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Boeing bullish about prospects as 777X gets off to flying start

Dominic Perry

Boeing is staying confident on the timeline of its 777X as the big-twin arrives for its Dubai air show debut, even as the boss of the programme's biggest customer, Emirates Airline, continues to voice his concerns about the widebody.

Emirates president Tim Clark has repeatedly expressed his frustrations about a lack of information from Boeing about the 777X's development status and when the carrier might receive its first aircraft.

But in a pre-show briefing yesterday, Ihssane Mounir, senior vice-president for commercial sales and marketing, said Boeing was on course to hand over the initial example in late 2023.

Boeing's four-aircraft 777X test fleet has now accumulated 1,700h across 600 flights and is "doing well – we are seeing it performing as predicted", says Mounir.

However, he offers no clarity on the status or timeline for the smaller but longer-range -8.

While the -8 was always seen as the second member of the widebody's family, it may now be pushed behind a freighter variant, should Boeing launch that product.

Mounir says the airframer is in "pretty advanced discussions with a number of customers" regarding the freighter, which "looks very good from a design and requirements standpoint". But he says Boeing is "not yet at the point" where it is ready to launch the programme.

Nonetheless, that point may need to arrive soon if Boeing wants to continue building factory freighters. ICAO emissions regulations due to come into force in 2027 will mean an end to production of the 767F and current 777F if the manufacturer cannot secure exemptions.

Mounir says there is sufficient time to develop a freighter variant of the 777X, but that it is also "building contingency plans" and conducting "other product evaluations" for the cargo market.

The 777X took part in rehearsals for the flying demonstration yesterday.

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Dust the job

GE Aviation has completed dust-ingestion testing on its new GE9X engine for the Boeing 777X, as the propulsion firm prepares the turbofan for service entry in 2023.

Performed at the manufacturer's facility in Peebles, Ohio, the trial saw the 110,000lb-thrust (489kN)-class powerplant run for a total of 1,600 cycles while a stream of dust particles was injected into the engine.

"We really put it to the test," says Karl Sheldon, programme manager for the GE9X. But borescope inspections of the turbofan after 1,500 cycles "looked really good", he says, "particularly the hot section".


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Showing its flare: A UAE air force Boeing C-17 demonstrates its countermeasures system in the skies over the air show during yesterday's practice session.

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Armed up B-350 unveiled at show

Turboprop from Abu Dhabi start-up Calidus comes with 12 under-wing hardpoints and fuselage-mounted EO/IR sensor

Craig Hoyle

Abu Dhabi-based Calidus has unveiled its heavily-armed B-350 at the show, with the two-seat platform capable of carrying a broad variety of air-launched weapons.

Believed to be powered by a Pratt & Whitney Canada PW127C turboprop, the two-seat design boasts 12 under-wing hardpoints, along with an electro-optical/infrared sensor turret beneath its fuselage.

Armament options include laser-guided bombs, air-to-surface missiles, unguided rockets and air-to-air missiles.

The United Arab Emirates air force is launch customer for the smaller Calidus B-250 armed turboprop, with 24 of the P&WC PT6A-powered type on order. The in-development model is on show alongside its larger sibling, carrying dummy Halcon Desert Sting 16 air-to-surface missiles and Thunder P32 guided bombs.

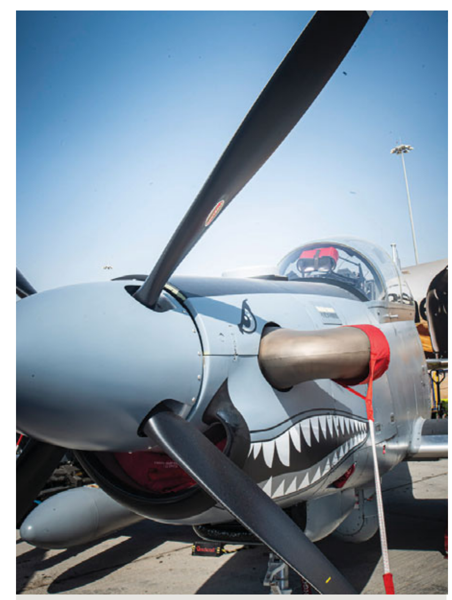
BillyPix

Gulfstream puts faith in Empire

Gulfstream has appointed Dubai-based Empire Aviation as its international sales representative for aircraft sales in India.

Under the agreement, the aircraft management and charter specialist will be "responsible for promoting and supporting Gulfstream with customers and prospects" in the country.

"As interest in the Gulfstream family of aircraft grows throughout India, we wanted to ensure we have local representation that not only possesses significant experience dealing with Gulfstream aircraft, but can also deliver a personal approach befitting the number one in business aviation," says Scott Neal, senior vice-president of worldwide sales at Gulfstream.



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Bangkok bites first for Wolverine

Textron Aviation Defense has secured its first international buyer for the Beechcraft AT-6 Wolverine, with the Royal Thai Air Force (RTAF) to receive eight of the armed turboprops.

Bangkok has signed a $143 million contract to acquire the type, which is on static display at the show (*above*).

To be designated the AT-6TH in Thai service, the aircraft will replace already-retired Aero Vodochody L-39s for duties including border security and counter-narcotics tasks, Textron says. It adds that following a competitive evaluation, its model was selected due to its "best cost, schedule and performance".

Also covering the provision of personnel training and support equipment, the deal will see deliveries made to Chiang Mai air base from 2024.

The US Air Force was launch customer for the Wolverine, and has so far received its first of two on-order examples.

Faury fired up for future

Airbus

Airbus chief says air show taking place proves industry is back on front foot

Dominic Perry

This year's Dubai air show stands as a book-end to the deepest and most abrupt crisis ever seen by the commercial aviation industry. Its previous edition – in November 2019 – was the last major gathering before the Covid-19 pandemic, and 2021's event will be the first time the aerospace industry has been able to congregate since.

That the show is taking place, says Guillaume Faury, Airbus chief executive, is "a very clear, significant signal that [the industry] is on the front foot again".

Faury was barely a year into the top job at Airbus when the crisis struck, throwing plans for ambitious rate rises into reverse.

Just a couple of weeks before the pandemic engulfed air transport, Airbus had foreseen a "clear path" to A320-family monthly build rates of 65 aircraft in 2023, and it is again referring publicly to this target – and potentially higher output – while suppliers, put through the wringer by the downturn, openly question whether the airframer has thought its ambitions through.

"I always sympathise with my suppliers, especially when they are large suppliers," Faury tells *Flight Daily News* on the eve of the show. "But I don't necessarily share their views."

While Airbus is examining monthly rates of 70-75, engine manufacturer Safran, partner in the CFM International venture, and Pratt & Whitney and Collins Aerospace parent Raytheon Technologies have questioned the wisdom of ratcheting beyond 65.

"We are sharing information with them now," says Faury. "They want to know how long rate-70 or -75 would last and how the investment will be made. "From that perspective, I sympathise. But there's another reason I don't: we see the demand. The demand is large enough to more than justify the ramp-up and the need to go to bigger rates."

Faury indicates Dubai will allow Airbus to highlight its A350 freighter, the configuration for which, he says, has been frozen.

"I think it's fair to say we have not been a real freighter player in the widebody market – we touched it a bit," he says. "Here it's a very different approach to the market. We are really serious about it."

Freight focus

Its genesis has been driven by customer requests, he says: "They knocked at the door and said, 'You have a great A350 why don't you do a freighter?'"

The freighter will be "very close" to the A350-1000 and developed "mainly from the -1000's bricks", he says: "Not all of them – we'll take some of the -900."

Faury acknowledges that some customers are enquiring after an A321neo freighter, but he indicates the airframer's single-aisle priorities are the ramp-up and entry into service of the long-range A321XLR.

Airbus is reorganising its aerostructures operation to prepare for future propulsion, having backed use of hydrogen as fuel. Although Faury says the airframer will "not stop looking at conventional aircraft", it "has to look at new configurations on top" as the airframe will play a different role.

It will be "the very core" of the product, he says, likening it to a car chassis over the evolution to hybrid and electric power, encompassing energy storage and management.

