address the sustainability of our industry and the challenges and opportunities it faces in the short and long term."

Rising taxes

Changes included rising taxes and on-ground infrastructure having an impact on the aviation and tourism sectors.

Samir Al Darabi, director of United Nations Information Center (UNIC) for the Gulf States, gave the keynote address on 'Arab travel and tourism between world peace, culture and the global economy'.

He said: "This year, we aim to highlight the contributions of aviation and tourism and its economic impact on the Arab world. We will also address key challenges facing the regional industry, including geopolitical changes, air management and open sky policies, and fluctuating oil prices. This year is the seventh

continuous year of the global growth of the aviation and tourism industries.

"The UN emphasises sustainability in all operations and, under our 'Change for Good' initiative, we have contributed to international peace and well-being. More than 70,000 tonnes of relief supplies and 95% of emergency medical supplies are transported by air to the needy every year."

The summit witnessed the inauguration of the Airbus Little Engineer workshop, with students from across the UAE participating.

Starting a day before the summit, the initiative included more than 50 students, aged between 13-15, from the Sheffield Private School in Dubai.

Airbus' primary focus is to familiarise students with the parts of the aircraft and give them a diverse understanding of the manufacturing and assembling processes of the A380 – the world's largest passenger aircraft. This provided them with an educational platform, explaining the importance of science, technology, engineering and mathematics (STEM) to channel their talent towards innovative outcomes.

The summit shed a light on the regional aviation market and the factors contributing to the key shifts in business models, from economic borders and consumer demands to costs pressure. Despite the challenges facing the region, a further growth is expected.

Economic growth

Abdul Wahab Teffaha, secretary general of the Arab Air Carriers Organization (AACO), said: "Developing the aviation industry will directly contribute to economic growth and more business opportunities in almost all sectors, but this will not happen by protectionism or by blocking key players from global and regional markets. Protectionism doesn't help anyone and should be balanced with openness. Arab countries should replicate such a system.

"Dubai is a very good example of an environment subscribed to openness. Its government has subscribed to open skies and has completely removed the concept of protectionism.

"Openness is achieved by welcoming investors, providing market access, ownership and control. As we face present challenges, including air traffic management, sky liberalisation, rising taxes and charges, and secondary airports among others, we need to work together to bring more social and economic benefits to the Arab world."

One sector that is expected to see a promising future is the Middle East's, maintenance, repair and overhaul (MRO) market, the summit heard.

MRO is forecast to double by 2025, rising by 7.4% annually. The summit explored the contribution of the MRO sector priorities, airline trends shaping the sector and the impact of emerging technologies on the MRO industry. ■

The region is witnessing constant development and the theme for this year's edition, 'Time to Transform', reflects this fact.
ADEL ALI

Krešimir Kučko is Gulf Air CEO

Gulf Air named Krešimir Kučko as the new chief executive for the airline in November.

The former Croatia Airlines president and CEO has been involved in the industry for 25 years and is a member of several notable associations.

These include: the Croatian-Swiss Chamber of Commerce; SKAL Club Zurich; BAR Swiss and Benelux; Star Alliance; CSC in Belgium and CSC in the Netherlands, where he was voted vice-chairman in 2012 and appointed chairman for 2013.

This follows the recent appointment of Captain Waleed Abdulhameed Al Alawi as deputy CEO.

Janahi steps up to TS&S deputy CEO

The Abu Dhabi strategic investment fund, Mubadala, has named Mansoor Janahi as deputy CEO of its wholly owned business, Turbine Services & Solutions Group (TS&S), the MRO provider for aircraft and industrial engines.

Janahi has spearheaded business development and asset management activities for several leading aerospace initiatives, including, most recently, the Strata-Solvay joint venture.

NAFL'S ABDUL AZIZ MAKES HISTORY



Nadia Abdul Aziz, president of the National Association of Freight and Logistics (NAFL), is the first UAE woman to be nominated as vice-president on the global extended board of the International Association of Freight Forwarders (FIATA), which represents more than 44,000 forwarding and logistics firms in 150 countries.

