

ISSUE 4, VOLUME 14: NOVEMBER 2022 – JANUARY 2023



# ARABIAN AEROSPACE

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## PEGASUS MAKES A FLYING LEAP

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FOR GROWTH

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in business  
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## EYES OF THE WORLD TURNING TO THE GULF

**T**he world will be watching avidly as Qatar hosts the FIFA World Cup in Doha.

While everything funnels into the city's Hamad International Airport for those attending one of the sporting world's biggest spectacles, it is also an opportunity for the other carriers and airports around the region to showcase their service standards and facilities to a global audience.

Business aviation, too, will be busy. Undoubtedly there will be many shuttling from Dubai, Abu Dhabi, Bahrain and Riyadh or Jeddah to visit Doha for individual matches, and the ground handlers and trip planners are steeling themselves for one of their busiest periods ever.

Others will be in the region for more traditional reasons as far as our industry is concerned.

With two major aviation events happening in the Gulf before the end of the year, visitors will be coming from the US, Europe and Asia, as well as the wider MENA region.

Firstly, we have the Bahrain International Airshow at the Sakhir Airbase on November 9-11.

The event had been recognised as the fastest-growing show of its kind in the region before Covid put a block to the 2020 edition. However, with its speciality hospitality and networking opportunities, it will surely bounce back

in fine form. *Arabian Aerospace* will be there with its daily newspaper and it looks like there is plenty in store.

Another old favourite reopening its doors after a four-year pause is the Middle East's business aviation event – MEBAA.

Business aviation played its part during lockdown, continuing to keep essential, humanitarian and governmental travel open. With commercial air transport continuing to recover the full route networks, the sector has seen an increase in interest in private and corporate aircraft.

We will have a daily paper there as well as daily videos – so look out for those.

Our cover story features Turkey's incredibly successful low-cost carrier, Pegasus. The airline will be the next host for the International Air Transport Association (IATA) annual assembly, which is a marker for how much this carrier has grown, both in size and reputation.

Although there are new threats to our industry's steady recovery in the shape of conflict affecting the global economy, shortage of jet fuel, and increased pressure on sustainability, there is no doubt that the aerospace world is in a much better position than it was a year ago.

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



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PICTURE: ETIHAD AIRWAYS



## Etihad commits to mangrove tree plan

Etihad Airways has committed to adopt a mangrove tree on behalf of every guest who books an economy seat, ensuring every space sold is eventually carbon neutral.

The Etihad mangrove forest programme is aiming to plant 182,000 trees by the first quarter of 2023 in Abu Dhabi, before the next phase moves to new forests in international destinations.

Mangroves remove up to four times more carbon dioxide from the air than other tropical forests, helping to fight the effects of climate change such as coral bleaching and coastline degradation, as well as supporting biodiversity and wildlife as an important habitat for fish, birds and other animals.

Etihad will plant one mangrove tree in locations in Abu Dhabi for each economy space seat purchased on any Etihad Airways flight. Each mangrove planted alone will absorb up to 250kg of CO2 in its lifetime – the same amount produced by an eight-hour flight.

## Landmark cargo agreement signed

Emirates SkyCargo and US-based United Cargo have signed a collaboration memorandum of understanding (MoU).

The companies will work closely on a number of aspects, which include expanding cargo interline options and blocked space agreements, pending regulatory approvals.

“Cooperating with United, which is a leading airline in its own right with strengths and a network that are complementary to our own, will allow us to add value for our customers and help them reach new markets more speedily,” said Nabil Sultan, Emirates divisional senior vice president, cargo.

## Saudi pilot boost

AeroGuard Flight Training Centre, a global ab-initio pilot training group, has launched AeroGuard Arabia near Jeddah, Saudi

Arabia, its first campus located outside the US.

The new location will service aspiring future commercial pilots from within the kingdom, the Middle East region, and across the globe.

AeroGuard Flight Training Centre has more than 20 years’ experience, graduating more than 7,000 future airline pilots for major airlines around the world.

## New routes

Flynas is scheduled to start two direct weekly flights between Jeddah and Marseille from November 9.

The carrier recently signed an agreement with the Air Connectivity Programme, which was established in 2021 to support tourism growth in Saudi Arabia, to launch four new and direct destinations, including Marseille in Europe, as well as Casablanca and Algiers in north Africa and Almaty in central Asia.



## Zakaria is EgyptAir’s new group chairman and CEO

The EgyptAir Group has appointed Yehia Zakaria as the new group chairman and CEO of EgyptAir.

Zakaria has been heading the company’s successful maintenance and engineering division for the past 10 months.

He joined the Egyptian Air Force in 1984 after graduating from the military technical college and assumed many positions, ranging from aircraft engineer to chief engineer for all aircraft types.

He rose through the ranks of the Egyptian Air Force and concluded his service as head of the aircraft engineers division for five years, then assistant to the air force commander before joining EgyptAir Maintenance & Engineering in 2021 as chairman and CEO.

## New Saudi airline

Saudi Arabia has announced that it is set to launch a new airline late this year. Tipped to be called ‘RIA’ the airline will be part of the country’s \$100 billion tourism investment.

The new airline will become Saudi’s second national carrier, based out of Riyadh. Currently Saudia operates from Jeddah.

## Astronaut ‘first’

The Saudi Space Commission (SSC) has launched the kingdom’s first programme dedicated to training astronauts to undertake long- and short-term space flights.

The programme will enable Saudi astronauts to conduct scientific experiments and research in priority areas such as health, sustainability and space technology.

One of the astronauts will be a Saudi woman, whose mission to space will represent an historic first for the kingdom.

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Solar protection

Satair has renewed its agreement with Vision Systems covering the worldwide distribution of solar protection systems for the cockpit and cabin that can be installed across Airbus, Boeing, and ATR platforms.

Satair has been a distributor of Vision Systems solutions since 2011 and an appointed warranty administrator for the manufacturer.

Triumphant move

Sanad, the global aerospace engineering and leasing solutions company wholly-owned by Abu Dhabi's Mubadala Investment Company PJSC (Mubadala), and Triumph Group, a US-based aerospace manufacturer and MRO provider, have signed a memorandum of understanding (MoU) outlining plans to collaborate on the provision of next-generation MRO capabilities in the UAE. The partnership will jointly establish a dedicated centre of excellence in Abu Dhabi.

The parties also intend to jointly provide MRO solutions for V2500, CFM and GE90 engine accessory repairs and overhauls.

Wizzing away

Wizz Air Abu Dhabi has received its sixth aircraft and is increasing its services.

Managing director, Michael Berlouis, said: "We welcome our sixth aircraft with an exciting 15% flash sale on our ultra-low fares.

Travellers can Wizz their way to an attractive destination and treat themselves to a well-deserved vacation.

"We are committed to providing travel options



On the tarmac: The new jets bring the airline's fleet to a total of 19 aircraft from seven in 2018. PICTURE: JAZEERA AIRWAYS.

More Airbus A320neos for Jazeera Airways

Jazeera Airways has taken delivery of its 10th and 11th A320neo aircraft from Airbus.

These are the first aircraft to be delivered from the airline's 2021 orderbook for 20 A320neos and eight A321neos.

Jazeera placed the order for the 28 aircraft with Airbus in November 2021.

The agreement is valued at \$3.4 billion.

Jazeera was the first airline in the Middle East to operate the A320neo.

Chief executive officer, Rohit Ramachandran, said: "Jazeera is focusing on expanding its fleet with these latest aircraft. The more environmentally friendly neo models provide a range of benefits, including 18% fuel savings, quieter engines and 50% less CO2 emissions."



PICTURE: AIRBUS.

RJ to introduce 20 new Airbus A320neos

Royal Jordanian (RJ) has reached agreement with Airbus to introduce 20 new Airbus A320neo family aircraft to its fleet.

The aircraft will replace the carrier's current 13 A320ceos.

The purchase is in line with the airline's strategic plan to modernise its narrow-body fleet to serve its core destinations in the Middle East, Africa and Europe.

RJ vice chairman/CEO, Samer Majali, said the company's five-year growth strategy (2023-2028), further boosts its positioning as the preferred air carrier in the Levant, promoting Amman as the leading gateway in the region and Jordan as a remarkable tourism destination.

"The airline conducted thorough and comprehensive feasibility studies to decide on the best choice of aircraft," said Majali.

that are more convenient and affordable for everyone."

Opportunity knocks

Oman Air, The British School of Excellence, and the Muscat Hospitality Academy (MHA) have come together to organise

an opportunity for Omani female students to enrol for preparatory cabin crew training.

Hilal Al Siyabi, SVP of people at Oman Air, said: "At Oman Air we are proud to have the best and brightest Omani talent and are committed to

continuing our Omanisation drive, which now stands at 94%. Being a cabin crew member is a highly respected and sought-after role, offering an unparalleled opportunity to travel the world along with many other benefits."

Soccer success

Qatar Duty Free has been named as official retail store for the FIFA World Cup Qatar 2022.

Qatar Duty Free vice president, Thabet Musleh, said: "This enables international fans to pick up their tournament souvenirs once they arrive in the country, allowing them to enjoy the tournament at its fullest. Travellers leaving Qatar will still have the opportunity to visit our stores at the airport and take a piece of the World Cup home with them."

■ World Cup focus, Page 16.

New Etihad CEO

Antonoaldo Neves has been appointed as group chief executive officer of Etihad Aviation Group, succeeding Tony Douglas as Group CEO.

Neves was CEO of TAP, the National Airline of Portugal, where he successfully led a major turnaround.

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Pharma bid

Saudia Cargo has entered an agreement with the International Air Transport Association (IATA) to work on its centre of excellence for independent validators for pharmaceutical logistics (CEIV Pharma) certification.

For the next few months, Saudia Cargo will continue rigorous preparations across multiple aspects of its operations, particularly on staff competency to handle pharmaceuticals, to comply with IATA's requirements.

Talking Turkey

AJW Group, an independent aircraft component parts, repair, and supply chain solutions provider, has opened a new regional support hub and office in Istanbul.

AJW Turkey will primarily support the group's regional customers, initially as a local extension of AJW's customer support, offering access to inventory of Airbus and Boeing spare parts (valued at \$500 million), including engines and major assets, contractual support negotiations, MRO services, and nose-to-tail support solutions.

Name switch

MRO provider, TAG Maintenance Services, has been rebranded Dassault Aviation Business Services (DABS).

Dassault Aviation's global MRO support organisation includes 40



SalamAir to buy six Embraer E195-E2s

ME 'first': SalamAir signs firm order with Embraer for six E195-E2, with options for a further six aircraft. PICTURE: EMBRAER.

Oman low-cost carrier, SalamAir, has signed a firm order with Embraer for six E195-E2s, with options for a further six aircraft. The deal is valued at \$934.6 million and deliveries will start towards the end of 2023.

Captain Mohamed Ahmed, CEO of SalamAir, said: "It is exhilarating for us to be the first airline in the Middle East to fly the incredible E195-E2.

"Embraer's aircraft represents the best environmental

efficiency, operating performance, and passenger comfort. Its sophisticated aerodynamics, novel wing design, and new technologies enable its exceptional energy efficiency.

"The new fleet will be used on domestic flights initially, including the four oil fields and four international airports within Oman. As we receive more aircraft we will be able to use them on regional airports in neighbouring countries, which today are not connected to Oman."

factory service locations and 20 authorised service facilities around the world.

"Customers will see a new name, but the commitment to applying advanced technology and the ultimate in service quality will remain the same as ever," said Franck Madignier, president of DABS. "In fact, since the acquisition by Dassault, we have invested heavily to expand to new locations, upgrade facilities and, as always, stay at the leading edge of the MRO business."

Bagging a new deal

SITA and Middle East Airlines – Air Liban (MEA) have renewed a technology contract and moved the

baggage reconciliation system (BRS) at Rafic Hariri International Airport in Beirut, Lebanon.

The technology will significantly reduce operational costs for the airport and airline, with the server-less design avoiding on-site interventions to refresh, upgrade, maintain, and support multiple obsolete devices, such as servers.

Going greener

Etihad Cargo has become the first Middle Eastern carrier to participate in The International Air Cargo Association's (TIACA) BlueSky programme.

"Sustainability remains a

key pillar of Etihad Cargo's agenda," said Martin Drew, senior vice president global sales & cargo.

"Although the air cargo industry has historically been considered less sustainable than other methods of transportation, the sector is making great strides in developing more sustainable solutions and is investing in fleet modernisation, fuel efficiency, sustainable aviation fuel and carbon compensation initiatives."

Saving on fuel

Gulf Air has signed a multi-year renewal of Honeywell Forge software to help increase operational

efficiencies and decrease costs associated with several factors, including unnecessary fuel burn.

Gulf Air utilises Honeywell Forge flight efficiency fleetwide in approximately 36 wide and narrow-body Boeing and Airbus aircraft. By implementing the solution across its fleet, the airline has reported it receives reliable, accurate data on fuel burn, which it has used to optimise its fuelling strategies, develop and manage more efficient routes, and measure the impact on companywide efficiency and sustainability initiatives.

Celebrating the new deal: Adil Karaismailoglu, Turkish Minister of Transport and Infrastructure, is flanked by Dr Bolat (fourth right) and EFW CEO & president, Jordi Boto. PHOTO: TURKISH TECHNIC



Conversion collaboration

Elbe Flugzeugwerke (EFW), a centre of excellence for Airbus passenger-to-freighter (P2F) conversions, and Turkish Technic have entered a new collaboration. The deal will see Turkish Technic becoming the first MRO company to provide third-party conversion solutions for EFW's proven and technologically advanced A330P2F programme.

The first A330P2F conversion for EFW is planned to be carried out at Turkish Technic's facility in Istanbul in the third quarter of 2023.

Turkish Technic chairman, Dr Ahmet Bolat, said: "With extensive know-how and close collaboration with suppliers, we are always well equipped to provide technical services and solutions for our customers."



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*Qatar Airways has grown into one of the world's leading airlines and, as **Alan Peaford** discovers, the group CEO, Akbar Al Baker, is not resting on his laurels and has further growth in his sights.*

# Al Baker sets his sights on the forgotten continent

**A**lmost since the air transport industry began, Africa has been a forgotten continent. Despite a population of 1.3 billion and several African nations among those with the fastest-growing GDPs in the world, the continent's airlines enjoy only around 2% of air transport movements around the globe.

For years, African airline CEOs and aviation commentators have bemoaned the presence of the Middle East region's big hub airlines – Emirates, Qatar and Turkish – but one of these is turning the tables in fronting an investment in Africa, backed by the belief that the continent is ready to bloom.

Speaking at the Aviation Africa event in Kigali, the group chief executive of Qatar Airways, Akbar Al Baker, talked about his country's involvement with the host's new international airport and its national carrier, RwandAir.

"Quite frankly, I think we see the potential in a place that is right at the centre of Africa, with a stable economic and political climate and a good relationship with the State of Qatar.

"We see the huge potential of Africa and admire the resilience of the African people. The president of Rwanda has been clear that this isn't just a project for Rwanda, but he wants to invite the neighbouring countries to benefit from what we are going to do here."

□ □ □ □ □

Qatar's investment in the airport has meant the new site at Bugesera is well advanced in its construction; meanwhile the final elements of the 49% stake in RwandAir is progressing and already the two flag-carriers are moving closer together at an operational level.

While saying he doesn't have a blank cheque, Al Baker explained that key to success of the venture is investment in human capital.

"One of the plans we have is to build, together with the airport and the airline, an institution to train cabin crew, ground staff, handling staff, equipment operators, engineers, and even pilots.