Airbus also builds military aircraft – on its own, like the A400M, and as part of the Eurofighter consortium – and is the biggest supplier of civil and parapublic helicopters.

These divisions are dwarfed by the commercial operation. But Faury, who cut his teeth at Airbus Helicopters, insists the division is still "essential" to the group, despite its modest size. "Helicopters is an entity that makes sense," he says, contributing around €6 billion of revenue annually, while serving as a place for technological and management development.

Airbus recently revealed its strategy for the UAM market, with its CityAirbus NextGen multicopter – a project led by Airbus Helicopters – due to make a maiden flight

> "The demand is large enough to justify the ramp-up"
>
> **Guillaume Faury** **Chief executive, Airbus**

in 2023, potentially leading to certification around two years later.

Conceding that Airbus will be a year or two later to market than rivals, Faury is unconcerned, pointing out that "the same boxes need to be ticked by everyone"; within Airbus the belief is that "we are at the right pace".

He says the company does not "necessarily need to be the first one to enter a product into service" but, because it is Airbus, "it has to be the right product".

For the defence business, two multinational development efforts are areas of increased focus: the EuroDrone and the Future Combat Air System.

While the EuroDrone – a twin-turboprop medium-altitude, long-endurance unmanned air vehicle – is relatively simple, the FCAS bristles with complexity. It envisages a sixth-generation fighter, loyal wingman-type UAVs and associated systems, and was a project initially led by France and Germany, subsequently joined by Spain.

Balancing act

It has not been a smooth ride so far: the delicate balancing act required to forge consensus and share work evenly – between Dassault Aviation for France and Airbus for Germany – was upset by Airbus-represented Spain's incorporation.

Dassault, which is leading development of the manned fighter, has voiced concerns around dilution of its workshare and intellectual property issues.

But with contracts signed earlier this year paving the way for phases 1B and 2 of the programme, some equilibrium seems to have been reached. Faury admits there have been "tensions", but says these are expected between ambitious high-tech companies that see FCAS as key to their future.

"We have come such a long way together since we started a couple of years ago that it's quite impressive what we are doing between Dassault and Airbus; that is something which, in my view, is extremely positive," he says.

"No single country is able to put together, to design, and produce an ecosystem of that complexity and magnitude", he says, so the multinational project "is here to stay".

Aurus corporate jet version of Superjet 100 on display

BillyPix

Russian pair make show debut

The arrival of Russia's domestically powered Irkut MC-21-310 at Dubai marks the international show debut for the twinjet and its Aviadvigatel PD-14 engines.

The PD-14-powered MC-21-310 first flew in December 2020, complementing the -300 variant which is fitted with the Pratt & Whitney PW1400G.

United Aircraft flew the MC-21 some 3,700km to Dubai from the test airfield at Moscow Zhukovsky, where the jet has been undergoing certification.

The aircraft is partially configured with business- and economy-class seating for the show.

"This allows us to demonstrate one of the advantages of the MC-21 – an increased space between the seats, provided by the widest fuselage in its class," says United Aircraft parent Rostec.

It had previously shown off the MC-21-300 at the Istanbul Teknofest show in 2019.

Rostec has also co-operated with the Russian luxury car brand Aurus – which has close ties with the United Arab Emirates, through Abu Dhabi partner Tawazun – to develop a corporate version of the Sukhoi Superjet 100.

Irkut has absorbed the Superjet programme as part of the broad restructuring of Russian aviation manufacturing. The Aurus Business Jet will complement the Aurus version of the Kazan Ansat light helicopter, which was presented at the Moscow MAKS 2019 air show.

Rostec says the business jet, with an enhanced fuel system featuring extra capacity, has a range of 7,200km. "Potential customers will see a comfortable cabin designed and installed in Russia, as well as optional solutions that expand the aircraft's capabilities," it adds.

Russian trade minister Denis Manturov has reportedly stated that the VIP-configured aircraft will be certified next year.

FLIGHT DAILYNEWS

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EMS joins business aviation community at Al Maktoum

Dassault-owned ExecuJet MRO Services is to move its Dubai heavy maintenance operation from Dubai International (DXB) to the city's Al Maktoum airport (DWC), the home of the air show.

EMS – which parent company Luxaviation divested from the ExecuJet aircraft management and handling business in 2019 – will move into the new-build hangar in the second quarter, says Nick Weber, regional vice-president Middle East.

The company has carried out maintenance, repair and overhaul activities at Dubai's original airport since 2006, originally specialising in Bombardier aircraft. It currently shares a facility with its former sister company in the airport's free zone.

Ahead of its move to Al Maktoum, EMS has opened a smaller line maintenance facility at the second airport, close to the airport's fixed-base operations and the business aircraft ramp.

While DXB remains Dubai's hub airport, the authorities have been persuading business aviation operators for much of the past decade to relocate to the new Dubai South commercial development that surrounds Al Maktoum airport. Firms such as DC Aviation Al Futtaim, Lufthansa Technik, Jetex and Falcon Aviation have facilities there.

"More and more business jet activity is shifting to DWC, partly driven by the airport authority and FBO incentives such as reduced airport landing and parking fees," says Weber.

Although EMS is owned outright by Dassault, it provides maintenance to other manufacturers including Bombardier, Embraer and Textron Aviation's Hawker brand. "While Dassault are promoting their presence in the region, they have made it clear that we must not lose focus and must continue to support other OEMs," says Weber.

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The new-build hangar will house EMS' Dubai heavy maintenance operation

Arab airlines seek travel pain relief

Carriers' AGM seeks government action to standardise rules on borders and biosafety for a 'new normal' of endemic Covid – and pleads for a ramp-up in SAF production

Graham Dunn

Arab airlines adopted resolutions calling for government action to recognise global standards on travel and healthcare documentation and on reaching net-zero carbon emissions by 2050 at their recent AGM in Doha.

The call for governments to follow international guidelines on air travel and biosafety is aimed at supporting the recovery of air travel in the region. Middle East carriers have been hit particularly hard by the collapse of international travel caused by Covid-related border restrictions, given the relatively large share it comprises of its overall traffic.

While global airline RPKs were down by around two-thirds on pre-crisis levels in the first half, traffic was 80% down on Arab routes.

"With such a deep and lingering impact of the crisis, we expect that returning to 2019 levels will take three to five years, a period that depends heavily on how the world will adapt to a new normal of having an endemic Covid-19," explains Arab Air Carriers' Organisation (AACO) secretary general Abdul Wahab Teffaha.

The resolution calls on governments to tackle the differing requirements and acceptances within the region covering PCR tests and vaccine certification. "The resolution was very specific on what type of measures we expect governments to adopt in order to reduce the amount of hassle that passengers are being subjected to," Teffaha says.

Another major theme of the AGM was sustainability – and AACO members passed a resolution adopting a net-zero carbon emissions by 2050 target. That comes after members of global trade body IATA made a similar commitment at their AGM in Boston two months ago.

The AACO resolution calls on other stakeholders – including governments, manufacturers, technology partners and fuel suppliers – to act as part of what it calls "joint responsibility of all sectors concerned with civil aviation".

AACO secretary general Abdul Wahab Teffaha (*left*) and Qatar Airways chief executive Akbar al Baker

Graham Dunn/FlightGlobal

Notably, carriers are calling for a step-up in production of sustainable aviation fuels (SAF). "I don't think, if they really produce SAF in volume, that the price is going to be an issue," says Qatar Airways chief executive Akbar al Baker, who was chairman of the AGM, pointing to how the price will go down if there is enough supply.

"The producers must invest in producing large quantities of SAF. Even if it is 10% or 15% more than normal fuel, we will still buy it."