She said: "This election also affirms the UAE's strong position as a logistics hub and brings with it a great responsibility to further support FIATA and NAFL's vision."

"I am committed to raising industry standards through our professional FIATA training courses and e-platforms and I will work on creating opportunities for our respected members as well as our country."

"I am looking forward to enhancing our relations even further with FIATA to build stronger strategic relations for our entire region."

He sits on the senior management board of the Aerospace Research and Innovation Center at Khalifa University

TS&S CEO, Abdul Khaliq Saeed, will work closely with Janahi over the coming months as the former completes his transition to the CEO role of Etihad Airways Engineering.

(See Page 100: Expansion on the horizon for Janahi and TS&S)

Dr Bastaki takes Aerospace medical role



Dr Nadia Al Bastaki (left), vice president medical services at Etihad Airways, has been named as the new vice-chairperson for the Middle East for the global liaison and outreach committee of the Aerospace Medical Association.

Dr Bastaki successfully managed the fifth annual aviation health conference in Abu Dhabi in November, which was accredited for the first time by the International Academy of Aviation and Space Medicine.

Glenn heads sales at Empire Aviation

Dubai-based Empire Aviation Group appointed Scott Glenn as the company's new director of sales in November to build the global aircraft sales activity for new and pre-owned aircraft.

Glenn will be based in Dubai and support the company's global operations, working especially closely with the dedicated sales office in the US, the largest private aviation market in the world.

Al Joker leads the Dubai Airports pack

Dubai Airports has appointed Majed Al Joker as executive vice president, corporate affairs, in a move that reaffirms the organisation's on-going commitment to develop and promote emergent Emirati leaders.

He takes on responsibility for a new corporate affairs unit that comprises Dubai Airports' excellence programmes and government relations, corporate resilience, security and legal departments.

Prior to his promotion, Al Joker was senior vice president, assurance & control authorities.

AJW Group appoints VP sales for region

AJW Group has appointed Prashant Mohan as the new regional VP sales, Middle East. Mohan will be based out of AJW's UAE office in Dubai and will report to Tom De Geytere, chief sales officer.

Mohan joins AJW Group from NAS Holding, where he was head of engineering business finance for five years – a group role that covered Flynas, NasTech and NasJet.

NEW SAEI MD ALASHBAN TARGETS REGIONAL TRANSFORMATION



Ali Bin Abdullah Alashban is the new managing director of Saudi Aerospace Engineering Industries (SAEI).

Alashban said he is committed to advancing SAEI's goal of transforming the aviation market in the region, offering customers "impeccable maintenance and repair services".