"We have a flying school in Qatar and we could bring the Rwandans and other people from around the region to come and get trained; we have very advanced training facilities. And that will be transferred here, in order not only to bring the training for Rwandan employees of the airline, but also from the region, to make it a centre of excellence in aviation for Africa.

"You know, the human capital that Africa has is huge. But a positive criticism is that people have jobs, but they're not trained to do the job. Training is so important when a country needs to progress economically – you need trained people to do that. And, unfortunately, in Africa, the governments are not paying enough attention to train their people."



Talking growth: Akbar Al Baker (left) and Alan Peaford.

PICTURE: BILLYPIX.

▼ People have jobs, but they're not trained to do the job. Training is so important when a country needs to progress economically. ▲  
**AKBAR AL BAKER**

Al Baker is currently also the chairman of the OneWorld Alliance – an airline alliance including American, British Airways, Qatar, Cathay Pacific and, in the MENA region, Royal Jordanian and Royal Air Maroc.

He was critical of the way the alliance has treated smaller airlines and, while expressing a hope that RwandAir could one day join the club, added that things needed to change first.

"Up until now, alliances have been using smaller airlines to stifle competition. And, as the chairman of OneWorld, I want to create an alliance that is win-win for every single member, and not try to let the big boys take advantage of their smaller colleagues."

Al Baker believes there are opportunities for African carriers.

"We would like RwandAir to be part of OneWorld and we will do everything within our ability to bring them to the standard to be ready to join as a full member," he said.

"There is a huge potential to have a proper hub in Africa. Africa has no hub. If I want to go from point A to point B, I have to go through a point C.

"I have people from South Africa coming to Doha to go to the UK, I have people coming from different regions of Africa, doing the same distance backtracking to get to a third country. And this is where we want to create an airport and an airline that will run services not only to one country, but to the entire African family."

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*In April, Güliz Öztürk became a member of a very select group of female airline CEOs. As she steers Turkish low-cost carrier, Pegasus Airlines, through the bumpy exit from the pandemic, she talked to Alan Dron.*

# PEGASUS SPREADS ITS WINGS

**R**unning an airline is a difficult job – even in the good times. A surprisingly large number of airlines survived the pandemic but have been plunged straight into the highest inflation for several decades.

Among the most serious aspects of this inflation is the rise in the price of jet fuel, which typically makes up around 30% of an airline’s costs.

That is the position facing Güliz Öztürk, newly appointed CEO of Istanbul-based Pegasus. She took over the top position after her long-standing predecessor, Mehmet Nane, was appointed chairman of the International Air Transport Association (IATA) board of governors.

Öztürk’s priorities are simple: “My biggest goal is to move Pegasus’ success to the next level. Based on our current plans, our fleet size will exceed the 100 aircraft threshold in 2023 and continue to expand.

“Strengthened by this growth, our aim is to become an international carrier with a wide network of international flights covering Europe, the Middle East, Africa, the Caucasus and Turkey.”

A major factor behind this aim will be the continued renewal of the airline’s fleet, which is steadily switching from the Boeing 737-800 to members of the Airbus A320neo family under a 2012 order that, at the time, was the biggest ever placed by a Turkish carrier.

“By the end of 2022, 78% of our total seat capacity will consist of our new-generation aircraft. Our current plans foresee us taking delivery of 64 new aircraft between 2022 and 2025. By doing so, we anticipate that our total seat capacity will consist entirely of new-generation aircraft in 2025, as the older aircraft exit the fleet.”

This will allow the company’s network to continue to expand.

Capacity for 2022 is projected to be 5-10% above pre-pandemic levels, with passenger numbers close to those of 2019.

As of August 2022, the Pegasus fleet consisted of 23 Boeing 737-800s, 10 Airbus A320neos, 46 A320neos and 16 A321neos. The airline added eight aircraft to its fleet in the year to August and that number will jump to 20 by year-end.

□ □ □ □ □

The A320neo family gives roughly 15% better fuel consumption than the 737-800s – a major benefit to the company’s balance sheet. Additionally, the larger number of seats in the A321neo means that unit costs, as well as fuel costs, drop significantly. Perhaps unsurprising, then, that the company intends to increase the number of A321neos to 73 by 2025.

“In 2019, Pegasus recorded the lowest cost of available seat kilometre (CASK) non-fuel figure across the industry. Back then, the share of neo seats [in the fleet] was 40% and this ratio

increased to 61% in 2021. However, the negative impact of Covid overshadowed the benefits of this increase. Going forward, we expect to see the efficiency gains kick-in again and become more and more visible.”

Although Pegasus has invested in the A321neo, there are currently no plans to acquire the longer-range A321neoLR or XLR models, with the carrier content to limit its sectors to a maximum of around six hours.

However, the CEO said the longer-legged models would be considered in future if the airline’s route strategy changed.

The good news is that, as with most regions of the world, tourism figures bounced back strongly over the summer as the pandemic waned and countries gradually dropped the restrictions and regulations that had made travelling such an infuriating process over the previous two years.

“Tourism figures returned to pre-pandemic levels this summer,” said Öztürk. “We had strong numbers for both the visiting friends and family (VFF) segment travelling to Turkey and on our transit routes.

“We believe that there is still great potential for further growth for Turkey’s tourism. Based on our analysis of forward bookings, our outlook for the winter season leisure traffic is very positive.

“In addition to the ‘winter sunshine’ offering of sun and beach destinations across our network, Turkish ski resorts also have great potential for interest from international tourists.

▼ Our aim is to become an international carrier with a wide network of international flights covering Europe, the Middle East, Africa, the Caucasus and Turkey. ▲  
GÜLİZ ÖZTÜRK



PICTURE: PEGASUS.

“While there is some reduction in domestic flight demand due to a squeeze on purchasing power, international demand for travel to Turkey is growing and we anticipate that this trend will continue.”

During the pandemic, frequent changes to government flight restrictions meant that passengers increasingly booked only a short time before they flew, to try to minimise the risks that flights would be cancelled, or that they would find themselves in a foreign country and have to rush home to avoid the imposition of new quarantine regulations.

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That trend for last-minute bookings is continuing for both domestic and international flights, said Öztürk. Lots of late bookings make it difficult for airlines to predict passenger loads and Pegasus is trying to restore some semblance of normality to passengers’ booking habits.

“With the aim of normalising the booking trend moving forward, we are launching regular and widespread sales campaigns, especially for routes on our international network. Our bookings for the winter season are already at satisfactory levels and we expect them to increase further nearer the flight dates.”

Turkey’s geographic position, at the historic crossroads of Europe, the Middle East, and Asia, gives Pegasus a strong platform for international expansion in multiple directions. However, it is

often forgotten by outsiders that the country’s population of around 84 million gave Turkish carriers a strong domestic market on which to fall back when international travel slumped during the pandemic.

Of the airline’s 125 destinations, around 25% are domestic, and there are still around 10 Turkish cities not served by Pegasus. As a result, the company sees room for growth in its domestic operations.

However, the airline is continuing its strategy of focusing on international network growth.

At present, Pegasus flies to 47 countries and is continuing its expansion in eastern Europe, the Middle East, north Africa, central Asia, and the Caucasus as its main focus regions. Some of the international routes added from Istanbul this year include Yerevan, Ganja, Sofia, Nur Sultan, and Helsinki.

Looking ahead, Pegasus plans to expand both north and south. Prior to the Russia-Ukraine conflict, both nations were on the airline’s target list. How those plans will change remains to be seen. However, Turkey remains a highly popular leisure destination for Russians, partly because of simpler visa requirements than for European Union nations.

The airline also aims to increase services to the Middle East, as well as to the CIS countries in central Asia, whose Turkic languages make Turkish carriers some of the most prominent operators in the region.

“Istanbul has a unique position connecting the

CIS countries, Russia and the Middle East etc,” the CEO said. “We operate much more of a hub and spoke system than Ryanair or EasyJet, for example.”

Turkey’s proximity to the Middle East is important, as it allows Pegasus to take advantage of several major airports, such as Dubai International and Hamad International, that, unlike European counterparts that frequently have curfews, operate 24 hours a day. “We fly during the day to Europe and during the night to the Middle East and CIS countries. That’s a strength in terms of utilisation of aircraft,” the CEO said. Pegasus’ fleet typically operates 14-hour days.

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Pegasus’ main hub is Istanbul’s second airport, Sabiha Gökçen, with around 70 aircraft based there. However, the carrier is continuing to develop other major airports in Turkey, including Ankara, Izmir and Antalya, from which it has launched a number of new direct international services this year. These include flights from Izmir to Tbilisi and Skopje, from Doha to Trabzon, Antalya to Sofia and Ankara to Bucharest.

As well as opening up new routes, Pegasus is also increasing frequencies on existing sectors where there is demand, such as direct routes from Europe to Turkey’s summer destinations such as Izmir and Antalya. ▲



As the aviation sector rebounds strongly from the pandemic, **Alan Dron** asks: will the much-maligned Airbus A380 make a comeback?

## Return of the Superjumbo?

The A380, with its spacious cabin and remarkable quietness, has always been a favourite with passengers... but not with airlines' accounts departments.

Its four-engined configuration was overtaken by 'big twins' such as the Boeing 777, which offered substantially reduced operating costs. When passenger numbers plummeted in early 2020, operators were quick to ground the European behemoth.

Now, however, some are returning the aircraft to service. Part of the reason is demand; long-haul traffic to and from the Gulf has enjoyed a faster resurgence than expected, which has resulted in a need for more capacity.

That demand has also resulted in higher ticket prices, improving yield and helping edge the aircraft back towards, if not profitability, then at least break-even.

The best-known A380 operator, Emirates, has been steadily restoring its fleet of 123 aircraft to service and, at time of writing, had brought back around 85, with more scheduled. The airline, which is synonymous with the aircraft, has said that it will continue to use the type well into the 2030s.

Etihad, which previously said it was extremely unlikely it would return its 10 examples to service, is now considering bringing back at least some, although it will probably need fuel prices to drop to \$60-80 per barrel before it goes ahead.

For one carrier, bringing back the aircraft is a matter of



necessity, not desire. Qatar Airways is in a bitter dispute with Airbus over surface degradation of its new A350s and the country's aviation regulator has grounded them until it is convinced the problem does not pose a safety risk.

To replace this lost capacity, the airline has "very reluctantly" returned some of its A380s to service, said Group CEO Akbar Al Baker.

Al Baker has previously described the airline's purchase of 10 A380s as its biggest mistake and has lambasted the aircraft for its fuel consumption and accompanying levels of CO2 emissions. Seven of the fleet were back in service over the summer.

Elsewhere, the picture is mixed. British Airways, All Nippon Airways, Qantas and Lufthansa are bringing the type back from storage, but Air France and Malaysia Airlines have dumped it for good.

The big question: Etihad is mulling the possibility of bringing back its A380s.

PICTURE: ETIHAD AIRWAYS.

## OPPORTUNITY KNOCKS IN THE ALGERIAN SKY

Now that Algeria has lifted health restrictions following the Covid-19 pandemic, it has allowed the country to increase flight numbers, opening up great prospects. **Vincent Chappard** reports.

The Algerian Ministry of Transport authorised 82 additional frequencies to France in late August – a clear sign of air transport recovery during the summer period.

Of those new slots, 79 went to Air Algérie and three to Tassili Airlines.

Air Algérie also announced connecting flights via Algiers to the French cities of Lyon, Marseille, Toulouse, Paris and Nice, and to Abidjan, Bamako, Dakar, Niamey, Nouakchott,



More flights: Air Algérie has 79 extra slots to France and will soon be connecting some of Africa's major cities. PICTURE: AIR ALGERIE.

and Ouagadougou in Africa. These new flights started in October this year.

"The summer season ended on a positive note," said Air Algérie spokesperson Amine Andaloussi. "We have pulled in travellers across our entire network and we are determined to make a successful comeback to the African market after two years of absence.

"Algiers International Airport has the potential of becoming a hub between the continent and Europe."

This redeployment to African capitals is part of the airline's repositioning strategy and is geared to meet several expectations. For example, the launch of the African Continental Free Trade Area (ZLECA) will undoubtedly promote economic and

commercial exchanges between African countries.

There's also a need to develop transit services via the Algerian capital and Air Algérie also wants to scale up to face competitors like Royal Air Maroc and Ethiopian Airlines.

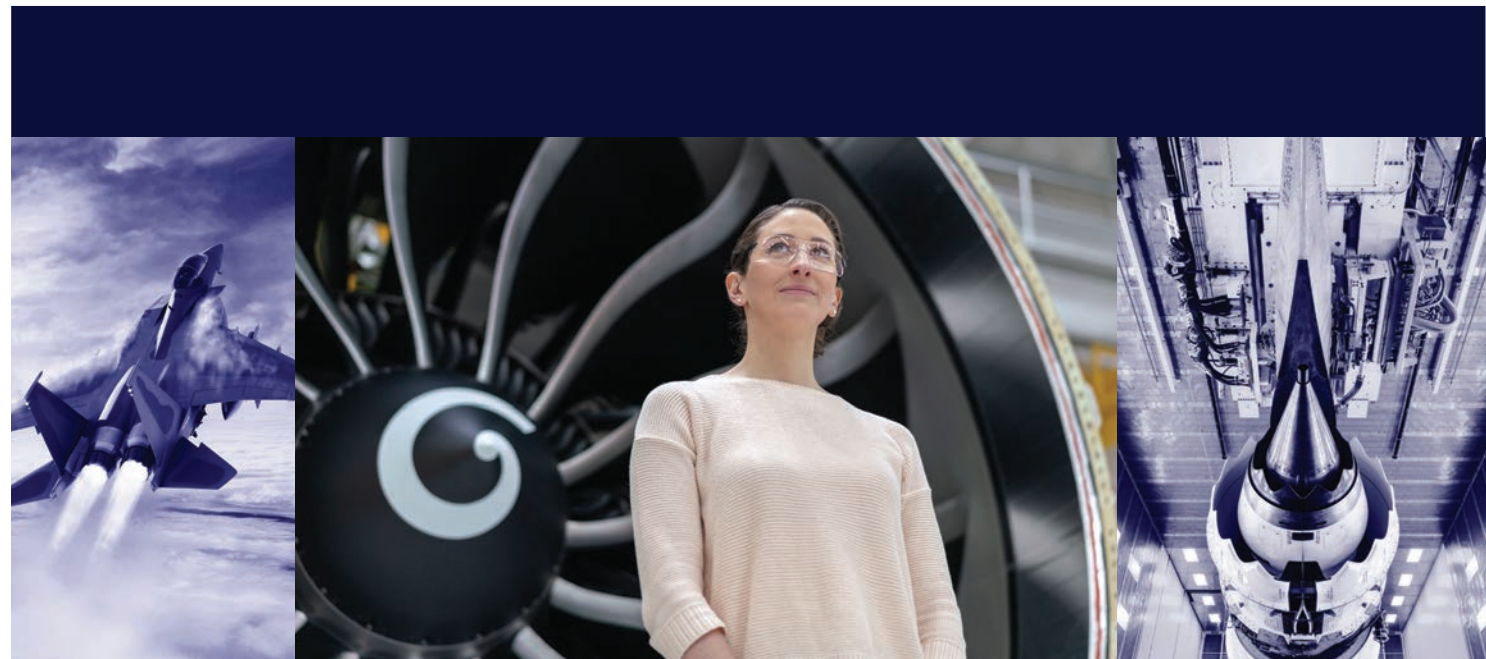
The Algerian market is, furthermore, whetting the appetites of low-cost carriers. The collapse of Aigle Azur [liquidated in September 2019]

and the Covid-19 crisis are creating new opportunities.