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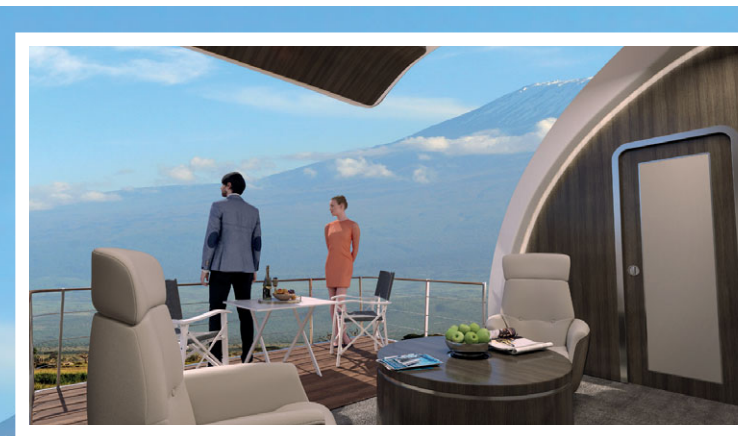


Lufthansa Technik unveils cabin concept pitched at jet-setters seeking multi-destination vacations

Lufthansa Technik

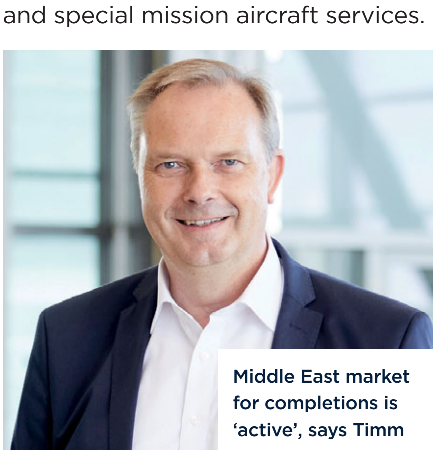
The design offers the option of a balcony, as part of the cargo door

Murdo Morrison

You are an ultra-wealthy individual who, rather than choosing a single destination for your hard-earned, two-week holiday, wants to sample, say, St Lucia, San Tropez, and the Seychelles. Lufthansa Technik may have the solution for you.

The German aircraft services provider is revealing more details at the show about its "pioneering" luxury cabin concept for the Airbus ACJ330, called Explorer, that it previewed at the recent Monaco Yacht Show.

The product is pitched at what it believes is a growing market of jet-setters who charter superyachts for multi-stop international vacations with family or friends, but want to travel further afield in a relatively short period of time, explains Wieland Timm, head of sales for VIP and special mission aircraft services.



Lufthansa Technik

Middle East market for completions is 'active', says Timm

Rather than the traditional VIP widebody cabin design that is aimed more at a single owner, who tends to travel with an entourage, the Explorer study is configured for four couples and their children, or a group of up to 16 people travelling together on an extended leisure trip.

While it features the standard en-suite bedrooms and living quarters found on most private jets of this size, the Explorer's novel features include a Diehl-designed projection system that generates wrap-round images for the walls and ceiling, creating the impression of travelling through space or under water, or, alternatively a cloudscape or disco.

It also includes the option of a balcony, built into the cargo door – the A330 has a supplemental type certificate which allows such an entrance to be added to a passenger aircraft – which can be opened when the aircraft is parked, as well as an additional lounge in the cargo deck.

Lufthansa Technik is confident all the features meet with regulatory approval and believes a charter operator could offer the product at prices similar to those for hiring superyachts for a similar period, says Timm.

Two years ago at the show, Lufthansa Technik exhibited an observation desk concept for the Airbus A220 – now the TwoTwenty corporate jet – where the cockpit bulkhead was replaced by a transparent barrier just aft of door one to allow passengers, sitting on a divan just behind the flightdeck, to get a pilot's-eye view.

Lufthansa Technik

Diehl system creates wrap-round images for walls and ceiling

Lufthansa Technik

Everything you need for an on-board party with friends

The Middle East represents half of Lufthansa Technik's VIP jet completion and maintenance revenues, and Timm says the market is "active", with many customers looking to upgrade cabins with modern communications and entertainment technology.

While Boeing 747s have traditionally been the type of choice for heads of state in the Gulf, the fact that the passenger version of the 747-8 is out of production means that most of these will soon be replaced by 777s or Airbus A350s, believes Timm, creating opportunities for completions houses such as Lufthansa Technik.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Qatar Airways ready to return A380 to service

Qatar Airways has returned one of its Airbus A380s to Hamad International airport ahead of the type's return to service for the first time since the beginning of the Covid-19 crisis.

A7-APG completed a positioning flight from the old Doha International airport – where it had been in storage – to Qatar Airways' hub on 2 November. The airline describes the aircraft as the "first A380 officially back in the skies" since the beginning of the pandemic.

Qatar Airways will serve London Heathrow and Paris Charles de Gaulle with the superjumbo from mid-December this year, it states.

While Qatar Airways chief executive Akbar Al Baker has frequently talked down the A380's future role in the carrier's fleet, the airline is short of widebodies following the grounding of 13 A350s on concerns about paint degradation.

The Oneworld carrier has not said how many A380s it plans to return to service, but Al Baker has previously suggested he expected only half of the carrier's 10 examples to fly in Qatar Airways colours again.

Cirium fleets data shows that A7-APG was parked at Hamad International on 19 March 2020 as the severity of the Covid-19 crisis was becoming clear, before being moved to storage at Doha International on 6 April.

The Engine Alliance GP7200-powered jet was delivered to Qatar Airways in December 2016, making it the fourth-newest example of the type in the airline's fleet.

Emirates to recruit 2,500 more staff

Rex Shutterstock

Emirates is about to take delivery of its final pair of A380s

Murdo Morrison

Emirates is aiming to recruit a further 2,500 personnel over the next six months to ensure it has the resources necessary to maintain its recovery track.

It is supplementing a previous drive, unveiled in September, to take 3,000 cabin crew and 500 ground-services staff. Emirates says it will expand its requirement by recruiting 600 pilots, plus 1,200 engineering staff and another 700 ground workers.

The Dubai-based carrier says it is bracing for a "surge" in customer demand "sooner than expected".

Emirates has rebuilt about 90% of its network – and aims to have 70% of pre-crisis capacity in place by the end of this year – and the airline is re-introducing higher-capacity aircraft types and increased frequencies.

"With the positive signs in the economic recovery and continuous growth of demand, we are hopeful to be back to where we were pre-pandemic, from mid-2022," says Emirates Group chairman Sheikh Ahmed bin Saeed Al-Maktoum.

He says the airline has been "prudently" resuming services as international restrictions lift. Dubai, he adds, is experiencing a "quick recovery" and that this underpins the recruitment drive. The carrier has started redeploying Airbus A380s to ply its more popular routes, supporting its fleet of Boeing 777-300ERs – all of which are in service, either for passenger or cargo services. Emirates will increase the number of A380 destinations from 18 to 27 by the end of November.

It says the last two A380s on order – and the final two to be produced – will be delivered by December, by which point around 50 A380s will have returned to operation. The airline has 263 long-haul jets and has several new types – including the Airbus A350, Boeing 787-9 and 777X – on order.

Boeing predicts Middle East order bonanza

Middle Eastern operators will take delivery of 3,000 new aircraft over the next two decades, with a strong widebody presence, Boeing estimates in its latest forecast for the region.

In the report published just ahead of the show, the airframer states that these deliveries will include 1,320 widebody types as well as 1,570 single-aisle aircraft.

They will be complemented by 70 freighters and 40 regional jets.

Boeing estimates that the Middle East region's fleet will increase by more than 2,000 aircraft – rising from the current figure of 1,500 to more than 3,500 by 2040.

The single-aisle and widebody sectors will more than double their fleets – to 1,750 and 1,570 aircraft respectively – while the number of freighters will rise from 80 to 150.

Two-thirds of the overall deliveries will support expansion, with the remainder for replacement.

Manufacturer's backlog includes 737 Max aircraft for Flydubai

Markus Mainka/Shutterstock

Boeing's backlog data lists over 500 aircraft yet to be delivered to Middle Eastern customers, led by 777X and 787 orders to Emirates, Qatar Airways and Etihad Airways, plus 737 Max jets for Flydubai.

Among other customers for outstanding orders are Gulf Air and Oman Air, plus lessors ALAFCO and Dubai Aerospace Enterprise.

Middle Eastern carriers will take delivery of a greater proportion of widebodies, in comparison with the current fleet, than any other region, according to Boeing's commercial market outlook. Boeing puts the annual passenger traffic and fleet growth for the region's airlines at 4.1%.