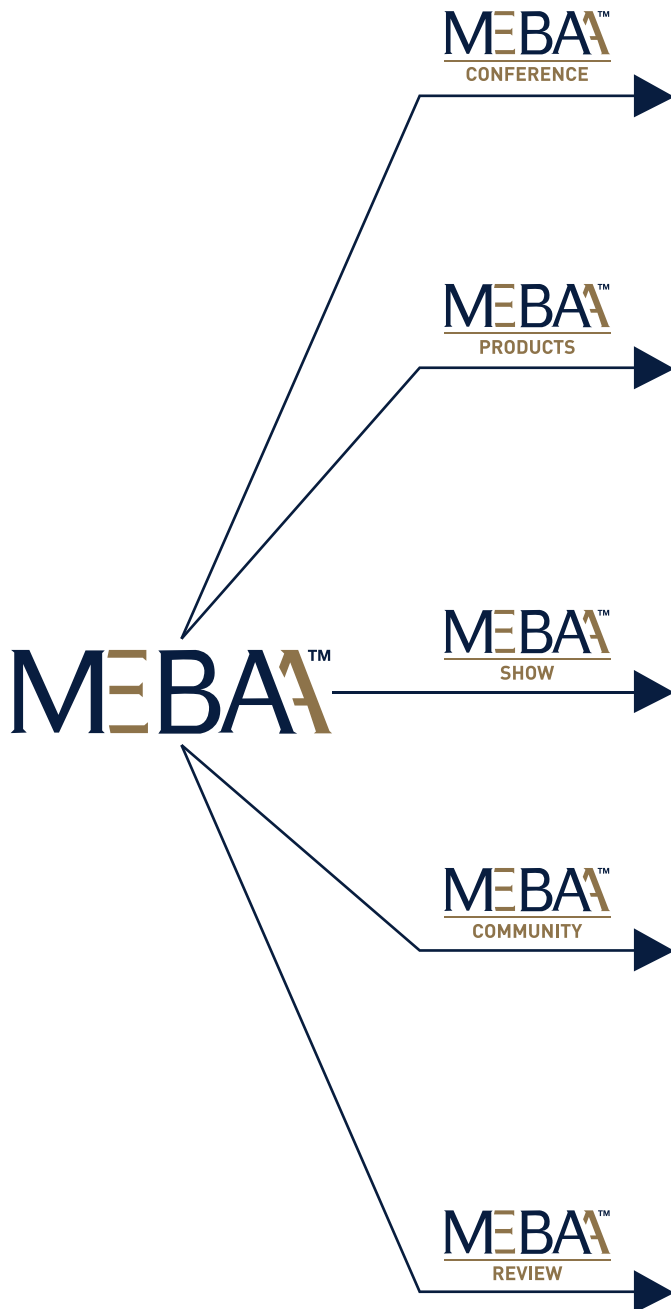
SAEI said Alashban would help build upon its established reputation in the aviation sector, aligned with the kingdom's 2030 vision.

As well as work for commercial carriers, SAEI said its goals include extending its defence projects.

Its capabilities now incorporate military aircraft, including the Airbus A330 multi-role tanker transport (MRTT) and Lockheed Martin C130.

SAEI is in the process of building the largest aircraft maintenance facilities in the Middle East, including 11 hangars, 33 aircraft parts workshops, an engine overhaul and maintenance centre, and an engine testing centre.

The expected completion date is by the end of 2020.



REGIONAL FOOTPRINT

MEBAA hosted conferences in several cities such as Dubai, Jeddah, Riyadh, and Amman. These conferences, with complimentary access for MEBAA members, provide a platform for discussion among members with a particular focus on the host country.



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The Middle East and North Africa's premier business aviation show will be held at DWC in Dubai, 6-8 December 2016. MEBAA Show 2014 showcased 44 aircrafts, 8,314 attendees, and 422 exhibitors. The show also had educational sessions, panel discussions and IS-BAO/IS-BAH certification workshops. MEBAA has also launched MEBAA Show Morocco, the first business aviation show in North Africa.



FLY AND FEED

GIVING BACK

With the support of its members, MEBAA has raised USD 25,000 within the first year of launching its donation program, Fly and Feed, in partnership with the United Nation's World Food Program (WFP.)

The annual business aviation review for the Middle East and North Africa addresses major issues and updates in the region for the year. In addition, the magazine showcases the profile and accomplishments of the association's 240 members.

Marian Pistik

Marcelle Nethersole *speaks to the CEO of Aerotask.*

1

■ Tell me about Aerotask?

Aerotask was founded in 2013 as a successor to Airbus' tasc aviation.

Our original aim was to provide financial consultancy to airlines, delivering services such as feasibility studies, business plans and complex financial models.

We quickly realised that among our target customers we could easily include financial institutions, banks and lessors, as well as aircraft manufacturers.

A typical assignment today would be supporting an airline in funding an acquisition, both in the form of debt and equity.

We provide due diligence analyses on airline credit risk, further enhanced by our ability to deliver aircraft appraisals and base value forecasts.

We also made a strategic investment in our asset management unit that provides technical and contracts management services to airlines and aircraft investors. Aerotask has established itself as a recognised remarketer of difficult assets, having traded about half-a-dozen MD80s and 737 classics in the last year alone.