Transavia – part of the Air France-KLM group – has strengthened its presence in north Africa. "Algeria is destined to take a growing place within our network," said Nicolas Hénin, deputy general manager sales and marketing of Transavia France.

"We currently operate 24 weekly flights. We shall increase this to 50 when our programme is operating fully."

Spanish low-cost airline, Volotea, also currently offers 21 frequencies between Algeria and three of its bases – Marseille, Bordeaux, and Lyon. The airline recently announced that it wants to set up new frequencies next autumn to connect six Algerian airports. ▲



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# TRANSFER WINDOW



Revising plans: Airlines from throughout the region are preparing to revamp their schedules to get fans to and from venues such as Doha's Al Janoub Stadium.  
PICTURE: WIKIMEDIA COMMONS.

**A**s the world's soccer nations prepare to descend on Qatar for the FIFA World Cup in November and December, plans to get them to and from matches are being drawn up.

Although Doha possesses a significant number of hotels, the Qatari capital cannot hope to accommodate the huge numbers of spectators – estimates are as high as 1.5 million – who want to see their country's team playing.

This means that tens of thousands will have to use hotels in neighbouring countries and fly into Doha on match days.

With most of the Gulf nations within two hours' flying time of Doha, this plan is feasible – if expensive.

The numbers involved will overwhelm normal flight schedules, so many of the region's airlines are putting special arrangements in place to cope with the influx of fans.

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Oman Air, for example, will operate 48 'match day shuttle' flights between Muscat and Doha from November 21 to December 3. The airline's extra services will include wide-body Boeing 787s for the short hop to Doha.

The airline is advising fans to arrive in Doha at least four hours before the start of a match. In addition, all passengers must register for a Hayya card, or fan ID,

*The Middle East's airlines have one goal as they gear up for a huge sporting event in Qatar. Alan Dron reports.*

prior to their flight, as this will be required for travel on all the special flights and for entry to Qatar.

The airline will also be enforcing a no-checked-in baggage policy, to get passengers on and off flights in Doha as quickly as possible.

Meanwhile, RoyalJet Abu Dhabi, the premium private aviation provider, has announced match day flights to Doha.

RoyalJet has launched these flights to not only provide for the high demand, but also allow fans to travel at preferred times on match days and return the same day if they wish.

"We have seen a substantial rise in demand for travel this year, especially when it comes to short-haul flights across the GCC," said Mohammed Husain Ahmed, CEO of RoyalJet.

Abu Dhabi-based Etihad is more than doubling its services to Doha over the course of the event.

As well as providing 42 weekly return flights to the Qatari capital (up from 18 currently), the airline is provisioning charter capacity from within its own fleet to support large groups of travelling fans.

At the time of writing, other airlines had yet to formulate plans for additional flights.

Meanwhile, Qatar's own flag-carrier, Qatar Airways, is preparing for one of the busiest periods in its existence and is sacrificing existing destinations in order to have enough capacity to ferry passengers to and from the emirate. The airline plans to either reduce frequencies or even completely halt services to more than 30 destinations in its network as it focuses on the soccer fans.

The company "will have to grit its teeth and take a financial hit" as it makes drastic changes to its schedules during the World Cup, according to Group CEO, Akbar Al Baker.

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"We have to withdraw from many destinations in order to relieve capacity and make room for others [airlines] to come to Doha and utilise the slots," Al Baker said during the annual meeting of the International Air Transport Association in Doha in June.

"It's a pain we will have to take but it's only for a period of 30 days."

At its Hamad International Airport hub in Doha, Qatar Airways will also modify the structure of its banks of flights throughout the tournament, releasing slots for airlines from those countries whose national teams are playing in the event.

Doha's former airport, Doha International, will be used by airlines from neighbouring states to fly in spectators staying in hotels around the Gulf. ▲

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Heading out: A Super Typhoon en route to Qatar wearing the distinctive squadron badge of the Al Thariyat (Moving Wind) Squadron. PICTURE: RAF

## SUPER TYPHOONS ON THE TEAM SHEET...

*The new Eurofighter Typhoons of the Qatar Emiri Air Force (QEAF) No7 Squadron will provide round-the-clock air defence cover for the 2022 FIFA World Cup this winter. Jon Lake reports.*

**T**he tournament, which begins on November 20, will be the first ever FIFA World Cup to be held in the Arab world, and only the second to be held entirely in Asia. The final is scheduled for December 18, which also is Qatar's National Day.

Qatar's rapidly expanding air force is tasked with preventing any interference from the air, and its new Eurofighter Typhoons took on a quick reaction alert (QRA) commitment soon after the arrival of the first aircraft at Tamim Air Base, at Dhukan, on August 27 this year.

By September 4, when the QRA commitment began, four aircraft were present at Dhukan.

The Qatar Emiri Air Force's first four Typhoons had been officially accepted into service during a ceremony at BAE Systems' Warton factory in the UK on August 15, with a fifth aircraft serving as a backdrop for the proceedings.

The ceremony was held under the patronage of Dr Khalid bin Mohammed Al Attiyah, Qatar's Deputy Prime Minister and Minister of State for Defence, with

Ben Wallace, the UK Secretary of State for Defence, in attendance alongside a host of senior officers from the RAF and the QEAF. The event was hosted by Cliff Robson, managing director air at BAE Systems.

The first pair of Typhoons left UK airspace on August 25, flying to Athens, where one suffered a minor unserviceability issue, leaving the squadron commander, Colonel Faisal Al-Ghanim, to fly on alone to Dhukan.

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It was, perhaps, appropriate that the first Typhoon to arrive was flown by Colonel Al-Ghanim, who had previously served as the deputy commander of No12 Squadron, the joint UK-Qatar Typhoon unit. He has become a great ambassador for the QEAF, noted for his professionalism, good humour and charm.

Four years earlier, as a Lieutenant Colonel, Al-Ghanim had been the QEAF commander on the joint UK/Qatari exercise Epic Skies II, when RAF

Typhoons flew into Al Udeid Airbase. Two years later, he was himself flying a No12 Squadron Typhoon on the next iteration of the Epic Skies exercise series – the first time that Qatari pilots had flown Typhoons in the emirate.

Al-Ghanim's arrival was greeted by the Emir of Qatar, His Highness Sheikh Tamim bin Hamad Al-Thani, who was accompanied by Dr Al Attiyah, Staff Lieutenant General (pilot) Salem bin Hamad bin Aqeel Al Nabit, chief of staff of the Qatar Armed Forces, and Brigadier General (pilot) Jassem Mohamed Al Mannai, commander of the Qatar Amiri Air Force, as well as a number of other high-ranking officials and senior officers.

The three remaining aircraft left Akrotiri on September 1, routing to Dhukan via the Royal Saudi Air Force base at Tabuk.

A bird-strike to one aircraft delayed the completion of the journey, but the aircraft finally arrived at Dhukan on September 4.

Sufficient combat-ready aircrew have completed training with the joint Qatari-UK No12 Squadron for the Typhoons to be fully operational from "day one" after their arrival. The new squadron is entirely Qatari-operated, with no RAF exchange officers or BAE pilots.

Further aircraft are expected to be

operational before the World Cup begins, including the first QEAF two-seater, and the joint UK/Qatar No 2 Typhoon squadron, which is due to deploy to Dhukan with eight Typhoons to bolster the Qatari unit, under Exercise Al Thariyat.

The RAF aircraft deployed to Qatar for six months from late September.

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The QEAF Typhoons are built to a new standard, with the formidable ECRS.Mk 0 AESA radar – which many believe to be the most advanced fighter radar in service today, thanks to the innovative 'repositioner', which gives unmatched 'field of regard'.

This uses the same human machine interface (HMI) as the mechanically scanned radar fitted to the RAF Tranche 3 Typhoons, on which Qatari pilots trained. Consequently, conversion to the QEAF standard is largely a matter of understanding the capabilities of the new sensor, rather than learning how to operate an entirely new system.

QEAF pilots began working to understand the new sensor's capabilities in a synthetic environment while still in the UK, leading some to dub the QEAF aircraft as 'Super Typhoons'. ▲

*Qatar is working with the US Department of Homeland Security to throw a security blanket around the FIFA World Cup. David Oliver reports.*

## Building a defensive wall against the rogue drones

Hosting the FIFA World Cup in Qatar will be a challenge for the country's security agencies – but they are getting help.

Building on the long-standing relationship between the US Department of Homeland Security (DHS) and the Ministry of Interior of the State of Qatar (MOI), DHS Undersecretary for Policy, Robert Silvers, met in July with Qatar's Prime Minister and Minister of Interior, HE Sheikh Khalid bin Khalifa bin Abdulaziz Al-Thani.

They discussed shared security priorities and re-affirmed a joint commitment to expand cooperation to enhance the security of the World Cup.

There was particular emphasis on countering threats from uncrewed aircraft systems (C-UAS) with the DHS committed to sharing lessons learned and best practices.

The United States Air Force had already deployed C-UAS systems at Al Udeid Airbase in Qatar following exercises with the 379th Expeditionary Security Forces Squadron and the explosive ordnance disposal team from the 379th Expeditionary Civil Engineer Squadron in December 2020.

Earlier this year, Fortem Technologies, a leading US company in airspace security and defence for detecting and defeating dangerous drones, announced that it would work with Smart Communication Systems (SCS) to provide C-UAS solutions to defence and security clients, with initial installation for the Qatari Ministry of Interior for the FIFA World Cup events in November and December.

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"The Government of Qatar understands the importance of providing comprehensive security from the ground to the air for the FIFA World Cup matches and beyond," said Timothy Bean, CEO of Fortem Technologies.

"We are thrilled to be able to partner with SCS to provide the best counter-drone security to ensure the safety of players, sports fans, and everyone involved in putting together one of the most viewed global events in decades."

Fortem Technologies will provide interceptor drones to fend off potential attacks from other uncrewed aerial vehicles at football venues. Its SkyDome System is a C-UAS solution that detects, defeats, and protects against rogue drones. The SkyDome system classifies threats and mitigates them autonomously with its interceptor drone, DroneHunter.

At the heart of the Fortem SkyDome System

is TrueView radar, a compact, AI-enabled, networkable radar designed to perform in urban environments and crowded public places, such as sports arenas and airports.

SCS specialises in extra-low voltage systems integration, perimeter sky protection anti-drone solutions, and AI/robotic solutions.

Its anti-drone system detects and/or intercepts unwanted drones by incorporating different layers of protection from radio frequency (RF) sensors, radars, optical and thermal cameras, as well as jammers.

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Earlier this year, SCS chief executive officer, Rania Abou Mosleh, signed a contract for securing the FIFA World Cup stadiums and facilities with Major General Eng Abdul Aziz Al Ansari, chairman of the security and safety operations committee (SSOC).

"After much consideration of companies around the globe, Fortem's offerings outshined all competition," said Walid Chahine, managing partner of SCS and exclusive distributor of Fortem in Qatar.

"The world is at a point where enhanced security is becoming the norm, and we're determined to stay ahead of the curve."

Qatar Airports and Airport Management Company (QAAMC) had begun to develop a drone that could fly in restricted airspace and detect and track air traffic in 2021. Designed to operate in Qatari airspace, the system would be able to identify any objects flying near the drone and notify QAAs officials.

The drone, called the Qatarair, was being developed in cooperation with the University of California Berkeley and other academics from around the world, and the prototype was being built at the university's Center for Aerospace and Electronic Engineering (CAE) at UC Berkeley.

The QAAMC said at the time that it hoped to launch the drone by the end of the year, but to date no more details have been released. ▲



State-of-the-art: The Fortem Technologies DroneHunter C-UAS drone. PICTURE: FORTEM TECHNOLOGIES.



Flying high: Embraer's C-390 is already in service with Brazil and has racked up contracts in Hungary, the Netherlands and Portugal. Several South American nations are also known to be interested in the type.

PICTURE: EMBRAER.



## Could Embraer's C-390 be Saudi's transporter of delight?

*What chance does Embraer's C-390 tactical transport have of replacing at least part of Saudi Arabia's large, but ageing fleet of C-130 Hercules?*

**Alan Dron** has been finding out.

**B**razilian manufacturer, Embraer, is known to be looking to the Middle East for orders for its C-390 tactical transport. The aircraft has made several sales tours of the region in recent years, the latest a couple of months back in June.

Embraer is understandably coy about where it has shown off the aircraft, but its capabilities make it a contender to replace elderly transports, in particular the Lockheed Martin C-130 Hercules.

The company notes that the worldwide average age of tactical transports is a remarkable 31.2 years, so several nations will soon be looking to recapitalise their fleets.

"For strategic reasons, we cannot disclose some of the countries. However, as is public knowledge, the Kingdom of Saudi Arabia is one of the prospects in the region," said an Embraer spokesman.

Saudi Arabia, with one of the largest transport fleets in the region, does, indeed, offer prospects for the Brazilian twin-jet transport.

The Royal Saudi Air Force (RSAF) has 33 C-130H/J's in its inventory, with 20 J's on order. It also has seven KC-130H tanker variants, plus two new-generation KC-130J's, with a further three KC-130J's to be delivered.

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However, despite these existing orders, it is known that Saudi Arabia is still on the lookout for further multirole transport aircraft, with Lockheed Martin, Airbus, and Embraer having made offers to fill the requirement. The manufacturers' identities suggest that the C-130J, A400M and C-390 respectively will be in the running for the order.

The RSAF fleet contains KC-130 tankers, a role that was originally one of the most heavily publicised for the Brazilian aircraft. It was initially designated KC-390, the 'K' being the international abbreviation (at least in the west) for refuelling capability. Embraer is now giving greater emphasis to transport roles, but the tanker designation is still very much part of the aircraft's portfolio.

"It is important to highlight that, as the programme

matures, the [C-390's] operation with the Brazilian Air Force has proven its capability, reliability, and performance, with a mission completion rate of 97%," the spokesman added.

As well as being chosen by its 'home' air arm, the C-390 has also picked up small orders from Portugal (five) and Hungary (two). In Portugal, the aircraft will replace the C-130H, while in Hungary, it will take the place of retired Antonov An-26s.

In June, the company picked up an order from the Netherlands for five more C-390s – again, supplanting four elderly C-130Hs.

Embraer's successes in winning orders from existing C-130 customers are good omens as, for many years, many nations took the view that the only replacement for an old Hercules was a new Hercules. Indeed, in the Netherlands, the C-390 was pitched against the C-130J.

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The decision by a third NATO nation to adopt the type undoubtedly enhances the C-390's credibility.

Embraer notes that the C-390's cargo compartment's length, width, and height are all slightly larger than those of the C-130J-30, the stretched version of the US aircraft. This gives the C-390 a maximum payload of 26 tonnes, compared to the C-130J-30's 20 tonnes.

To boost its chances in the Middle East, Embraer earlier this year signed a memorandum of understanding (MoU) with BAE Systems to help market the aircraft in the region.

The UK company has had a strong presence in the Gulf for several years, notably in Saudi Arabia, where it helps maintain and support the RSAF's fleets of Tornado strike aircraft and Eurofighter Typhoon fighters.

The agreement "sets the basis to establish a strategic partnership between BAE Systems and Embraer to collaborate in Middle Eastern markets for C-390, with an initial focus on the Kingdom of Saudi Arabia", said the Embraer spokesman.