"The region has been a leader in restoring confident passenger travel through multi-faceted initiatives that aid international travel recovery," says Middle East commercial marketing managing director Randy Heisey.

Boeing adds that air freight "represents an ongoing areas of opportunity", with Middle Eastern operators having recorded a near-20% rise in cargo traffic since 2020.

Middle Eastern carriers will need to recruit 54,000 pilots, plus 91,000 cabin crew members, as well as 51,000 technicians over the next two decades.

Boeing values the Middle Eastern jet requirement at $700 billion with a similar figure for the services market over the 20-year period.


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MENA's first 737 cargo aircraft

Freight expectations for MENA's new venture

Bahraini aviation services group launches cargo airline

MENA Aerospace

Murdo Morrison

Bahraini aviation services group MENA Aerospace is launching a cargo airline to tap into what it says is a burgeoning air freight market for e-commerce between Asia and the Middle East and Africa.

The company, which is exhibiting at the show this week, has transferred its existing air operator's certificate (AOC) for a private jet management and charter business to the new venture, and has launched services with a former Southwest Airlines Boeing 737-300 freighter conversion by Florida firm Pemco.

It plans to lease "two or three" 737-800 converted freighters in the next year, followed by its first widebody, and is aiming for an eventual fleet of "15 to 20" aircraft, says business development director Brian Hogan.

"That sort of number gives us critical mass," he says. "It means we can move around crews and engineering."

MENA is currently partnering with euroAtlantic to offer long-haul freight services from Asia into Bahrain using one of the Portuguese charter provider's 777-200ER airliners, with seats removed for cargo.

"That is the start of our widebody operation, but that will develop into us purchasing our own cargo aircraft," says Hogan, who admits that both new-build and converted widebody freighters are in short supply.

"The future is 777s, if we can get a hold of them, but the first available conversions are 2023 to 2025. [Airbus] A330s or 747s could be the bridge and it is my job to source these planes, but everyone in the world is gathering up these planes," he says.

Mohammed Juman, founder and managing director of MENA, describes e-commerce as a "gamechanger" for the Middle East and Africa. "E-commerce in this part of the world has barely started, but between us and Asia it is growing phenomenally."

He discounts suggestions that by launching now, MENA has missed the air cargo peak as more passenger flights return and that additional belly-hold capacity relieves the pressure on freight forwarders. He says that for many just-in-time consignments, "belly-hold is not an option", while many passenger airlines do not have the safety approvals to transport electronic goods. "I'm confident there is still a lot of opportunity out there," he says.

MENA will base its cargo operation in Bahrain, but plans to open a hub in Saudi Arabia "shortly" followed by an Asia site in Malaysia, Singapore or Thailand.

DHL already has its Middle East hub in Bahrain, but Peter Hewett, acting general manager of MENA Aerospace Aircraft Management, says the logistics giant is a customer rather than rival. "We have been working with them for a long time and can complement what they do rather than competing with them," Hewett says.

One of the ways it will do this is by flying services into secondary airports in Saudi Arabia and elsewhere in the wider region that "extends [DHL's] service from their hub", Hewett says.

MENA, which was founded 16 years ago and also offers maintenance, repair, and overhaul and aircraft parking services from its hangar at Bahrain's main airport, has also announced a partnership with Sparfell to transfer its business aircraft mangement operation to the Austrian company's AOC.

IAI hails new era for peace and prosperity

Hudi Lahav spent 30 years as a combat pilot in the Israeli air force defending his nation. Now the executive vice president of marketing at Israel Aerospace Industries hopes his country's debut at the Dubai air show will help usher a new era of "peace and economic prosperity" for Israel and the Gulf states.

IAI is one of several Israeli companies exhibiting here for the first time, after the 2020 Abraham Accords saw the United Arab Emirates and Bahrain recognise the state of Israel and open diplomatic and trade relations.

The move has led to the launch of direct flights from Tel Aviv to the Gulf, and a number of planned industrial collaborations, including between IAI and UAE entities EDGE and Etihad Engineering.

"We think [our presence] will be a pathway for business relationships and friendship with our colleagues in the Gulf," he says.

"IAI brings to the show a long experience and know-how in cutting-edge technology in both the defence and civil domains."

He adds: "I have a lot of respect for our new partners in the Gulf and we are anxious to work with them. DAS is the first platform where we can see our new relationship flourish, and we look forward to working shoulder to shoulder with them for decades to come. The air show is all about a common future with our friends."

At the show IAI is exhibiting models of its unmanned air vehicles, its Barak missile defence system, and some of its satellite technology. The company says that during the show it will "expand its strategic collaboration in the region by signing new cooperation agreements with local companies, and broadening existing partnerships that have been signed during the past year".

See feature P36

IAI

IAI will be showing models of its UAVs on the stand


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into life

This week's event is the first major international air show since Covid-19 forced the closure of the convention circuit in March 2020. After such a long time away, the organisers explain what visitors can expect

Back in business

Murdo Morrison

Several times throughout its history Dubai has bounced back from misfortune bigger, bolder and better than before, so it is apt that the emirate should host the first major air show of the Covid-19 recovery era. What happens here over the next few days will send clear signals not just about the sector's confidence about the months ahead, but also highlight some of the technologies and trends that will shape aerospace and aviation through the 2020s and beyond.

At a press conference on 1 November, His Highness Sheikh Ahmed Al Maktoum – who heads Emirates Group, Dubai Airports and Dubai's civil aviation authority – promised that this year's show will be "an opportunity to reconnect the aviation, aerospace, space and defence industries" after the long pandemic-induced hiatus. Based on the number of exhibitors and participating countries, the 2021 event will be larger than its predecessor two years ago, he said.

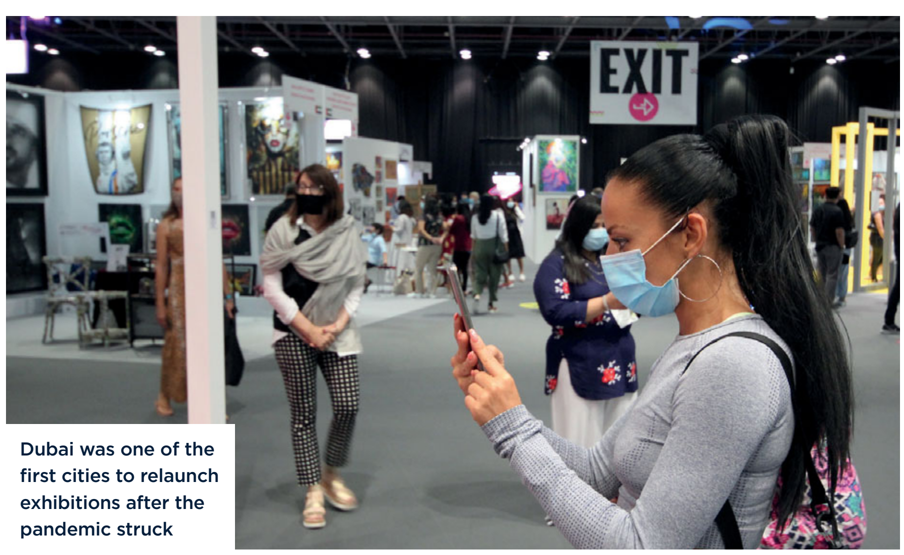
The air show, he continued, is a "testament to the UAE and Dubai's response to the pandemic, a pragmatic response that focused on protecting the health and wellbeing of the people as a top priority, while minimising the impact of the crisis on the nation's economy. We are once again hosting important in-person events and returning to business normality thanks to the success of our approach."

Although it has been subject to many of the international travel restrictions that kept much of the world behind national borders for most of 2020 and the first half of 2021, the emirate was, in fact, one of the first few cities in the world to safely restart major events. Unlike other global trade hubs such as Hong Kong and Singapore, which kept the drawbridge raised to stop the spread of Covid-19, Dubai's default approach has been to open for business as soon as it was safely possible.