Aerotask has also established an active trading floor for wet leases.

2

■ Who are your customers in the region?

By far our largest market is Africa, where we support many existing and start-up airlines, as well as governments and private investors involved in airline, airports and aviation infrastructure projects.

In the Middle East, most of our customers are funding institutions, lenders and lessors, who rely on our financial modelling expertise, lease negotiation and contract management, technical services, aircraft appraisals, portfolio valuations and expert opinions.

We have enjoyed a close relationship with IAFC, who we support in many technical aspects of their leases with Kuwait Airways and Saudia.

Aerotask has been involved in the start-up and fleetings of Fly Baghdad and our prospectus incentivised Air Arabia into acquiring Petra Air in Jordan.

3

■ What's been the company's major highlights in the Middle East?

I am proud that Aerotask has become a bonafide source of reference for aviation expertise and commentary. For example, over the past few months we have been frequently called upon by television news broadcaster CNN to give our opinion on major news such as the Dubai Air Show, the Qatar crisis, and varying overseas investment strategies of all Gulf carriers.

I was invited to chair this year's annual Dubai AirFinance Conference, which was recognition of Aerotask's position as a leading consultancy firm in the Middle East.

4

■ How do you see the market in 2018?

There are two key megatrends to factor in. One is the continuous rise of China, both in terms of domestic demand, as well as endless appetite for foreign acquisitions, which will fan further liquidity into the market. Chinese investors have a special craving for long-term dollar denominated securities, where aircraft transactions attract a high ranking. The second phenomenon to monitor, perhaps working in opposite direction, is my prediction of interest rate rises, mainly as a function of a coordinated monetary policy to curb asset inflation. For as long as the world economy continues to grow, however, and without any geopolitical crises such as military conflicts in Korea or the Middle East, we will still see stronger share prices of lessors and equally healthy financials of airlines this time next year.

5

■ Does the company face any challenges?

We recognise the industry is cyclical and the upswing we have all witnessed in the recent decade will eventually end. Aerotask needs to be positioned to be relevant and needed also in the downturn.

I strongly believe that our financial solutions unit, with its workout and restructuring expertise, will become the shop window for our aircraft remarketing and lease management services.

We have been extremely successful in remarketing difficult assets stemming from and/or headed to challenging jurisdictions, and these skills will become priceless to asset owners in the period of turbulence.

6

■ What does a typical working day hold for you?

I usually work out in the morning, then enjoy a good breakfast and several strong espressos as I do my first batch of e-mails before leaving home.

In the office it's always busy and bustling as different team members work on several projects; hence my first hour or two is spent in face-to-face discussions, which I always prefer to e-mails.

As it happens, most of our customers are based in the time zones behind Dubai, which typically spells long work hours. Sometimes I like to end the day with a good shisha to relax and reflect.





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Professional Skills for DGR Instructors (CAT 1,2,3,6- Classroom 5 Days)	15-19
Aircraft De-Icing Operations Management (Classroom, 3 Days)	29-31

February

Ancillary Revenue Strategies (Classroom, 4 Days)	12-15
Management of Training (Classroom, 5 Days)	19-23
Crew Resource Management for Instructors (CRMI) (Classroom, 3 Days)	26-28
Baggage Handling Services and Systems (Classroom, 3 Days)	26-28

March

Managing People Performance (Classroom, 5 Days)	05-09
Route Forecasting and Development (Classroom, 4 Days)	19-22
Cargo Revenue Management with Optimization Simulations (Classroom, 4 Days)	26-29

April

Instructional Techniques (Classroom, 5 Days)	09-13
Root Cause Analysis (Classroom, 5 Days)	09-13
A-CDU in Airport and Ground Operations (Classroom, 3 Days)	17-19

May

Managing Across Cultures (Classroom, 3 Days)	02-04
Human Resources Management (Classroom, 5 Days)	07-11
Human Factors in Aviation (Classroom, 5 Days)	07-11



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