Perhaps surprisingly, given Embraer's desire to break into the region's markets with its tactical transporter, the C-390 will not be appearing at this month's Bahrain International Airshow.

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# Turkey powers on with ambitious schedule for new stealth fighter

Turkish Aerospace is working to an ambitious timetable on its national combat aircraft – the Milli Muharip Uçak (MMU) programme. **Jon Lake** reports.



Good-looking: The mock-up of TAI's new MMU fifth-generation fighter showing off its lines, which demonstrate the obvious influence of the US F-22 and F-35. PICTURE: TAI.

The MMU is an indigenous fifth-generation stealthy tactical fighter aircraft that is being developed to meet a Turkish Air Force requirement by prime contractor TUSA /Turkish Aerospace, with technological assistance from BAE Systems. Some 250 MMU aircraft are to be delivered between 2029-2040. Turkish Aerospace general manager, Temel Kotil, said that the first MMU prototype will “leave the hangar on March 18, 2023 with engines running”. This is the same date that has been set for the first flight of the TAI Hürjet jet trainer and of the TAI T929 ATAK 2 combat helicopter.

Next year marks the centenary of Turkish independence, and of the foundation of the Republic of Turkey as a modern and secular nation state. March 18 is of particular significance as it will be the 108th anniversary of what Turkey remembers as the famous naval victory of Çanakkale – what the west knows as the Gallipoli campaign – the prelude to the Turkish war of independence. With the MMU preliminary design review yet to be completed, and with the aircraft’s shape, sensors and sub-systems still not finalised, it is hard to see how a prototype could be completed in time, let alone one capable of taxiing under its own power, though the planned first flight date of late 2026 would seem to be more achievable. Three block 0 development aircraft, including the first prototype, and 10 block one (low rate initial production

(LRIP) and serial production aircraft will each be powered by a pair of General Electric F110-GE-129E turbofans, 10 of which were ordered from the US company in 2019 and 2021. Turkey intends to eventually use a domestically produced powerplant for the MMU, and Tusa Engine Industries (TUSA Motor Sanayii A.Ş., TEI) and TRMotor are competing to supply an engine, together with the Kale Group’s Turkish Air Engine Company (TAEC) joint venture with Rolls-Royce. TEI was founded in 1985 as a joint venture involving GE Aviation, Turkish Aerospace Industries, the Turkish Armed Forces Foundation and the Turkish Aeronautical Association, while TR Motor is a subsidiary of the procurement agency SSB, founded in 2017, and wholly owned by TUSA. Kale is less well known, but has significant production experience with Pratt & Whitney engines, manufacturing engine shrouds, heat shields, flaps, seals, and bracket cone assemblies for the F135 engine – powerplant for the fifth-generation Lockheed Martin F-35 Lightning II Joint Strike Fighter aircraft, as well as parts for the F100 engine family, which powers the F-15 and F-16 fighters. Turkey’s favoured option seems to be for a new engine to be produced by TAEC and Rolls-Royce, who have received a request for proposals for such a programme.

Ismail Demir, Turkey’s president of Defense Industries – a civil institution established by the government to manage the country’s defence industry – and Turkish Air Force commander, General Hasan Küçükakyüz, led two senior delegations to the UK in May for talks with Rolls-Royce. Demir described the UK Government’s reaction to the plan to cooperate on an engine for the MMU as being “generally positive”. Rolls-Royce originally offered a joint production partnership in October 2016, with a production facility in Turkey to manufacture engines for the MMU (then still known as the TF-X), before the agreement collapsed as a result of disagreements about intellectual property and export restrictions. “It is imperative for us that the engine will be produced in Turkey... and that Turkey should possess intellectual property rights,” Demir said. “We had some issues with Rolls-Royce before. These have been resolved. I think we are ready to work together.” It is not clear as to how many competitors will go through to the second phase of the indigenous engine project – a development study that will culminate in the production of a working prototype of the engine. The third phase of the project will see the selection of a main contractor to serially produce the MMU’s indigenous engine, beginning from around 2028 onwards. Whatever engine is eventually selected to power full series production MMU aircraft, it will need to offer a compelling blend of performance, low signature and reliability, since the MMU aircraft is expected to be a super-cruising, low-observable fighter that is also available, maintainable and cost-effective.

C-390 MILLENNIUM

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## TAI ORDER BOOK IS ON THE ATAΚ

Turkey's ATAΚ attack helicopter is enjoying something of a resurgence in popularity.

After losing a \$1.5 billion deal for 30 TAI T129 ATAΚ helicopters, originally signed in 2018 but abandoned after the US denied a licence to re-export the aircraft's LHTEC T800-4A engines, the type's order book is growing and operational experience has been extremely positive.

With 56 T129s now delivered to the Turkish Land Forces (five of them to the latest T129B phase II standard), the *News of Turkey* newspaper reports that six more are to be received this year, and that 91 will be in service by the end of 2023.

This is additional to 10 of 24 aircraft ordered for the Gendarmerie General Command (all but six of them Phase II), and three for the General Directorate of Security (all Phase II). It represents an increase of 35 over the previously announced total, suggesting that an option for 35 aircraft may now have been exercised.

The first export aircraft (part of a six-aircraft order by the Philippines) were delivered in March 2022, while Iraq's defence minister has



All-round success: The TAI T129 ATAΚ has heavily stepped tandem cockpits, giving both crew the best possible all-round view. PICTURE: TAI.

announced that his country will be acquiring 12 T129s.

An order for six aircraft for Nigeria was announced by TAI CEO, Temel Kotil, at this year's Farnborough International Airshow, while Qatar, Saudi Arabia and Brazil have also all been listed as potential customers.

A licence-built and much improved derivative of the AgustaWestland (now Leonardo Helicopters) A129 Mangusta offers a compelling blend of excellent performance and

agility, a compact footprint, and low cost. With a constrained budget in the Philippines, for example, TAI was able to bid six T129s, where Textron offered five AH-1 Zs, and Boeing just four AH-64 Apaches.

The T129 reportedly has an unusually fast 'scramble' capability from cold, while its relatively small rotor diameter allows operation in more confined areas – including 'urban canyons', which might represent more of a challenge for the larger AH-64 Apache. ▲

## MENA SITS COMFORTABLY WITH MARTIN-BAKER

Ejection seat designer and manufacture, Martin-Baker, has recently been busy visiting various customers across the MENA region qualifying the new US18E ejection seat for the export versions of the Lockheed Martin F-16.

"The US18E is baseline for the new production Lockheed Martin F-16 Block 70/72 aircraft that will be purchased by the Royal Moroccan Air Force and the Royal Jordanian Air Force," explained Steve Roberts, head of business development.

"With large fleets of F-16s in service across the MENA region, an important opportunity exists to retrofit the legacy ejection seat fitted to older F-16 aircraft with the US18E."

The US18E is based on the US16E installed in the Lockheed Martin F-35 aircraft. There are some 939 in service and, so far, three lives have been saved.

"The new seat enables safe ejection for aircrew equipped with a helmet-mounted display across the size and speed range," explained Roberts.

"Lots of helmets can cause injury during ejection but the new system allows safer ejection through the latest airbag technology making the load easier on the head and neck. The modular seat design also reduces the maintenance hours associated with canopy removals."

The British company has a strong presence in the Middle East and currently boasts 1,639 of its seats in



Life-savers: Martin-Baker has been designing and manufacturing ejector seats for 70 years and has so far saved a total of 7,681 lives.

PICTURE: MARTIN BAKER.

service in the region in countries including Egypt, Bahrain, Kuwait, Qatar, Iraq, and the UAE.

"MENA is an important region for Martin-Baker due to large fleets of military aircraft fitted with our seats," said Roberts. "Rafale (F16F), Typhoon (16A), Hawk (10LH), Mirage 2000-5 (F10QA), and PC-21 (CH16C) are just some examples. For this reason we will also be exhibiting at the International Defence Exhibition and Conference (IDEX) in Abu Dhabi next year."

During IDEX, in February, the company will also be

displaying its latest ejection seat, the KR18A – the first seat in the Mk18 range.

"It is currently installed in the Korean Aerospace Industries KF-21 Boromae fifth-generation fighter," said Roberts. "The Mk18 range offers three important advantages over legacy seats; an extended boarding range - which is gender neutral; safe ejection for aircrew wearing helmet-mounted displays; and modular design that enables savings through the reduced need for canopy removals." ▲

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Testing: A US Air Force AT-6E seen during AERONet trials, which involved pilots from Tunisia, Thailand, Colombia and Nigeria. PICTURE: US AIR FORCE AIRMAN 1ST CLASS DEANNA MUIR

## LIGHTWEIGHTS ADD A HEAVY PUNCH TO NORTH AFRICAN AIR ARMS

Libya has reportedly ordered an undisclosed number of Hürkus-C turboprops from Turkish Aerospace (TAI), with Major General Muhammad Gojil, the Libyan Air Force chief of staff, signing a formal agreement.

However, the sale has not yet been formally acknowledged by TAI.

The company has confirmed orders, though, from the Niger Air Force and, more recently, from the Chad Air Force, as well as reporting strong interest from the Azerbaijan Air Force.

The Hürkus-C is an armed close air support variant of the Hürkus-B turboprop trainer. It is fitted with a forward-looking infrared (FLIR) sensor and can carry 1,500kg of weapons, including 12.7mm machine gun or 20mm cannon pods, Cirit laser-guided rockets and L-UMTAS anti-tank guided missiles.

The Hürkus HYEU air-to-ground integration aircraft is a variant used for forward air controller (FAC) training by the Turkish Air Force's 135 Filo at Konya.

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In neighbouring Tunisia, despite the diplomatic stand-off between Joe Biden's US administration and President Kais Saied, an order for eight T-6C Texan II trainers from Textron Aviation Defence is moving ahead, and the US Department of Defense has now agreed a \$90 million deal towards the production of eight aircraft. These are expected to be followed by four AT-6E Wolverine close air support variants.

Tunisia has signed letters of offer and acceptance to acquire the airborne extensible relay over-horizon network (AERONet) mobile ad-hoc networking communication suite that was developed by the US Air Force as part of its continuing light attack experiment programme.

AERONet is being supplied to US international partners who operate light attack aircraft by Persistent Systems LLC.

Following the signature of a contract on the first day of this year's Farnborough International Airshow, the Royal Moroccan Air Force (RMAF) will take delivery of an unspecified number of H135s, which will replace about 10 surviving Agusta-Bell 206Bs in the rotary wing pilot training role.

They will serve with the L'Ecole de Pilotage Hélicoptère at 1 Air Base at Rabat/Salé.

The H135 is already in Moroccan service, with four EC135s serving with the Gendarmerie Royale's Escadron Aérien at Rabat/Souissi.

The contract also covers an extensive support package, including the delivery of flight training devices and the training of instructor pilots and maintenance personnel.

Airbus Helicopters will provide support in cooperation with its Moroccan strategic partner, Heliconia.

The training programme will enable the RMAF to take full advantage of the H135's multi-role capabilities and will include flying on night vision goggles (NVGs) and winning – a core skillset for the search-and-rescue role.

More than 130 IFR-certified H135s are operated by military agencies in the training role, and the type has now been selected by 12 military customers, including the armed forces of Australia, Brazil, Gabon, Germany, Ireland, Japan, Morocco, Nigeria, Spain, Thailand and the United Kingdom. ▲



PICTURE: US AIR FORCE AIRMAN 1ST CLASS DEANNA MUIR

Making contact: Tunisian Air Force First Lieutenant Hsan Gabtni, a joint terminal attack controller, communicates with US and TAF pilots via the AERONet.

*Egypt is continuing a major modernisation of its armed forces – and especially the air force. This has, in recent years, discarded its last F-4E Phantoms, Dassault Mirage 5s, and Chinese built F-7 'Fishbeds', and is replacing them with more modern fighter types. Jon Lake reports*

The latest stage in the modernisation programme now seems likely to include the acquisition of 24 Eurofighter EF-2000 Typhoon aircraft, as part of a wider \$10-12 billion arms package from Italy.

This will also reportedly include 24 Leonardo M346 Master training aircraft, 20-24 more AW-149 medium-lift/utility helicopters, four FREMM heavy frigates (additional to the two already being discussed), 20 Falaj-II class patrol boats to be co-manufactured in Alexandria Shipyard, and a Telespazio radar-equipped military surveillance and reconnaissance satellite.

Egyptian President Abdel Fattah El-Sisi is reportedly committed to acquiring the Eurofighter Typhoon from Italy to further diversify and modernise the Egyptian Air Force, and is determined to prevent ongoing US efforts to blunt Egyptian capabilities in an effort to maintain Israel's qualitative military edge (QME).

Egypt is, therefore, determined to have a 'full spec' Typhoon with AESA radar and the Meteor beyond-visual-range air-to-air missile (BVRAAM).

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All the Typhoons will be new-build aircraft assembled in Italy, and not second-hand Italian Tranche 1 jets, as was once expected, although delivery details have yet to be disclosed.

Egypt's fighter modernisation began in earnest in February 2015, with an order for 24 Dassault Rafales, followed by an order for 46 MiG-29M/M2s in April 2015.

In 2018, Egypt ordered 24 Sukhoi Su-35S heavy fighters, but in 2019, US Secretary of State, Mike Pompeo, threatened that if the sale went through, the USA's countering America's adversaries through sanctions act (CAATSA) would require sanctions to be imposed on Egypt. After a brief stand-off, Egypt refused delivery of the aircraft (several of which were by then flying) and they were eventually sold instead to Iran.

Abandoning the Su-35 purchase proved to be a blessing in disguise, as testing had shown that the Su-35's Irbis phased array radar was vulnerable to jamming (notably by the Rafale's Spectra electronic warfare system).

This, in turn, led to the decision to order 30 additional Rafales, while the United States has undertaken to deliver Boeing F-15 Advanced Eagle aircraft to Egypt, according to General



New over the old: The RoKAF's Black Eagles team displaying over the Pyramid complex at Giza. KAI is mounting a sustained effort to sell the armed version of the T-50 Golden Eagle to Egypt.

PICTURE: KAI

## Egypt grows its modern family

Frank McKenzie, the commander of US Central Command (USCENTCOM), when he gave evidence to a session of the Senate armed services committee. These would probably be similar to the F-15SA for Saudi Arabia, or the Qatari F-15QA, and the USAF's new F-15EX variant.

The backbone of the fighter fleet will continue to be provided by six wings of approximately 200 F-16s, which may be upgraded in the near future. A single squadron of elderly Mirage 2000s is widely expected to be bolstered by about half of the UAE Mirage 2000-9s, once these are supplanted by the Emiratis' new Rafales.

With Typhoons and Advanced F-15s augmenting F-16s, Mirage 2000s, Rafales and MiG-29M/M2s, the Egyptian Air Force will have probably the most diverse fighter fleet in the world, and one of the most modern in the region.

This will 'buy' a degree of geopolitical goodwill from all of the disparate supplier nations, and will provide a wide spectrum of capabilities, some of which will not be intimately familiar to Israel.

However, such diversity could also complicate the air force's logistics and support arrangements, and may make operational integration more difficult, although Egypt is

understood to have a compatible identification friend or foe (IFF) system for all types, and an intent to develop a universal datalink.

For now, though, Egypt faces real difficulties in integrating its MiG-29M/M2s into command and control networks that are predominantly of western origin.

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The Egyptian Air Force's next priority is likely to be pilot training. The dwindling fleet of ageing Alpha Jets is increasingly in need of replacement and, while Egypt's Hongdu K-8Es are newer, they are unrepresentative of the more modern aircraft types that now form the backbone of the fighter force.