That policy, says Tim Hawes, managing director of show organiser Tarsus, has given the Dubai authorities, and companies such as his, plenty experience over the past months in managing large public gatherings, despite strict Covid-19 protocols. "We are working very closely at the highest possible level with the UAE government to ensure the comfort and safety of all attendees, which is our main priority," he says.

His Highness Sheikh Ahmed Al Maktoum says this year's show will be "an opportunity to reconnect the industry"

Dubai Airshow



Dubai was one of the first cities to relaunch exhibitions after the pandemic struck

Rex Shutterstock

Those safeguards, which will make this year's event feel different to previous Dubai air shows, include encouraging social distancing and the wearing of masks by attendees, screening for temperature and enhanced sanitary measures. Exhibitors will have capacity limits on their stands, and safety wardens will be employed to make sure everyone is sticking to the rules. Elbow bumps are preferred to handshakes or embraces.

But beyond the Covid regulations, Hawes promises a raft of innovations at the show, which will also help to set it apart from its predecessors. A new conference stage, Tech Xplore, will host talks on trending topics such as advanced aerial mobility and sustainability, as well as technological developments in space, air traffic management and cargo.

There will be a "start-up hub" called Vista that will allow young Emirati companies to meet potential investors and access mentor programmes. They will also have a chance to compete for prizes by pitching their ideas. It is part of an initiative called "Make it in the Emirates" that is intended to showcase the talents of local entrepreneurs, and "encourage bright minds to bring new ideas and creativity to the industry", says Hawes.

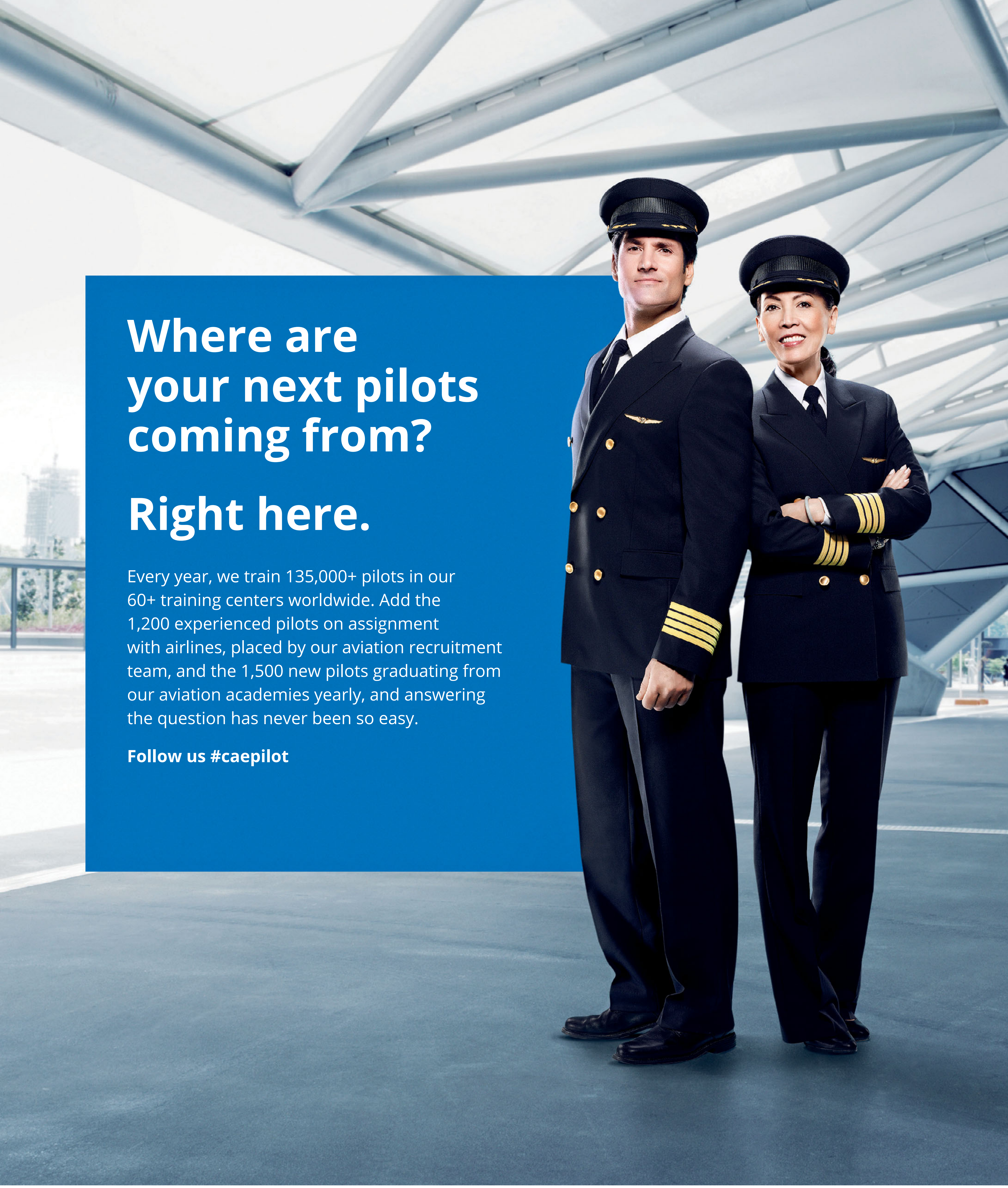
Hawes: Visitor safety will be a priority

Tarsus

There will be a number of new country pavilions at the show, including Belgium, the Czech Republic, and, most notably, Israel, whose companies are at Dubai for the first time following last year's signing of the landmark Abraham Accords between the Jewish state, the UAE and Bahrain. Among the exhibitors making their debut are Accenture, Eurosam, NAFFCO and G42.

There will be much excitement as visitors step this morning into a show some feared would not take place, after 20 months in which major industry events such as Paris, Farnborough, Aircraft Interiors Expo and EBACE fell victim to lockdowns and travel bans. While recent months saw the return of Moscow's MAKS, a Zhuhai show all but closed to foreign visitors, and the NBAA business aviation convention in Las Vegas, this is the first of the big-four air shows since Singapore in February 2020.

For some it will be their first venture into a professional face-to-face environment since before the pandemic. For most it will be a chance to say goodbye to meetings on Zoom and Teams and reconnect and rebuild relationships with customers, colleagues and suppliers in person – albeit sufficiently distanced and without handshakes.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The Gulf has bounced back from the pandemic-driven downturn, with increased demand for private jet services forming part of the recovery

Destination Dubai

DC Aviation Al-Futtaim

Business aviation is thriving with the re-opening of the emirate's economy

Murdo Morrison

Anyone watching the series of sleek private jets descending into Dubai's Al Maktoum International airport during much of this year might have wondered if the emirate had somehow managed to sidestep the Covid-19 crisis that impacted global aviation so badly.

In fact, Dubai's pandemic policy – a comprehensive testing regime and vaccine roll-out, coupled with an early reopening of the economy and lifting of travel restrictions – has helped the city to bounce back. With the delayed 2020 Dubai Expo now open and bringing more visitors in, business aviation is thriving.

During 2021, the Gulf metropolis has once again become the leisure and investment destination of choice for many of the world's wealthy and powerful. "When things get bad elsewhere, Dubai often fares better," says Holger Ostheimer, managing director of DC Aviation Al-Futtaim (DCAF), which runs a fixed-base operation (FBO) and aircraft management business at the airport's Mohammed bin Rashid Aerospace Hub. "The real estate market in Dubai is on the up, with a lot of international individuals relocating here."

The hub – home to FBOs such as ExecuJet, Falcon Aviation, and Jetex – reported that private jet movements grew to 8,088 in the first half of this year, from 3,056 in the corresponding period in 2019 (movements in the first six months of 2020 fell to 1,811). While some of that was doubtless down to an increase in infrastructure, chief executive Tahnoon Saif believes government policy played a major part. "Dubai, given its quick recovery post-pandemic, has proved the ideal destination for tourism, living and, most importantly, conducting business," he says.

Not all areas of the sector have been doing so well. International travel restrictions meant the biennial 2020 Middle East Business Aviation Association (MEBAA) show was shelved until next year after efforts to re-stage it last February failed. Likewise, other key business aviation markets in the region, such as Saudi Arabia, have been slower to recover. Abu Dhabi, too – which had a stricter and longer clamp-down than its neighbour Dubai – has still to return to 2019 levels of activity, says Rob DiCastri, chief executive of Royal Jet, the emirate's biggest charter operator.

Grounded flights

After sinking to just 10% of previous levels in the second quarter of 2020, with all but a handful of medevac and diplomatic flights grounded, Royal Jet's traffic has been growing for over 12 months, says DiCastri. However, Abu Dhabi's "conservative stand" on the virus meant movements stalled at a maximum of 50% of 2019 levels until about March this year. "Since then, we've seen a climb as vaccines have rolled out and quarantine restrictions have been reduced," he says. "We're at about 80% of 2019 now, but 2019 was a fantastic year so the bar is very high."

Royal Jet is the world's biggest operator of Boeing Business Jets, with a fleet of 10 – six are owned, with four under management, and nine are available for charter. It also operates two Bombardier Global 5000s. This gives the company a very different client base to many charter providers. During the crisis, Royal Jet took the opportunity to refurbish its flagship FBO at Abu Dhabi's international airport. "We wanted a wow factor that would help us emerge from Covid stronger and attract more customers," says DiCastri.

Royal Jet's core clients are Abu Dhabi's elite – a separate Presidential Flight operation handles official government flights. However, the firm has been diversifying by basing a BBJ in Moscow, and is trying to attract more Europeans to the region. Last year's peace accord with Israel has also opened new links. "There is a lot of business now between Abu Dhabi and Tel Aviv," says DiCastri, who even considered a VIP shuttle between the cities, but decided that "Etihad already does a great job with its first-class product".

BillyPix

Rob DiCastri heads Royal Jet, Abu Dhabi's biggest charter firm

Ostheimer also experienced a collapse in business when Covid-19 hit, but traffic began to improve from October last year, and "we had really good levels of activity up to July", he says. He is confident the six-month Expo, which began in October, will also boost demand for charter flights. But maintenance and aircraft storage remain DCAF's main activities at Al Maktoum. The oldest tenant in the business aviation zone, having opened its site in 2013, it is licensed to work on a number of types. It has two 13,500sq m (145,000sq ft) hangars, and these are 90% full, he says.

Maintenance activity

Maintenance is the sole activity now for another occupant of the Mohammed bin Rashid Aerospace Hub, ExecuJet MRO Services Middle East. Owner Luxaviation spun off the maintenance part of ExecuJet to Dassault Aviation last year, making the French manufacturer the latest of the big four business jet manufacturers to establish an arms-length maintenance business (Gulfstream parent General Dynamics owns Jet Aviation, while Bombardier has been taking large parts of its service network in house, including the former LBAS shop in Berlin).

In September, ExecuJet MRO Services Middle East won approval from New Delhi to carry out line and heavy maintenance on a range of Indian-registered Dassault Falcons, including the 7X and 8X. With many VT-registered jets coming to Dubai regularly, "India is a key market for us," says Nick Weber, the company's regional vice-president. However, despite its ownership, ExecuJet MRO Services will remain platform agnostic. It is an Embraer-authorised service centre and also certified to carry out heavy maintenance on most Bombardier aircraft.

Business aviation has always been a major feature of the Dubai show – perhaps more so than other air shows. According to the organisers, 30% of attendees are involved in the sector. Manufacturers lined up to take part this year include Airbus, Boeing, Dassault, Embraer, Gulfstream and Pilatus, alongside several service providers such as CAE, Comlux and Gainjet. While the market tends to favour heavier metal, many Middle Eastern business jets are older than average – perhaps because they fly less frequently than the typical corporate workhorses of Europe and North America.

Airbus sees this as an opportunity. "More than 60% of heavy jets and bizliners [airliner-derived types] are more than 15 years old," says Benoit Defforge, president of Airbus Corporate Jets. He believes this creates an opening for newer-generation platforms such as the ACJ TwoTwenty (based on the A220), and the ACJ350. "Both of these align well with customers' fleets from the Middle East," he says.

Traffic and confidence is on the up in Dubai and in much of the wider region. Whether this will translate to orders for Airbus and the other airframers at the show remains to be seen.

INNOVATING TOGETHER

T-7


boeing.com/dubai

Two years ago, the UAE consolidated its industry into one grouping with the intention of achieving self-reliance in military industrial capabilities. Progress has been impressive

EDGE of ambition

"EDGE showcased how fast we could deliver. We developed drone capabilities that did not exist before in record time"

Faisal Al Bannai Chief executive, EDGE

BillyPix

Murdo Morrison

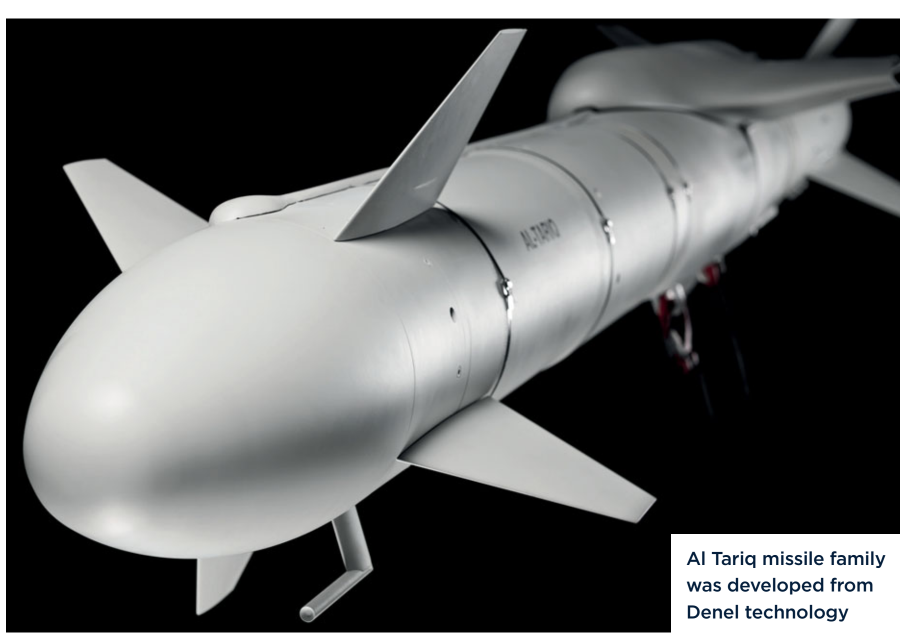
Since the foundation of the United Arab Emirates (UAE) 50 years ago, the oil-rich nation has become a formidable military power in the region, thanks largely to its ability to purchase top-end equipment and support from the USA and other friendly countries such as France and the UK. However, the UAE's relentless drive over the past two decades to diversify its economy from a dependence on fossil fuel exports has been coupled with an ambition to stand on its own two feet in terms of sovereign defence capabilities.

Centralised structure

This was the rationale behind the creation of EDGE, a holding group for the UAE's military industrial assets, almost all of them based in and controlled by the largest emirate, Abu Dhabi. EDGE was unveiled at an event in the capital ahead of the last Dubai air show, and its managers have spent those two years creating a centralised structure that consolidates 25 disparate entities into five clusters. EDGE's businesses range from a few years old to a handful that have been around since the 1990s, and had previously been loosely grouped under various state- and privately-owned entities.

Internal synergies and global name recognition were among the reasons EDGE was established, explains Faisal Al Bannai, a former telecoms entrepreneur appointed as the group's inaugural chief executive. EDGE gives Abu Dhabi and the UAE a single brand under which it can market its industrial and service offering to the export market. It also brings those 25 businesses, which employ a total of 13,000 people, "under one vision and one strategy, avoiding duplications and accelerating roadmaps", he says.

Combining the entities under a single management structure is paying off in a "dramatic acceleration in our technology offering", says Al Bannai. There are 10 times as many products under development today than there were when EDGE was founded, a result of its businesses becoming "more agile and faster to market". These include the launch of a family of battlefield-deployable loitering munitions at February's IDEX defence show in Abu Dhabi. "It showcased how fast we could deliver. We developed drone capabilities that did not exist before in record time," he says.