Dassault delivered the first four Alpha Jet MS1 trainers from French production in June 1983, while the remaining 26 aircraft were supplied in kit form for assembly in Egypt. Some 15 further Alpha Jet MS2s, ordered in the early 1980s, were manufactured by Dassault.

Egypt licence-assembled 80 K-8E (JL-8) Karakorum advanced trainers using Chinese-supplied kits, and these were delivered from 2005. Licence production of a further batch of

40 K-8Es began in time for deliveries to continue uninterrupted.

Even if Egypt does acquire 24 M-346s as part of the reported arms package from Italy, this would barely scratch the surface of its trainer requirement. Though the Alpha Jets and K-8Es will not be replaced 'one-for-one', there is still likely to be a requirement for at least 100 advanced trainer/light attack aircraft, and some sources suggest that Egypt plans to select an aircraft by 2023. Aircraft known to have been under evaluation in Egypt include the KAI T-50, the Leonardo M-346, the Aero L-39NG and the turboprop-powered Embraer Super Tucano.

Korea Aerospace Industries (KAI) has reportedly said that Egypt is interested in acquiring up to 100 FA-50 Fighting Eagle armed trainers, and Lee Bong-geun, the general manager of KAI's Export Innovation Centre, has said that KAI will promote joint production of the aircraft in Egypt.

In support of the KAI sales and marketing campaign in Egypt, the Republic of Korea Air Force dispatched the Black Eagles aerobatic team to participate in the Pyramids Air Show on August 3 2022. The team is equipped with nine T-50B aircraft (eight display aircraft and one spare). ▲





# CAR POOL

A Tunisian helicopter unit has been operating for a year in the Central African Republic under the banner of the United Nations multidimensional integrated stabilization mission in the CAR (MINUSCA). **Erwan de Cherisey reports.**

It's early morning in the western Central African Republic (CAR) and two Agusta Bell 205 helicopters, with United Nations and Tunisian Air Force (TAF) markings, are flying in close formation at low altitude.

Machine-gunners on each side of the aircraft keep a close eye on the ground, looking for signs of the presence of armed groups in the area, while, inside, a sensor operator does the same using an externally mounted camera.

In the meantime, ground troops are moving through the area to flush out any bandits and reassure the civilian population. The two helicopters loom close by, ready to deliver air support when needed.

The scenario is a good example of the duties performed by the Tunisian Armed Helicopter Unit, which has been deployed in the CAR about a year now.

The unit has made its home at the Bangui M'Poko Airport and comprises 130 people, including five aircrew, each made up of two pilots, one flight engineer and two gunners, and three AB 205s hailing from the TAF's 32nd Squadron based at Sidi Ahmed Air Base in Bizerte.

The Tunisian helicopters fill a gap left following the withdrawal of the Senegalese Mi-35s from the CAR in 2019.

According to a spokesperson for the unit, the helicopters and their support equipment were transported to Bangui in several rotations of TAF Lockheed Martin C-130J, while personnel flew on a chartered commercial aircraft on September 22 2021.

Meanwhile, ground support equipment and spare parts were shipped by

sea from Tunisia to Douala in Cameroon, and from there moved by road to Bangui.

Following aircraft assembly and testing, the Tunisian detachment was declared fully operational on November 6 2021 and started flying operations on November 8.

The Tunisian AB 205s are tasked with carrying out multiple duties including VIP, personnel and cargo transport, search-and-rescue, close air support, intelligence, surveillance and reconnaissance (ISR), casualty and medical evacuations, armed escort, air assault, and air control.

The aircraft can be armed with FN MAG and Dillon Aero M134D 7.62mm cabin-mounted machine-guns and with 70mm rocket launchers under two external hardpoints. A single Teledyne FLIR Star Safire III electro-optical/infrared (EO/IR) sensor can be externally mounted on the left side of the airframe for ISR duties.

The aircraft are also outfitted for night flying using night vision goggles (NVG), a particularly valuable feature allowing for greater tactical flexibility, which was previously lacking in MINUSCA.

These weapons and equipment are all part of the standard fit of the aircraft in TAF service and no special modification was made to any of the helicopters for the purpose of their deployment to the CAR.

The unit was intended to be assigned to MINUSCA for a year, although mandate extensions could increase this out to August 31 2024.

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Pre-deployment preparation started in Tunisia and included several lectures and courses on local customs and legal aspects, as well as UN rules of engagement. It concluded in the CAR, where additional operational matters of significance were also reviewed.

Between November 2021 and August 2022, the Tunisian unit had flown more than 300 hours despite the ongoing fuel supply crisis, which is having an impact on the CAR.

Flying in the region involves many challenges due to the lack of navigation aids in the country, as well as the changing weather, which includes heavy downpours during the rainy season.

The heat tends to affect aircraft performance and the dust, when landing in unprepared areas, can be a major hazard due to the 'brown out' phenomenon, where an aircraft is surrounded by a cloud of dust and the aircrew is left without spatial references while closing on the ground. According to the spokesperson, Tunisian fliers are quite familiar with several of these difficulties due to their experience operating in the desert, where sand and high temperatures are ubiquitous.

Overall, the TAF's helicopter unit has provided

MINUSCA with a vital airborne multipurpose armed capability.

The deployment is also a major achievement for Tunisia, which had never before sent helicopters to a UN mission. Although, as the spokesperson highlighted, it follows in the footsteps of the commitment of a Tunisian C-130J to the United Nations mission in Mali since 2019. ▲



ABOVE: The Tunisian AB 205s are all armed with cabin-mounted machine-guns. Seen here is an FN MAG, although the Dillon Aero M134D can also be carried.

RIGHT: The three AB 205s were airlifted to the CAR by C-130Js and then reassembled in Bangui before starting flying operations in November 2021. PICTURES: MINUSCA.



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Packed programme: More than 50 aircraft will be on show in the MEBAA static park.  
PICTURE: MEBA.

## MEBAA BLAZES A TRAIL FOR BUSINESS AVIATION

Since the pandemic, the Gulf region has been at the forefront of advances in business aviation. Now, as Marcelle Nethersole reports, the Middle East and North Africa Business Aviation Association show (MEBAA) will demonstrate why.

**B**usiness aviation and private flying is bouncing back. In the first half of this year, it was up by 22% over the same period last year. There were 2.7 million flights globally, with business jet activity, in particular, up 27% year-on-year and 21% above pre-pandemic 2019 levels. While Europe has seen a surge in activity, with nearly 300,000 business jet flights in the first half of the year – a 38% increase – it is the GCC region that has really blossomed. The global private jet market is projected to reach \$39.84 billion in 2025 from an estimated \$25.87 billion in 2021, with the GCC representing a major part of that growth. Driven by advances in infrastructure and technology, the industry is also welcoming back business aviation events and, from December 6-8, all eyes will be on Dubai World Central (DWC) for the ninth MEBAA edition.

“It is an exciting time for business aviation globally and multiple factors are leading to a surge in demand,” said Ali Alnaqbi, MEBAA’s founding and executive chairman. “MEBAA will gather industry leaders from across the globe to lay out the roadmap for business aviation in the future. The event will showcase new innovation and technology that is driving significant growth in business aviation, private jet, and the charter flight markets.” The three-day event, organised by Tarsus F&E, will, as ever, be a platform for networking opportunities and interactive sessions on the latest trends. Visitors and exhibitors will also enjoy a redesigned immersive show floor with everything from new high-tech and ultra-luxurious jets, through to blockchain-based assets, and electric vertical take-off and landing vehicles (eVTOLs).

Continued  
on Page 32

## DC AVIATION AL-FUTTAIM UNITES QUALITY MADE IN GERMANY AND ARABIC HOSPITALITY

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CONTINUED FROM PAGE 30

“At this year’s edition we’re also introducing BizAv Talks, which will provide three days of immersive discussions on everything you need to know about business aviation from top industry experts,” said Alnaqbi.

New features also include the future focus – showcasing everything from eVTOLs to sustainable aviation fuel (SAF) and artificial intelligence (AI) to blockchain.

The operators’ programme is a new dedicated opportunity for exhibitors to network with hand-selected regional and international operators.

There will also be the static display and, while the list was not totally confirmed as *Arabian Aerospace* was going to press, more than 50 aircraft were expected with Comlux displaying its VIP flagship Skylady.

Tarsus has already confirmed attendees from more than 30 countries, which includes new international and regional exhibitors like Aerospace Jet, Aerospace Aviation Services, First Class Aviation Services, and International Flight Landing Solutions. UAS International Trip Support will again be at MEBAA.

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Mohammed Al Husary, co-owner, founder, and executive president said: “I think this year’s MEBAA show will have an extra layer of significance as it follows a period of global chaos and the challenge the pandemic brought to the industry.

“As a MEBAA board member, I see first-hand the commitment and drive of the organisation to advance the interest of the industry in the region. The pandemic taught us the importance of business aviation and how powerful it can be when other forms of transport are totally restricted; we should never forget this going forward.”

The upcoming FIFA Football World Cup will also see an increase in business jet travel in the region. DC Aviation Al-Futtaim (DCAF) reports a demand for private jets during the event but is looking forward to attending MEBAA first.

Managing director, Holger Ostheimer, said: “MEBAA is undoubtedly the region’s premier business and private aviation event.

“It offers us a good platform to showcase our facilities and unique offerings, from our VVIP lounge to our state-of-the-art hangars and everything in between.

“We look forward to reconnecting with our partners and industry peers from all over the world.” ▲



# HEAVY METAL SOUNDS GOOD IN THE GULF

**Alan Peaford**  
*looks at why heavy metal is music to the ears of prospective owners at the MEBAA Show.*

When it comes to MEBAA show time, those involved at the larger end of the business aircraft spectrum wet their lips in anticipation.

The Middle East – and the Gulf states in particular – are proportionately the biggest potential market for the flagships of the world’s private and corporate aircraft fleets.

The world’s largest single fleet of Boeing Business Jets, for example, rests – or more accurately is headquartered – in Abu Dhabi, as Royal Jet meets growing demand for head-of-state and VVIP services from around the world.

Despite the ravages of Covid, the sector has been the focus of attention for the manufacturers with new models. Airbus, Boeing, Bombardier, Dassault, Embraer and Gulfstream will all be

offering current – and in-development – wide cabin aircraft to an eager market.

The specialist business jet makers have been rapidly taking new orders for the \$70 million-plus machines that occupy the upper echelon of the private-travel market, and demand has prompted the three main players to up their games by rolling out even-more-expensive models, including those that crack the 8,000nm (14,800km)-range barrier.

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Since the last edition of MEBAA the main manufacturers have seen backlogs increase by more than 40% as they push the envelope further and further.

Back in 2021, Gulfstream set a new range standard with the launch of the G800, with a published maximum range

of 8,000nm. At EBACE this year, Bombardier responded by unveiling plans to bring the long-promised Global 8000, also with 8,000nm of range, to service in 2025. The platform will be a modified version of the Global 7500, which has 7,700nm of range.

Dassault will be pushing the Falcon 10X – its new flagship – to the Gulf audience. The Falcon fleet is already a mainstay in Saudi Arabia.

The \$75 million 10X was designed to match the 7,500nm range option from Bombardier’s Global 7500 and Gulfstream’s G700 but opting instead to develop width rather than an extra 500 miles.

The 10X promises the tallest and widest cabin of a purpose-built business jet (still beaten by the adapted commercial airliners – the Airbus ACJ and Boeing’s BBJ) but has many other safety features developed from Dassault’s long military expertise.

The new Falcon features a smart throttle (that stops you shutting down the wrong engine) and a single button to return to straight & level flight in an emergency. Larger additional windows

also give the cabin an incredible amount of light.

Gulfstream’s G800 was at the Farnborough International Airshow in July, still on its test programme and just days after its first flight.

The G800 also features the latest in Gulfstream’s cabin technology and comfort, including hand-crafted, ergonomic seats; a high-definition circadian lighting system; 100% fresh, never recirculated air; the lowest cabin altitude in the industry; a plasma-ionization air purification system; and 16 of the largest windows in the industry.

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Designed to seat up to 19 passengers, the G800 offers up to four living areas, or three living areas with a crew compartment.

Bombardier’s Global 7500 has been selected by NetJets to fill its top-end requirement. The company has taken delivery of 75.

The US market is delighted by the range that allows it to link San Francisco to Sydney non-stop. Indeed, all of these ultra-long-

range large cabin contenders can reach the whole world with a single technical stop.

But there are clouds on the horizon. Supply chain issues are delaying deliveries, and that is something not welcomed in this region.

While the newest models will not be available until 2025, two exhibitors at MEBAA have alternative options.

Switzerland’s Comlux will be showing its newly refurbished flagship, the Comlux Skylady. Based on a 767BBJ platform, the aircraft promises top-end comfort and luxury, the latest in-flight connectivity, a new air purifying system via ionisation, all combined with ultra-long-range capability up to 15 hours of flight. It will be on display at the MEBAA static.

Another MEBAA favourite will be Citadel Completions from the US, which has developed an enviable reputation for taking wide-body aircraft like the A340, the B767, and even the ‘queen of the skies’ Boeing 747, and upgrading and refitting to a meet individual demands of owners.

So when it comes to viewing the wares on show at the Dubai World Central event next month, think big. ▲

**FROM LEFT:**  
Wide and tall: The Dassault Falcon 10X cabin will be ticking the boxes for Middle East prospective buyers.

PICTURE: DASSAULT AVIATION.

**Room to relax:** On the latest Comlux Skylady on display at MEBAA.

PICTURE: COMLUX.

**Going the extra mile:** Gulfstream’s G800, currently in flight test, can reach the ends of the Earth.

PICTURE: GULFSTREAM.

# BUSINESS AVIATION IS GROWING

The last two years have been very successful for business aviation worldwide, and particularly the Middle East.

According to business intelligence consultancy, WingX, in October the Middle East was still seeing strong growth on what was already a record-breaking 2021.

The global private jet market is projected to reach \$39.84 billion in 2025 from an estimated \$25.87 billion in 2021.

Within the Middle East, the UAE is leading the boom, with the private jet market in the emirates predicted to grow from about 150 private aircraft currently to 250 by 2025.

While celebrating this regional success, at the recent Corporate Jet Investor (CJI) Dubai event, Ali Alnaqbi, founding and executive chairman of MEBAA, also issued a word of caution, suggesting that global business aviation was under attack from a number of sides.

He said: “VIPs, whether a business leader or a celebrity,

are being monitored by the media when flying, so we are under scrutiny. A few weeks back, a minister in France went to the media and said, ‘let’s ban business aviation’.”

Alnaqbi added that, while this attack is not yet evident in the GCC region, it is happening in other parts of the world and he urged operators in the Middle East to work together in a number of ways. He said: “One of the very important aspects is what do we give back? If we don’t give back anything to the communities in the countries in which we are working, questions will be raised one day.

“We need to give back some charity flights, and humanitarian efforts. There is a way to establish that, and MEBAA is there to help you achieve such things.”

Alnaqbi believes that the industry should be proactive on environmental sustainability. He said: “People say that we contribute to CO2. All the aviation in the world put together contributes 2%. What is the business aviation contribution to this 2%? 0.04%.

# – BUT IT’S ALSO UNDER ATTACK

“But we need to think about sustainability; we need to think about sustainable aviation fuel, (SAF). We need to find a way to invest in SAF and we need to bring it to our region.

“We don’t have to be followers; we don’t have to wait until we go to Europe or the United States to use SAF in our aircraft. We need to bring it here and to start using it, because this is the future.

“Net zero emissions is going to be implemented on us by 2050. That is the blink of an eye. We must work now to bring SAF into the region before we come under attack. Let us be the leaders, not the followers.”

Another area of focus for Middle East operators is illegal charter. Alnaqbi feels that it has been forgotten, with the booming market, but it must be addressed. He said: “We forget about the grey market, but it is a reality, and it is happening. One day they will come and say enough is enough, because Europe is checking on us;

America is checking on us. Be aware of it. Your association is trying to help.

“We put a lot of effort here in the UAE, we are very close with the authorities, we work with them on a daily basis and have managed to reduce it. We have not stopped it altogether, nowhere has it been completely stopped. We may never kill it, but I am sure we can reduce it.”

He asked industry players to report to the authorities if they see grey activities.

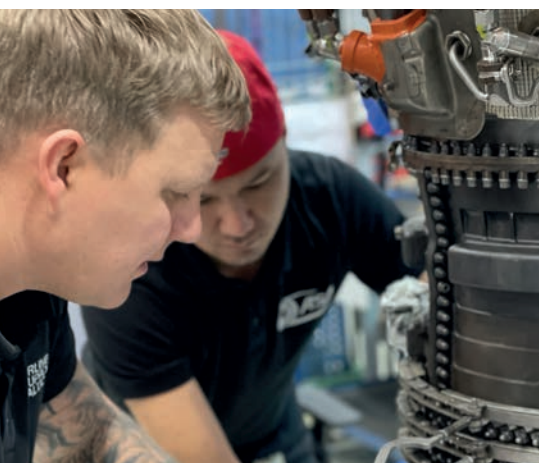
He concluded: “The pandemic has taught us that we are a unique industry. We were the only ones delivering goods and taking people to where they needed to be when all the countries’ borders were closed. We managed to change the perspective of business aviation. We are in a very good position. Our market is healthy. But to continue achieving that we need to work together, to share information, and put our hands together. That is what I am calling for.” ▲

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Ali Alnaqbi: “Let us be the leaders, not the followers.” PICTURE: BILLYPIX.





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# Saudi set for private jet renaissance

*For many years, the Kingdom of Saudi Arabia led the region for numbers of private jets in operation. Following political changes in 2017, and the effects of the Covid pandemic, the country lost that title to the UAE. It is now trying to rebuild and expand the private aviation industry.* **Jill Stockbridge reports.**

At the recent Corporate Jet Investor (CJI) event in Dubai, Yusef Hafiz, vice president NasJet, explained that Saudi Arabia was looking to regain the market share that has been lost.

He said: "Saudi Arabia has changed. We are open for business. There is the new airline, RIA, being established as the second national carrier, but they are also enhancing the business aviation opportunities and infrastructure.

"We will see new business aviation airports being developed in the near future. These will be dedicated to business jet traffic only. No commercial aviation.

"Also, there is a big push for new fixed-based operations (FBOs) in the country. Currently there are only two – Jet Aviation and SPA. There is a big push to open up the infrastructure and open up opportunities for those who want to do business and invest in Saudi Arabia."

Hafiz added that there is currently a big gap in maintenance, repair and overhaul (MRO) capabilities in the kingdom, but said the government was pushing to develop these facilities.

□ □ □ □ □

These expansions are not only to provide services to the industry, but to create employment within the country. "Today there are more than 3,000 jobs in aviation in Saudi Arabia; by 2030 we are aiming for 40,000," he said.

Mohammed Al Bokhari, CEO of Jeddah-based Aviation Horizons, felt that the reason the UAE has grown so strongly was due to investment in the support required.

He said: "The UAE started early and put in place all the infrastructure required. This is what we are doing now. The government is working to attract foreign investors and helping them to develop their business in Saudi."

He said that while the biggest need is for MRO facilities, this is the time and the opportunity to invest in every area of business aviation, including FBOs and parking hangars.

Captain Abdullah Masoud Al Haider, recently appointed advisor for

economical policies & international cooperation with Saudi's General Authority of Civil Aviation (GACA), explained that the authority is in the process of restructuring and changing and will be working with private aviation to develop the industry in a sustainable way.

He said: "One of the targets of the head of GACA is to redevelop general aviation in Saudi Arabia through infrastructure, support of companies and airports, and new rules and regulations, to bring it back to being the best in the Middle East and north Africa.

"We can reach decisions at very short notice, which is fundamental to success, through support from the highest level of the government."

Airports and operators in Dubai and Bahrain are expecting to benefit from the FIFA World Cup in Qatar this November and December, but Al Haider feels that private aviation operators should be looking to Saudi



**Captain Abdullah Masoud Al Haider:** "We can reach decisions at very short notice, which is fundamental to success." PICTURE GACA.

Arabia for repositioning and parking.

He said: "We have a number of airports on the east coast of Saudi Arabia that they have not even considered. Dammam Airport is within minutes of flight time from Doha, and visas are now issued in minutes."

One of the early restructuring steps is the establishment of a full department within GACA to work on introducing sustainable aviation fuel (SAF) into Saudi Arabia. Al Haider said: "We are already working with Aramco and the airport authorities to accomplish that."

□ □ □ □ □

Al Haider has been brought in from the private aviation industry for his first-hand experience and knowledge. He said: "My title is advisor on economical policies and international cooperation. It is not only to restructure within Saudi Arabia; it is also to take a look at the world outside.

"My first step will be to sit with every company and FBO in Saudi Arabia, one on one, and listen to what their problems are and to what their interaction with GACA has been," he concluded. ▲



▼ **We will see new business aviation airports being developed in the near future.** ▲  
**YUSEF HAFIZ**

PICTURE: NASJET.





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MEBAA PREVIEW



Down and safe: Hamish Harding walks away from the Blue Origin capsule. PICTURE: ACTION ADVENTURE.

## ACTION MAN

Action Aviation will be exhibiting at MEBAA in its established role as a business aviation sales and acquisitions consultancy. However, chairman Hamish Harding has been boldly going above and beyond the traditional large jets to explore the future of space travel as a commercial industry. **Jill Stockbridge reports.**

**H**amish Harding tested the space experience for himself as part of Blue Origin's Shepard Rocket fifth manned mission in July.

The Blue Origin journey involves about 10 minutes of space mission, giving passengers a chance to look down on the Earth from above the Kármán line – the boundary between Earth's atmosphere and outer space – see the curvature of the planet, and float around in zero gravity.

Harding said: "You are actually in space by the third minute."

However, this was not his first adventure. In 2021 he travelled to the lowest point on Earth – the Mariana Trench in the Pacific Ocean – breaking records for greatest distance travelled at full ocean depth.

The dive's scientific objectives were to search areas of the Challenger Deep never before visited to look for new species and also signs of human pollution affecting even this most remote area of planet Earth.

Then, two years ago, along with former International Space Station (ISS) commander, Colonel Terry Virts, Harding broke the round-the-world speed record by completing the fastest ever

circumnavigation of the Earth via both the north and south poles.

Harding piloted a Qatar Executive Gulfstream G650ER ultra long-range business jet to record a time of 46 hours and 40 minutes, at an average speed of 465 knots (535mph or 861km/h).

It almost seems logical that his next foray should have been into space.

Addressing the Corporate Jet Investor (CJI) Dubai conference in September, Harding said: "Currently there are three options for space: Virgin Galactic; Axiom and SpaceX; and Blue Origin. Virgin Galactic is the entry-level product. Officially it is \$450,000 for going to space with Virgin Galactic. However, it does not go into the official Fédération Aéronautique Internationale (FAI) definition of space, which is 100km above the Earth. It reaches about 80km, so they are redefining space to say that is where they go."

Harding admitted his bias, but felt that Blue Origin was the more authentic experience.

He said: "Blue Origin goes above the Kármán line, defined as 100km above the Earth. It goes up as a vertical rocket, Mach3, 100,000ft per minute, with lots

of fire and lots of noise. It is a real rocket, whereas Virgin launches from a parent aircraft."

He explained that Axiom and Space X go to the ISS space station and into low-Earth orbit for longer periods.

Blue Origin is also developing a space station, perhaps more suitable for space tourism. Harding said: "Within this decade there will be a second space station to go to, which will be more luxurious, with bigger circumference capsules."

Harding expects that future space tourists will remain in the space station for approximately two weeks, with the first being needed for acclimatisation, and the second being the time for full enjoyment of the experience and the unique view.

However, development of the space tourism as a commercial concern will take time. Both Virgin Galactic and Blue Origin are experiencing delays, and Virgin already has a waiting list of around 1,000 would-be passengers.

Space X costs around \$60 million per seat, so there is a limited number of people young and fit enough to go, but also able to afford the adventure.

But for those with environmental concerns about future space tourism there is good news. There are no carbon emissions from the Blue Origin rocket. Harding said: "It is a truly green rocket. You take liquid hydrogen and liquid oxygen at very low temperatures and combine them to create water. The propulsion is from very high pressure water vapour leaving the bottom of the rocket."



**Hamish Harding:** "Within this decade there will be a second space station to go to, which will be more luxurious, with bigger circumference capsules."

PICTURE: JAMES NEILHOUSE.





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**Spectacular: The UK's Red Arrows will be one of the display teams.**

PICTURE MoD.

**Inset: The static display at BIAS' Sakhir Airbase.**

PICTURE: BIAS.



*This year's Bahrain International Airshow has undergone design enhancement in terms of both facilities and programme, enabling a more people-centric experience.*

**Marcelle Nethersole** found out more from HE Mohamed bin Thamer AlKaabi, Minister of Transportation and Telecommunications.

This year's Bahrain International Airshow (BIAS) will mark 10 years of bringing the aerospace industry together to do business in the country. Organised by the Bahrain Ministry of Transportation and Telecommunications and the Royal Bahraini Air Force, in association with Farnborough International, the event is set to take place on November 9-11 at Sakhir Airbase.

"To mark our 10-year distinction, BIAS' 40 private chalets have been fully refurbished to enhance our clients' experience and maximise comfort," said HE Mohamed bin Thamer AlKaabi, Minister of Transportation and Telecommunications.

"A signature component of our boutique offering, the upgraded five-star setting will enhance the customer experience for chalet-holders and their guests, with the added unique BIAS advantage of panoramic views overlooking the runway with the flying and static displays."

Celebrating the resumption of in-person interaction as the industry starts to regain momentum following a two-year hiatus, BIAS 2022 will feature an expanded thought leadership and knowledge exchange programme, with a daily agenda of forums running concurrently with the show.

"Topics will include airports and aviation; women in aviation; cargo and logistics; and space," said the minister.

## Five-star upgrade marks BIAS' first decade

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**HE MOHAMED BIN THAMER ALKAABI**

"In addition, the fourth biennial Manama Air Power Symposium, organised by the Royal Bahraini Air Force for the world's top air force chiefs and leading experts, will be held the day before the show with an expected 100 participants."

The growth in air passenger and cargo traffic in the Middle East is expected to outperform those in all other regions in the world by 2032, so it is no surprise that the organisers have added a cargo hub to support the growth.

Around 140 companies are expected to exhibit across the defence, space, business and aviation sectors, with those already confirmed including: Airbus, Boeing, Rolls-Royce, Lockheed Martin, UAE Space Agency, BAE Systems, Bell Helicopter, Leonardo, Etihad Engineering, and MENA Aerospace.

BIAS will also host what it promises will be "an impressive static showcase".

"Aircraft on display include F-16, MV22 Osprey, MH-60 Sea Hawk, F-15E, Aermachhi MB-339NAT, A380, A321neo, and Typhoon, with many more to be announced ahead of the show," said Thamer AlKaabi.

Visitors will also be treated to a flying display, which will feature The UK Royal Air Force Red Arrows and Global Stars aerobatic.

The Pakistan Air Force is also participating for the first time with three JF-17 jets as part of the flying and static display.

Thamer AlKaabi said BIAS is testament to the aviation industry in the Middle East getting back on its feet.

"While the past few years have had a negative impact on many countries, Bahrain's business-forward strategy, which led to continued operations throughout the global pandemic, is testament to the country's commitment to harness business continuity across all sectors, spurred by the country's important role as a key access point to the \$1.67 trillion Gulf market, most notably the Kingdom of Saudi Arabia," he said.

"With a regional aviation industry that generates \$130 billion annually for the economy, equivalent to 4.4% of the region's gross domestic product (GDP), continued investment in the sector by all of the GCC members presents growing opportunities for global aviation players."



Things are hotting up: Airline crews operating out of Dubai International Airport are used to the heat, but scientists say climate change is increasing the frequency and intensity of extreme weather.

PICTURE: DUBAI AIRPORTS



## BE PREPARED TO WEATHER THE STORMS

*From flooding to sandstorms and wildfires, extreme weather events linked to climate change are affecting airline operations with increasing frequency, disrupting schedules and reducing the performance of aircraft and engines.*

**Tom Batchelor** reports.

**I**raq has been hit hard by dust storms this year and, since June, vast swathes of Pakistan have been under water after heavier-than-normal monsoon rains – just two examples of meteorological phenomena that scientists say are likely to intensify.

The impact of climate change can also be more subtle, including altered wind patterns or precipitation. Warmer oceans increase the volume of water that evaporates into the air, leading to heavier rain or snow storms.

As a result, airlines are having to adapt, including by reconfiguring their training programmes to prepare crews for the increased intensity and frequency of such weather events.

Climate change guidance issued by the International Civil Aviation Organisation (ICAO) warns pilots may face a range of factors associated with the warming planet, including payload restrictions due to rising temperatures, an increase in clear air turbulence, and more dust storms, which could increase the presence of silicates in jet engines.

Heat buckling runways and taxiways, and even difficulty in cooling the cabin to an acceptable temperature for passengers and crew, also pose a challenge.

The ICAO states that training crews for this new reality “may have an initial financial cost, but by improving resilience, carriers may ultimately reduce overall financial costs”.

Indian carrier, Vistara, which has regular flights to Doha, Dubai and Sharjah, is among the airlines to have modified flight crew training syllabuses.

Captain Hamish Maxwell, the Delhi-based airline’s senior vice president, flight operations, said: “We take into account all sorts of factors, and climate change is absolutely one of those.

“The weather is changing all over the world, and we are training more for adverse weather where we need to. We see more convective weather and a lot more adverse weather in a lot of the regions that we fly to, although we’re not as affected as some other airlines.”

A combination of ground-based training and support from aircraft manufacturers is helping to close any potential skills gaps before they arise, Maxwell said. “We take advantage of simulator training, and the OEMs are able to

offer us additional training capabilities, so we work with them to ensure that our pilots are as well trained as they possibly can be for the environments in which they are operating.”

Extreme heat, a particular problem in the Middle East, may mean that carriers are forced to adapt schedules, for example to ensure that larger aircraft can depart at cooler times, according to aviation analysts CAPA.

Training staff in “the use of meteorological data and in how to react during disruptions” is key, the organisation said.

Low-cost airline, Flydubai, said its operations department “continues to develop” training programmes to ensure its pilots are ready for current and future operating conditions.

A spokesperson said: “Flydubai has an extensive range of pilot training programmes that reflect industry best practices and exceed regulatory requirements. They cover adverse weather conditions and are based on simulator and evidence-based training modules (EBT) that we continuously review and develop.”