EDGE

Al Tariq missile family was developed from Denel technology

By exploiting economies of scale and encouraging EDGE companies to co-operate, "we are working on products that could not be created by individual companies", Al Bannai says. He gives an example from the growing field of loitering munitions – a hybrid of missile technology and expertise in unmanned, self-navigating platforms. EDGE has both an unmanned systems unit, ADASI, and one that produces airborne munitions, Halcon. "By putting together these different building blocks, working hand in hand, we can add value and create new categories of product," he adds.

EDGE's $5 billion revenues should put it in the upper half of the FlightGlobal Top 100 (which only considers aerospace turnover). The Stockholm International Peace Research Institute places EDGE 22nd among the largest 25 arms firms.

Start-up mentality

However, Al Bannai stresses that size is not all that matters. "We are a company with some scale," he says. "But we function like a start-up. We are supported by a government, so we are not going to go belly-up tomorrow. However, we have a start-up mentality in that we encourage agility and speed of decision making to come up with fresh product lines."

EDGE's extensive portfolio ranges from missiles to maintenance, repair and overhaul, and from armoured vehicles to ammunition. However, electronic warfare and autonomous capabilities are two areas where Al Bannai thinks EDGE can be a "key player on a global scale". For this to happen, it will need both the home-grown know-how to develop its own technologies and competencies, without having to rely on foreign-owned intellectual property, as well as the industrial capacity to adapt these into products both for its own domestic customer, and the export market.

So far, EDGE's legacy companies have co-operated largely with partners, such as Lockheed Martin, Denel of South Africa, and Germany's Rheinmetall. It developed its Al Tariq long-range missile family based on Denel technology and has worked with Rheinmetall to produce a short-range counter-rocket, artillery and mortar missile called SkyKnight that will be part of the German company's wider air defence concept, Oerlikon Syknex. In 2010 it embarked on a military MRO joint venture with Lockheed and Sikorsky to provide maintenance services to the UAE's C-130H Hercules and UH-60 Black Hawk fleets.

However, thanks to a combination of recruiting defence industry professionals from around the world and nurturing Emirati talent, Al Bannai thinks it will not be long before EDGE is marketing much more of its proprietary technology.

AMMROC is one of EDGE's MRO businesses, providing maintenance and overhaul services to the UAE air force and overseas customers

EDGE

Its Halcon subsidiary, for instance, is planning to move by the middle of the decade from producing a range of unpropelled, gravity-launched guided-delivery systems for missiles into segments such as propelled air-to-surface weapons, a surface-to-air capability, and finally air-to-air, according to Halcon chief executive Saeed Al-Mansoori.

And, while EDGE still has a "good relationship" with Lockheed, it is no longer a joint venture partner, EDGE having last year bought out the US company's shares in military MRO AMMROC. That coincided with the opening of a 36,500sq m (393,000sq ft) hangar and workshop complex at the airport in the desert oasis town of Al Ain, next to the Oman border. The site includes a paint hall, engine test rigs, and, according to EDGE, the most sophisticated helicopter blade repair facility outside the USA. It is set up for the Black Hawk, but could be modified for other types.

Israel is another potential partner. Similar in size to the UAE, the Jewish state has over seven decades created its own enviable defence industry, designing and producing almost everything itself except large manned aircraft platforms, and with some three-quarters of its revenues coming from exports. Last year's diplomatic recognition of Israel by the UAE opened the opportunity to team on defence technologies, and in March, EDGE and Israel Aerospace Industries announced they would work together on developing a counter-UAV system for the Gulf market.

Elite club

Until now, EDGE has been almost exclusively focused on supplying the domestic customer, but joining the world's elite club of defence technology exporting countries is very much on the radar for Al Bannai and the UAE's rulers. Al Bannai sees nations in Africa, Asia and South America as being among the target customers. And, rather than simply being a vendor of products, he believes EDGE can use its experience of developing an indigenous defence sector within Abu Dhabi to help these states build their own capabilities.

With a large presence planned for the show, Dubai will give the defence industry's newest name a chance to sell itself to the world.

The debut of the 777-9 in Dubai comes at a time of huge challenges for Boeing, both with the large twin itself but also with other programmes. Can Seattle win back the fans it won at launch eight years ago?

X appeal

Boeing

The 777-9 lands at Dubai Al Maktoum airport ahead of the air show on 9 November

Jon Hemmerdinger

Eight years after the high-profile launch of the programme here in Dubai, Boeing's 777-9 is making its air show debut. It comes as the airframer works to keep the type's certification timeline from slipping and as a top customer warns about quality issues.

The company's chief executive David Calhoun in recent weeks struck an optimistic tone – both about the timeline and the jet's performance during testing.

"The airplane is performing well and in line with our customer commitments based on the data that we've collected to date," Calhoun said on 27 October. "We will validate these results and we will continue to work with the FAA to ensure we meet their requirements prior to beginning the certification flight tests."

"We still expect we will deliver the first 777X in 2023," Calhoun added.

Delays aside, Boeing has insisted the 777-9 is a winning platform, and that the jet will be increasingly in demand as airlines retire older widebodies in the coming years. Some analysts agree.

But Calhoun's recent comments come amid much uncertainty about the long-delayed 777-9 programme – uncertainty stemming from Boeing's broader recent quality issues, the Covid-19 pandemic's impact on air travel and increased scrutiny by the Federal Aviation Administration.

Most notably, Boeing halted 787 deliveries in May due to quality issues affecting the jets' fuselages. Before that, Boeing was working to put the 737 Max's troubles behind it. Regulators in many countries – exceptions being those in China and Russia – have since cleared the Max to fly. But Boeing is still working to offload hundreds of stored 737 Max aircraft.

Quality problems have also in recent years plagued Boeing's 767-based KC-46A tanker programme.

Order commitments

Boeing launched the 777X programme at the 2013 Dubai air show with a record-breaking number of customer orders and commitments. There were agreements for 259 aircraft from Emirates (150), Qatar Airways (50), Lufthansa (34) and Etihad (25). Boeing at the time said the combined value of the deals was more than $95 billion at list prices.

Since then, it has since been moving forward with certification of the initial variant, the 777-9.

Powered by twin GE Aviation GE9X turbofans, the 777-9 will have 7,285nm (13,500km) of range and carry 426 passengers in two classes, according to Boeing. The jet's list price is $442 million.

The programme includes another model: the 8,730nm-range, 384-passenger passenger 777-8. But Boeing paused that type's development in 2019.

After early delays, the 777-9 made its first flight in January 2020, at which point Boeing was aiming to begin deliveries in 2021. Then came the Covid-10 pandemic, which essentially erased demand for the international, long-haul trips for which Boeing designed the jet.

In July 2020, the pandemic raging, Boeing pushed its first 777-9 delivery until 2022.

Then in January 2021 came more bad news for the programme when Boeing delayed first delivery until late 2023 and took a $6.5 billion pre-tax charge against the 777X programme. At the time, Calhoun said the delay partly reflected modifications the company was making to the 777-9's design. Specifically, he cited "firmware and hardware changes" involving actuator controls.

Separately, in a May letter to Boeing, the FAA said it was unlikely to issue the 777-9's type certificate until "mid- to late-2023", citing the need for more analysis and more information about certain 777-9 systems.

"The technical data required for type certification has not reached a point where it appears the aircraft type design is mature and can be expected to meet the applicable regulations," the letter said. "The model 777-9 amended type certification date is realistically going to be mid- to late-2023."

That range is still within Boeing's late-2023 timeline, but the letter revealed the FAA's areas of concern.

Specifically, the FAA needed more information about the jet's "Common Core System" (CCS), which the letter described as an "an integrated modular avionics architecture that provides a set of shared computing, networking and input/output resources".

The letter added that Boeing was making changes intended to "fix" an "uncommanded pitch event that occurred on December 8, 2020".

"After the un-commanded pitch event, the FAA is yet to see how Boeing fully implements all the corrective actions identified by the root cause investigation," the letter said.

Details about that event were not disclosed.