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Complementing airline training, technology is also helping pilots operate safely in extreme environments. NAVBLUE, an Airbus company, has developed its RunwaySense service, which allows airlines and airports to assess and report runway conditions by using data from A320 and A330 family aircraft provided by the braking action computation function (BACF).

Airbus highlights South Asian airports, where monsoon conditions are projected to become “even more challenging in the future”, as having the potential to benefit most from the web-based platform.

Airlines are also using software such as CEFA aviation mobile services (AMS) – a mobile service that allows pilots to replay their own flights on a tablet after landing – to enhance crew awareness without needing to wait for recurrent training.

It is in use by major airlines in the Middle East and globally, including Emirates, Gulf Air and Qatar Airways. ▲

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**Brave decision: Vistara, a joint venture between Tata and Singapore Airlines, was one of the few airlines to launch new routes during the pandemic.**

PICTURE: VISTARA.

## SHORTAGE MEANS FIGHT FOR PILOTS WILL HOT UP

*The saying goes that an airline is either short of aircraft or short of pilots – but, as Tom Batchelor reports, supply chain bottlenecks, an unexpectedly rapid recovery in post-Covid domestic and international air travel, and a tight labour market, risk leaving operators in need of both.*

Global management consultancy, Oliver Wyman, warned in August that – outside of North America – the Middle East is expected to be the region affected soonest by an impending pilot shortage, driven by a “projected sharp increase in air travel demand over the next few years”.

The region could face a shortage of 3,000 pilots by 2023 and 18,000 by 2032, the firm said.

That could spell trouble for carriers, not just in the Arab world, but elsewhere in Asia, Europe and Africa, as competition for experienced crew intensifies.

One carrier braced for a potential pilot brain drain to the Gulf is India’s Vistara.

Vinod Kannan, CEO, said a pilot shortage was “likely” in the medium term.

He noted how Vistara would feel the knock-on effect from strong demand for pilots in the Middle East just as the Delhi-headquartered operator’s narrow and wide-body fleet grows, with more than 20 new airframes to be added to the fleet by the end of 2023.

“Over the last few years there have been no pilot recruitment issues because, obviously, the world has gone through the pandemic. But now, particularly with the Middle Eastern carriers, I think that it will come back again,” he said.

Asked if he saw trouble down the line in terms of those airlines recruiting Indian pilots, the former Singapore Airlines executive of more than two decades said: “Yes, but at least for Vistara we have not seen a mass exodus yet. We haven’t seen a huge attrition for pilots. We’ll have to see as the situation evolves, but we’ve been running direct entry pilot campaigns and we’ve been able to get a good level of interest.”

Vistara expanded internationally throughout the pandemic, launching flights to London, Paris and Frankfurt.

More recently, it has boosted its operation in the Middle East.

Vistara, a joint venture of Tata and Singapore Airlines, was scheduled to begin operating non-stop daily flights between Mumbai and Abu Dhabi as *Arabian Aerospace* was going to press. It had already launched flights to Jeddah from the same Indian city, operating three times weekly, in August.

Kannan explained: “We’ve expanded quite significantly over the last few years despite the pandemic – and the Middle East is an important part of that.

“There are places in the Middle East where we believe there is enough demand to make it work. If you cast your mind back three years, Jet Airways used to have a lot of operations in the Middle East and it was a full-service carrier.

“Some of that demand is now being channelled through low-cost carriers or to other non-Indian carriers, but I think there will be enough there for an Indian full-service carrier, especially of the calibre of Vistara.”

With higher pay and attractive benefits packages, Arab carriers have not struggled to poach Indian captains and first officers. Emirates is currently advertising flight deck roles to pilots working in India, and Qatar Airways announced in September it was launching a recruitment roadshow in Delhi and Mumbai.

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Commenting on the hiring spree, Qatar Airways Group chief executive officer, Akbar Al Baker, said: “Qatar Airways has always had a special bond with India and, with this recruitment drive, we are further solidifying our commitment to the market.”

Training capacity is another headache that Kannan and his industry colleagues must confront. Vistara recently inducted its third Boeing 787-9, enabling increased frequencies to France and Germany, and the Vistara CEO said this would lead to training requirements “ramping up”.

Conversations are well under way with training providers about how the increased demand can be met. Vistara already has relationships with the Flight Simulation Technique Centre (FSTC) near New Delhi, and with CAE, though there is uncertainty around domestic training capacity if the post-Covid recovery in air travel continues on its current trajectory.

While Indian training providers remain Vistara’s preference, Kannan acknowledged that his new 787 pilots may be forced to train abroad if local academies become oversubscribed.

“Our training requirements are growing slowly again now with the 787,” he said. “The training provider will either be in India or overseas if there’s not enough capacity.

“On the narrow-body A320 fleet, command upgrades are due to start, but we can manage that with an Indian provider because for that type there is enough capacity.” ▲

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# Saudi boosts modification alliance

As demand for aircraft modifications and cabin refits builds, the Independent Aircraft Modifier Alliance (IAMA) has expanded its membership and geographical footprint into Saudi Arabia. **Chuck Grieve** reports.

**S**audi Arabia's ambitions to expand its aerospace capabilities have taken an important step forward with Saudia and Saudia Aerospace Engineering Industries (SAEI) joining the international standard-setting IAMA.

In line with the kingdom's 'vision 2030' blueprint for industrial development, SAEI has already announced a "greenfield investment" in a multi-bay facility for wide-body MRO and modifications, notably passenger-to-freighter (P2F) conversions of Boeing 777 airframes from the Saudia fleet, working with Mammoth Freighters.

IAMA said the national carrier and its technical arm bring additional high-profile Middle East and north Africa voices to IAMA's diverse group of stakeholders advocating for modifications completed via supplemental type certifications (STC).

Etihad Engineering was a founding member, and other regional MROs are believed to be weighing up the advantages of access to the alliance's resources and expertise and its audited mark of quality.

The alliance currently has 12 members, plus 10 airlines, operators and lessors registered as subscribers.

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Welcoming the two Saudi Arabian companies, Nina Schulz, IAMA managing director, said the alliance is working to attract stakeholders from across the world "to represent the needs and strengths" of the global aviation modification market.

"You need much more than the STC approval granted by an authority for a successful STC project," said Schulz. While the approval signifies compliance with airworthiness requirements, IAMA adds "another layer" of considerations to satisfy the needs of operators and owners.

"An IAMA-endorsed STC gives operators and owners confidence in their MRO's operational excellence."

Etihad Engineering recently became the first MRO in the Middle East to gain this important IAMA endorsement, for



**Nina Schulz:**  
"An IAMA-endorsed STC gives operators and owners confidence in their MRO's operational excellence."  
PICTURE: IAMA

an Airbus A320/A321 passenger cabin reconfiguration carried out under an STC first approved in 2019.

The modifications applicable to A320-232 and A321-231 models include replacing C1/C2 stowages with windscreen partitions, removing two rows of seats and re-pitching as per post-modification layout of passenger accommodation (LOPA).

Saudia's status as an IAMA subscriber gives the airline access to the alliance's burgeoning resource library and the IAMA rulebook, which cover an extensive range of topics, including asset preservation, de-modification, 'right to use' and the complexities around STCs.

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SAEI, as a member, can take advantage of critical educational resources, guidance and expertise. The prime consultancy and fulfilment organisation for Saudia's modification campaigns, SAEI also commits to complying with the IAMA rulebook – the alliance's standard.

SAEI serves regional and global clients from a network of more than 50 locations worldwide and is expanding into its state-of-the-art MRO operation at King Abdul-Aziz Airport, near Jeddah, with a design office, among other capabilities.

Abdulhamid N Aldosary, director, APC and engineering support at SAEI, said: "IAMA's founding members are highly regarded in the aviation modification market. Our vision is to be the partner of choice and a catalyst for aviation's success in Saudi Arabia and globally."

"We are thrilled to join the alliance and contribute lessons learned from our experience and strengthen our operations through IAMA's collective expertise and the high standards they advocate and defend."

IAMA was founded three years ago by retrofit market leaders who believe that an independent, transparent market benefits all. The alliance collaborates to develop standards that streamline communications and documentation within approved STC modification projects. ▲



## RECORD REFURB FOR EMIRATES CABINS

Emirates starts an ambitious retrofit programme this month on its world-leading fleets of Airbus A380 and Boeing 777 aircraft.

In doing so, it has changed tack and embraced premium economy with a multi-billion-dollar cabin upgrade to 120 aircraft.

The Dubai-based carrier says the work will be carried out in-house and completed in "record time" – one aircraft every 16 days.

The airline says nearly 4,000 new premium economy seats from Recaro, the German seat designer based near Stuttgart, will be installed by 2025, along with refurbishments and upgrades to first and business-class seats.

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OneWeb's in-flight connectivity solution – claimed to be a “watershed moment” by the company – is on track for service introduction in mid-2024. **Steve Nichols** reports.



Pathfinder: The OneWeb/Stellar Blu test-flight took place on a Boeing B777-200LR.  
PICTURE: ONEWEB.

## Spinning the web all around the globe

**O**neWeb in-flight connectivity (IFC) is a step closer to full commercial introduction with distribution partnership agreements now signed with Intelsat, Panasonic Avionics and Eutelsat.

Ben Griffin, OneWeb vice president, mobility services, said the company is also in dialogue with major original equipment manufacturers (OEMs) to make it line-fit available on new commercial aircraft.

“We now have agreements that cover 80% of the commercial market and are on track for service introduction in the middle of 2024,” Griffin said. “We aim to have full global coverage by the end of next year.”

At the time of writing, the company's next launch of 36 satellites was due to take place in India. With this launch, OneWeb will have more than 70% of its planned Gen 1 low-Earth orbit (LEO) constellation in orbit delivering high-speed, low-latency connectivity services around the world.

A SpaceX launch this month should loft a further 30-plus satellites.

OneWeb's new global distribution partnership agreements claim to offer airlines seamless IFC with what it says is the best combination of performance, coverage and reliability on the market.

While the existing Ku-band offers a vast installed base of aviation users, fast speeds and up to about 85 degrees coverage north and south of the equator, OneWeb's LEO satellites offer truly global coverage with low latency.

OneWeb says that airlines and their passengers will no longer have to accept significant gaps in IFC coverage or capacity, even at busy hubs, across oceans, and over polar

routes, as it will seamlessly manage connectivity, allowing passengers to remain connected no matter where they are.

Griffin said: “This is a watershed moment for the IFC market and we're excited to work together with our partners to bring our multi-orbit solution to commercial aviation.

“We're committed to delivering the most differentiated and innovative solution for airlines.

“We are proving that, through the power of partnership, a superior suite of multi-orbit capabilities can be offered to better serve the growing connectivity needs of the commercial aviation industry, delivering the highest value coupled with the lowest risk.”

OneWeb and Stellar Blu (formerly GDC Advanced Technology) demonstrated the LEO satcom service back in May. The first test-flight was conducted aboard a Boeing B777-200LR and took off from Fort Worth Alliance Airport (KAFW), in Texas, flying for a little more than an hour.

It simultaneously demonstrated the ability to connect MS Teams calls, 4K YouTube streaming, Netflix, online VR gaming, and Nintendo Switch gaming, among other structured performance tests.

Maximum speeds of 260Mbps download/80Mbps upload and file transfer scenarios of 5GB demonstrated in approximately 20 seconds were achieved, all while operating at less than 100ms of network latency.

□ □ □ □ □

“This successful flight-test demonstrates the power, not only of the OneWeb network, but also our industry-focused and partnership-led approach to the design, development, and deployment of ground-breaking technologies to connect commercial aviation. It's a solution designed for the aviation industry, by the aviation industry,” said Griffin.

OneWeb also recently announced that it plans to merge with geostationary satellite giant, Eutelsat.

Eutelsat Communications and key OneWeb shareholders have signed a memorandum of understanding (MoU) with the objective of creating a leading global player in connectivity through the combination of both companies in an all-share transaction. Eutelsat will combine its 36-strong fleet of GEO satellites with OneWeb's constellation of 648 LEO satellites, of which 428 are currently in orbit.

The transaction would be structured as an exchange of OneWeb shares by its shareholders (other than Eutelsat) with new shares issued by Eutelsat, such that, at closing, Eutelsat would own 100% of OneWeb (excluding the ‘special share’ of the UK Government). OneWeb shareholders would receive 230 million newly issued Eutelsat shares representing 50% of the enlarged share capital.

The potential transaction builds on the collaboration between Eutelsat and OneWeb, which began with the equity stake acquired by Eutelsat in OneWeb in April 2021. ▲

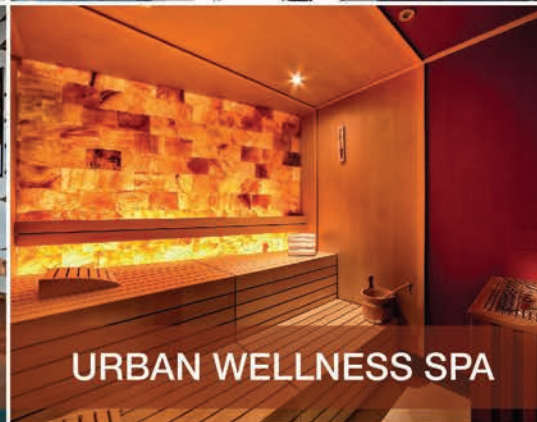
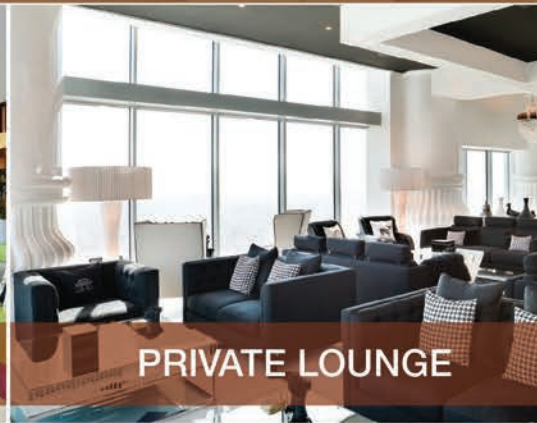




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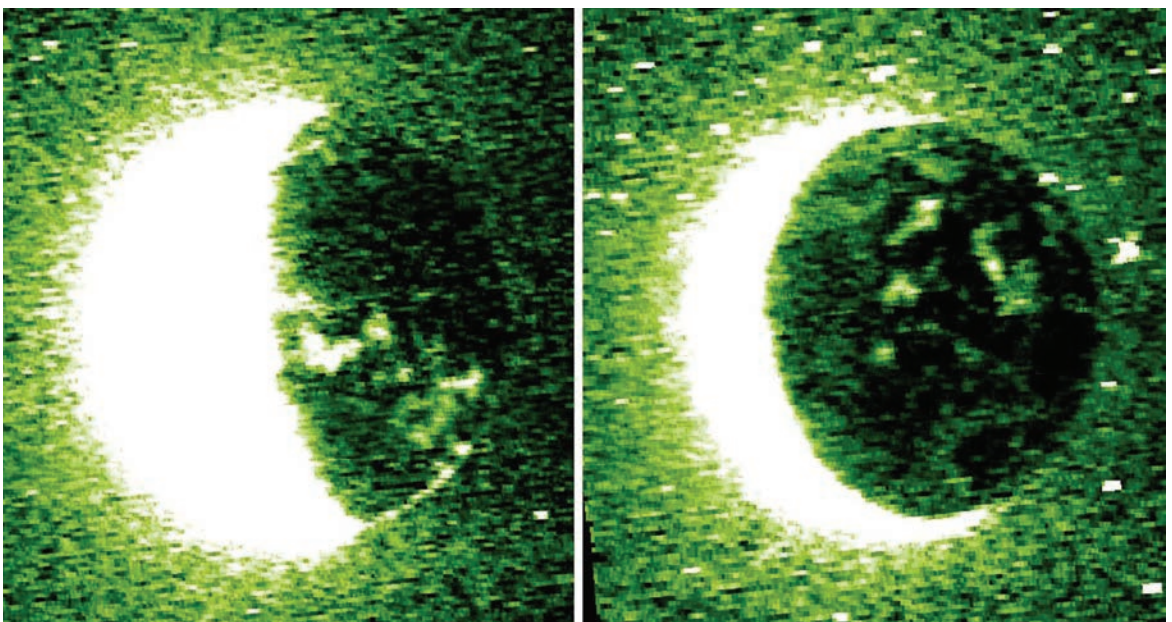
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The UAE's Hope Mars mission has discovered an interesting new type of aurora around the Red Planet. **Steve Nichols** reports.



Other-worldly: Auroras on Mars photographed by the Hope spacecraft. PICTURE: EMIRATES MARS MISSION.

# Hope's Mars discovery is blowing in the wind

The Dh735m (\$200m) Emirates Mars mission was launched in July 2020 from Tanegashima, Japan. The Hope spacecraft has been orbiting the Red Planet since February 9, 2021 and is currently the jewel in the UAE's crown in terms of space activities.

The mission's three main objectives were to develop the science and technology sector in the emirates, develop UAE-scientific capabilities, and increase the country's contribution to the global science community.

Now, Hope's Emirates Mars ultraviolet spectrometer (EMUS) has detected 'patchy' proton auroras, which were unexpected.

Auroras first appeared with NASA's Mars Atmosphere and Volatile EvolutionN (MAVEN) mission, and subsequently showed up in data from the European Space Agency's Mars Express.

The auroras are believed to be caused by interaction between Mars' atmosphere and the solar wind emanating from the Sun. As incoming protons from the Sun, moving at about 400-600 kilometres per second, hit the upper atmosphere and slow down, ultra-violet light is released.

As Mars doesn't have a magnetic field like Earth, these auroras are not concentrated at the planet's poles, but appear all over the planet.

However, scientists were surprised to discover the patchy nature of some of the aurora, which suggests another force may be in play, such as unexpectedly chaotic conditions where the solar wind interacts with the Red Planet's upper atmosphere.

Hope and MAVEN have now provided a comprehensive view of what is occurring in Mars' upper atmosphere.

Hessa Al Matroushi, Hope's lead scientist, said: "Access to MAVEN data has been essential for placing these new observations into a wider context."

▼ The auroras are believed to be caused by interaction between Mars' atmosphere and the solar wind emanating from the Sun. ▲

"Our discovery of these patchy proton auroras adds a new kind of event to the long list of those currently studied by the Emirates Mars mission and challenges our existing views of how the proton auroras on Mars' dayside are formed. Together, we're pushing the boundaries for our existing knowledge, not only of Mars but of planetary interactions with the solar wind."

While these two spacecraft showed uniform auroral emissions across the dayside of Mars, the Emirati probe spotted blotches, adding key details about the aurora on the planet.

By getting a complete view of Mars' upper atmosphere, scientists can perform investigations into its history and how it functions today. Previous missions have continuously found evidence that suggests Mars was wet and warm at some point in its past. Then the planet experienced atmospheric loss, leading to the desolate desert world we see today.

This auroral work may prove to be invaluable as Earth could suffer the same fate as Mars at some point in the distant future.▲

## STUDY TO FOCUS ON UAE SPACE SECTOR

The UAE Space Agency launched a survey in September to measure how the space sector has contributed to the national economy.

The study will focus on the number of companies working in the sector, foreign investment, and the total spending on space projects. It will also look at efforts to invest in research and development and space exploration, as well as the number of people employed in the sector.

Sarah Al Amiri, Minister of State for Public Education and Future Technology, and chairwoman of the UAE Space Agency, said: "The survey is an important tool that helps in

enhancing the decision-making process and drawing up strategic policies, as well as contributing to economic indicators, in addition to preparing national space plans and programmes."

She added that the results would also support the work of start-ups and small and medium-sized companies, and boost research projects.

Figures from 2019 show the UAE's investments in space exceeded Dh22 billion (\$5.99bn), with 57 space-related establishments operating in the country, helping to create 1,500 jobs. ▲





The big bang: Av Lease was launched at the Farnborough International Airshow with a sale-and-leaseback deal for 12 Airbus A320neos with Flynas. PICTURE: AVILEASE.

## AviLease flags up Saudi ambitions

*The launch of Saudi Arabia's AviLease in July signalled another significant move by the kingdom as it gears up its air transport sector to drive traffic in support of the 'vision 2030' strategy. Mark Pilling reports.*

AviLease, which aims to become a leading global aircraft operating lessor, is another example of Saudi Arabia's expanding aviation ecosystem, and will likely not be the last.

Over the past year or so, flag-carrier Saudia has launched a raft of new services from Jeddah, low-cost player Flynas is growing its fleet and network in Riyadh, the Saudi air connectivity programme has been incentivising carriers to add routes to serve the kingdom, and a major new Riyadh-based international carrier is in the works.

Saudi Arabia is investing in air transport at an astonishing pace.

It is surprising that a country as wealthy as Saudi Arabia has taken so long to enter the lucrative aircraft leasing business at scale. AviLease has been launched by the kingdom's public investment fund (PIF), "one of the largest and most impactful wealth funds in the world", counting its assets under management at the end of March 2022 at approximately \$620 billion.

□□□□□

Saudi Arabia is the latest wealthy country to move into the aircraft leasing market, coming around a decade after Chinese money began entering the sector in a major way with the formation of numerous lessors in that country.

Analysts expect AviLease to follow a similar route and build scale and market share in an aggressive expansion

that has the potential to disrupt the air finance market. It said it will also manage third-party equity for investors looking to allocate capital in aviation assets.

The company's vision is to become a top-tier lessor, starting with deals in Saudi Arabia and then moving into the global market. Its first deal was announced at the Farnborough International Airshow in July with a sale-and-leaseback deal with Flynas for 12 new Airbus A320neos to be delivered in 2022 and 2023.

Speaking at the launch, Bander Almohanna, chief executive officer and managing director of Flynas, said: "The agreement will help our ambitious efforts to support the national aviation strategy, which aims to increase the annual passenger traffic to 330 million and connect Saudi Arabia with more than 250 destinations worldwide by 2030."

Edward O'Byrne, chief executive officer of AviLease, added: "Our company has global ambition and the robust financial backing of PIF. We are ready to capitalise on the strong and growing Saudi market to scale rapidly and become a leading aviation lessor."

O'Byrne was named as the head of AviLease in June. He is an experienced air finance industry executive, who spent nearly three years as managing director and co-head of aviation at Carlyle Aviation Partners and, prior to that, was chief investment officer at leading lessor AerCap for 11 years.

□□□□□

There are several heavyweight air finance names behind AviLease, with David Power, a former CEO of major lessor Orix Aviation, and Alec Burger, the former CEO of GECAS, among its board members.

Moreover, the launch of AviLease has been supported by global aviation consultancy, Plane View Partners, which was co-founded and is chaired by Henri Courpron, the former CEO of International Lease Finance Corporation.

PIF said that AviLease will grow through more sale-and-leaseback deals, secondary portfolio acquisitions, direct orders from the aircraft manufacturers, and corporate acquisitions. The plan is to focus its fleet growth on the latest generation narrow-bodies and wide-bodies.

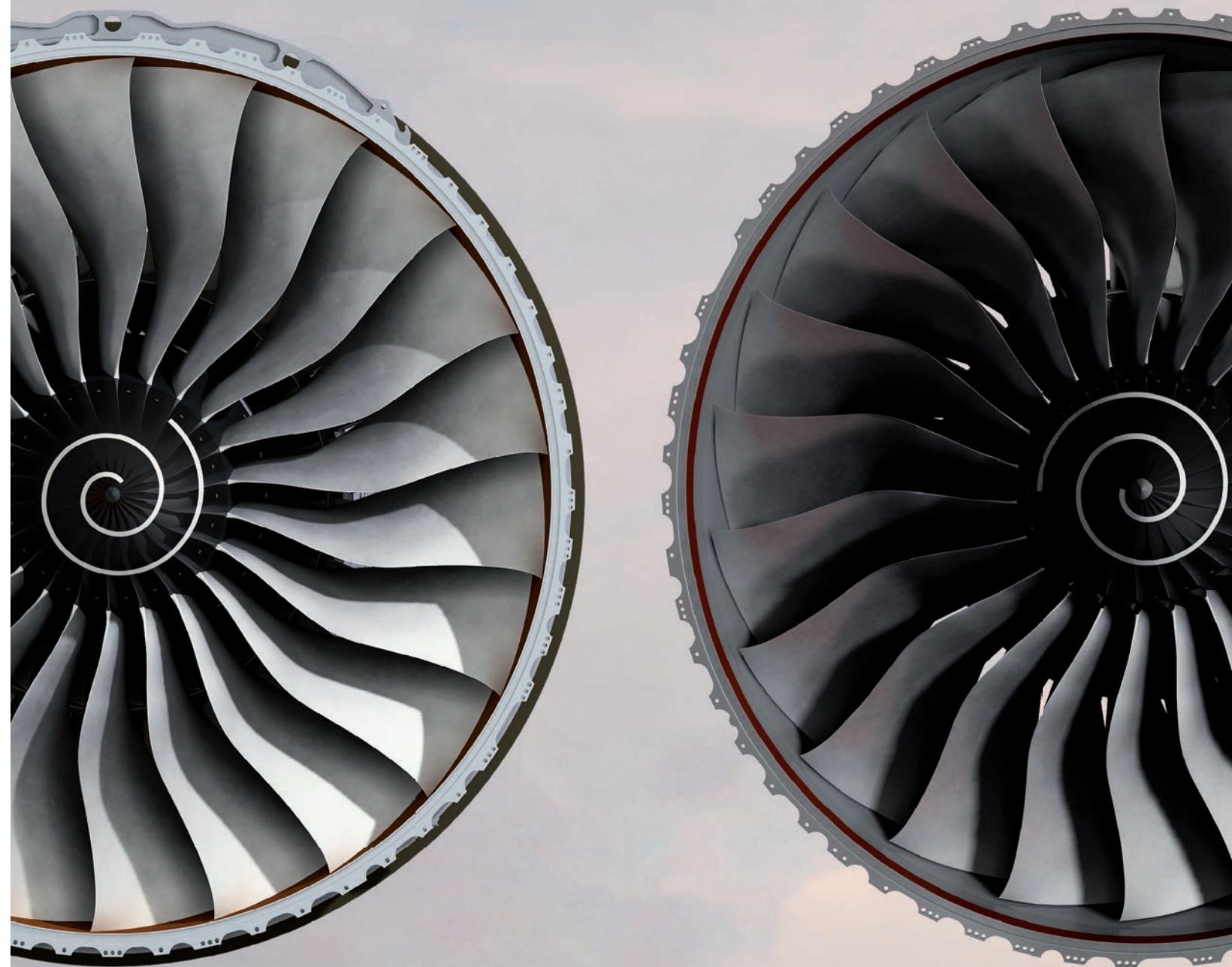
Based in Riyadh, AviLease plans to "become a national champion in the aircraft leasing market" and "will contribute to the reduction of value leakage for Saudi Arabia". Its launch "underlines PIF's mandate to unlock the capabilities of promising sectors locally that can help drive the diversification of the economy and contribute to non-oil GDP growth", explained PIF.

Within a couple of years, it could be that PIF-backed AviLease will advance to become a significant global player, possibly even breaking into the top ten of lessors worldwide. ▲



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## Barbara Baumgartner

Marcelle Nethersole speaks to the managing director of FAI rent-a-jet.

### Can you tell me a little about FAI rent-a-jet?

The award-winning FAI Aviation Group is a global provider of mission-critical aviation services.

The 35-year-old company offers fixed-wing air ambulance, special missions, VIP charter, aircraft management, and full MRO services.

FAI has retained a sales and logistics office in Dubai for more than 20 years. It employs local staff and maintains its own medical infrastructure.

In 2019, FAI received a 10-year anniversary award from the Middle East and North Africa Business Aviation Association (MEBAA) reflecting the fact that 20 % of its flying activity is now in the Middle East. It was also honoured with an aviation annual achievement award, in recognition of its 30 years of air ambulance and special mission flying.

FAI offers an extensive regional network and, importantly, a thorough understanding of the special characteristics of the region. Equally, it supports its head office in Nuremberg, Germany, with all the logistical requirements for its growing international customer base as it has done for many years across the region's crisis areas of Afghanistan and Iraq.

### What fleet does the company have and are any aircraft based in the Middle East?

FAI Aviation Group operates Germany's largest fleet of Bombardier business jets, which brings with it significant operational and cost benefits.

Its current fleet comprises five Bombardier Global Express, one Bombardier Challenger 850, six Challenger 604s, nine Learjet 60s, and one Premier 1A light jet.

FAI's preferred hub in the region is the dedicated business aviation airport, Al Bateen Executive, in the UAE.

Close access to Emirates and Etihad airlines enables efficient crew changes and also provides logistical support for our Asian business operation.

### Tell me about your participation at the Bahrain Airshow?

We are proud to be exhibiting at the show at Booth D10, where we will be promoting FAI's VIP charter and air ambulance services, as well as other core services in general aviation, such as aircraft management, maintenance, and refurbishment for Bombardier aircraft.

The company will also be promoting the expansion of FAI Technik, its dedicated and expanding maintenance division at its company headquarters in Nuremberg, which specialises in Bombardier Business Jet MRO.

Our interest in the region was further heightened in 2017 by a significant minority stake investment in FAI by Bahrain Mumtalakat Holding Company (Mumtalakat), the sovereign wealth fund of the Kingdom of Bahrain, further opening up the Middle East market.

### Can you tell us more about FAI's long-range air ambulance market in the Middle East?

For many years, FAI has maintained a leading position in the long-haul air ambulance sector. More than half of our patient transport routes are in the ultra-long-range category, which includes missions of more than 3,200nm, with more than a quarter in excess of 5,400nm.

With many Middle Eastern customers sending patients to the US or the Far East for medical treatment, we are pleased to be the preferred partner for these missions.

### What makes an FAI flight experience special?

First and foremost, our outstanding safety record is an absolutely essential component of our service.

FAI was proud to receive the diamond safety of flight award from the European Business Aviation Association (EBAA) in May 2018, marking the highest safety recognition awarded by EBAA to member companies operating business aircraft for 50 years or 100,000 hours without accident.

Secondly, outstanding customer service is a key feature of the FAI experience and it is what sets us apart from our competitors.

### What does a typical day look like for you?

I oversee a 13-strong team in our branch office in Dubai with a remit to manage charter sales, operations, and our UAE-based medical teams, as well as drive business development, planning, budgeting and ongoing customer service to increase satisfaction and retention.

Flying intensive care patients around the world also brings a lot of challenges – the preparation of such missions are very specific to each patient, depending on their medical condition.

This requires a lot of logistical planning and, most importantly, clear communication with all parties involved.

The rigorous training of my team for such missions is an important part of my daily routine and requires ongoing training.

My 20-plus years of experience with FAI and air ambulance operations to/from the Middle East has proved to be invaluable each and every day.



PICTURE: FAI RENT-A-JET

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