Concern

Few people have been as vocal in raising concern about the 777-9 as one of the type's first customers: Tim Clark, chief executive of Emirates Airline. That carrier, said to be the 777-9's launch customer, holds orders for 115 of the jets, according to Cirium data.

"We will not accept or tolerate quality-control issues" with the 777-9, Clark said in October. "If the [777-9] comes out, and we have problems with it – either airframe or engine – we will send it back to Seattle, and I don't care what happens to it."

"We don't want it," he added.

Clark also said Boeing seems unable "to predict when this aircraft will be delivered". The delays and continued uncertainty translate into huge costs for Emirates, which has been spending money to prepare for receiving the type, Clark added.

"All this is money going out… We cannot afford to put 60, 80, 100 million dollars out there not knowing when these aircraft are going to turn up," he says. "I need to know… precisely."

Calhoun sought to assuage such concerns in comments made on 27 October. "We continue to subject the airplane to a comprehensive test programme to demonstrate its safety, its performance and reliability, while working through our rigorous development process to ensure we meet all applicable requirements," he said.

"We continue to conduct Boeing flight tests and began engine performance flight testing earlier this month."

He said Boeing's decision to delay first delivery until late 2023 leaves Boeing plenty of time to address concerns and to incorporate certification lessons revealed by the 737 Max crisis.

"Nothing at this moment in time… has suggested that the [777-9] plan isn't still workable," Calhoun said. He also suggested Boeing will indeed more forward with development of a cargo-configured 777X, saying the company is "evaluating the timing of launching" such a product.

Clark: We will not accept or tolerate quality issues

IATA

Boeing holds orders for 320 777X, including for 278 777-9s, 32 777-8s and 10 unspecified orders, according to Cirium. Customers include Emirates (115 jets), Qatar Airways (60), Singapore Airlines (31), Etihad Airways (25), Cathay Pacific Airways (21), ANA (20), Lufthansa (20) and British Airways (18), Cirium shows.

Analysts suspect the 777X, despite a rocky start, will be a success in the long run. They see demand for the type increasing in the coming years, reflecting an expected rebound in international travel and the eventual retirement by airlines of existing widebodies.

But many of those existing jets have years of life left. The global fleet of 777s now stands at about 1,550 aircraft, including about 1,140 in service and the balance in storage, according to Cirium. Those jets are, on average, only about 12 years old, data shows.

"I think the 777X will have a renaissance in a year or two or three, when the international market is back and everything that was flying that market is mothballed," Credit Suisse analyst Robert Spingarn said earlier this year. "Then you are going to see a wave of orders for big widebodies."

Another industry analyst, George Dimitroff, head of valuations at Cirium, says he believes 777-9 demand will pick up in the late 2020s or early 2030s.

Calhoun has broadly defended Boeing's decision to launch the 777-9, saying the move was right even considering the pandemic.

"If I had a clean slate of paper today, and [there] wasn't a 777X loaded in my development pipeline, would [Boeing] want to do it again? The answer is, absolutely yes," Calhoun said on 3 June.

Calhoun cited the 777-9's cost per seat (and by volume of cargo) as key attributes and noted that competing jets like 747s and Airbus A380s are at the end of their production runs.

"It'll have a 40- or 50-year run," he added of the 777-9. "I have lots of confidence in it."

Over the three issues of *Flight Daily News* at Dubai, we look at EDGE – the new consolidated aerospace and defence group based in Abu Dhabi

BillyPix

BillyPix

Enter EDGE

Abu Dhabi's defence sector did not appear overnight. Despite a reputation in that part of the world for grand edifices and spectacular infrastructure projects emerging in a matter of months from the desert sand, Abu Dhabi – and the federation it dominates, the UAE – had been nurturing its military industry for 30 years, taking advantage of technology transfer and offset agreements garnered by a series of high-profile procurement deals.

However, the launch of EDGE a few weeks before the 2019 Dubai Airshow represented a transformation both in how Abu Dhabi sees itself as a rapidly maturing presence on the global defence stage, and how the rest of the industry views a nation that had previously been regarded primarily as a customer, rather than a peer, of the established defence contractors. EDGE was, to paraphrase the showbiz saying, an overnight sensation three decades in the making.

Within EDGE are 25 distinct businesses, each with its own identity and specialist offering, organised into five clusters. Combined, they vault EDGE into the elite club of the largest 25 defence players – a first for any company in the Middle East. However, while size matters, the consolidation of the nation's prize assets into EDGE is about much more than scale. It is a confident Abu Dhabi presenting a single identity and voice to the world when it comes to its military capabilities.

With those decades of experience behind it, and by recruiting international and fostering home-grown talent, EDGE has accumulated considerable intellectual property and capabilities across those five business areas – platforms & systems; missiles & weapons; cyber defence; electronic warfare & intelligence; and mission support. Apart from using that knowledge to support the domestic customer, EDGE believes it has the necessary heft to be a disruptive force in world defence.

But it will not do it alone. Over the years, Abu Dhabi and its defence sector have collaborated with the biggest names in the industry, from Lockheed Martin and Sikorsky to Denel and Saab.

Continuing to work with these companies, and newer entrants, is very much part of the EDGE global strategy, with the group deploying the knowledge it gained in creating a home-grown defence industry to mentor nations that want to build their own capabilities as part of offset arrangements.

In the following pages, founding CEO and Group Managing Director H.E Faisal Al Bannai explains the rationale behind EDGE and where it goes from here. We also profile six EDGE companies focused on the aerospace sector: GAL and AMMROC, which specialise in providing maintenance, repair and overhaul support to the armed forces; missile pioneers Halcon and Al Tariq; unmanned air systems developer ADASI; and EPI, which produces metal aerostructures for Airbus and other mainly commercial customers.

We hope that this special content partnership will give you an insight into the many capabilities of EDGE, and an understanding of the rationale behind its creation almost exactly two years ago.

A week before the 2019 Dubai Airshow, H.E Faisal Al Bannai stood before an audience of dignitaries at a ceremony in Abu Dhabi and announced the launch of EDGE. The newly appointed CEO and Group Managing Director hailed the entity as an "advanced technology conglomerate" that would bring together 25 of the nation's diverse defence industrial assets, specialising in areas from missiles to maintenance, and unmanned air vehicles (UAVs) to ammunition.

Although Abu Dhabi had previously organised its defence concerns under holding groups such as Emirates Defence Industries and Tawazun, EDGE was an attempt to unite the entire industry under a single, strong brand. It would drive internal synergies and empower those units to take the vital next step to becoming mature, export-focused businesses. At the same time, as the face of Abu Dhabi and the UAE, EDGE would promote the nation's emerging capabilities to the world.

Speaking in his office in EDGE's modern headquarters in a new business district of the UAE capital, Al Bannai, a former telecoms entrepreneur, is proud of what EDGE has done in those two years. "Our achievements include the consolidation of all those companies under one vision and one strategy, avoiding duplications and accelerating roadmaps," he says. "We are aligning all our companies to our market strategy."

AGILE WORKING

That is already paying off in a "dramatic acceleration in our technology offering", he says, with 10 times as many products under development than in 2019. Companies have become "more agile and faster to market", he adds, citing the launch of a family of tactical unmanned systems at February's IDEX defence show. "It showcased how fast we could deliver. We developed drone capabilities that did not exist before in record time," he says. "It highlights the type of DNA that we are developing."

Economies of scale and encouraging EDGE companies to cooperate are crucial to that success. "We are working on products that could not be created by individual companies," he says. He offers as an example the growing field of loitering munitions – a hybrid of missile technology and expertise in unmanned, self-navigating platforms. "By putting together these different building blocks, working hand in hand, we can add value and create new categories of product," he adds.

EDGE, of course, is not the first national industrial champion to be fashioned from the merger of smaller companies. From British Aerospace and Aerospatiale in the 1970s to the post-Cold War consolidation of the US military contractors in the 1990s and the amalgamation of the French, German and Spanish industries into EADS in 2000, sizing up has been around in aerospace and defence for generations.

However, EDGE is about much more than becoming

"We are offering well-paid, high-tech jobs with good career paths"

EDGE in numbers

EDGE may only be two years old, but it has become a significant player in the world market, as these statistics testify

22

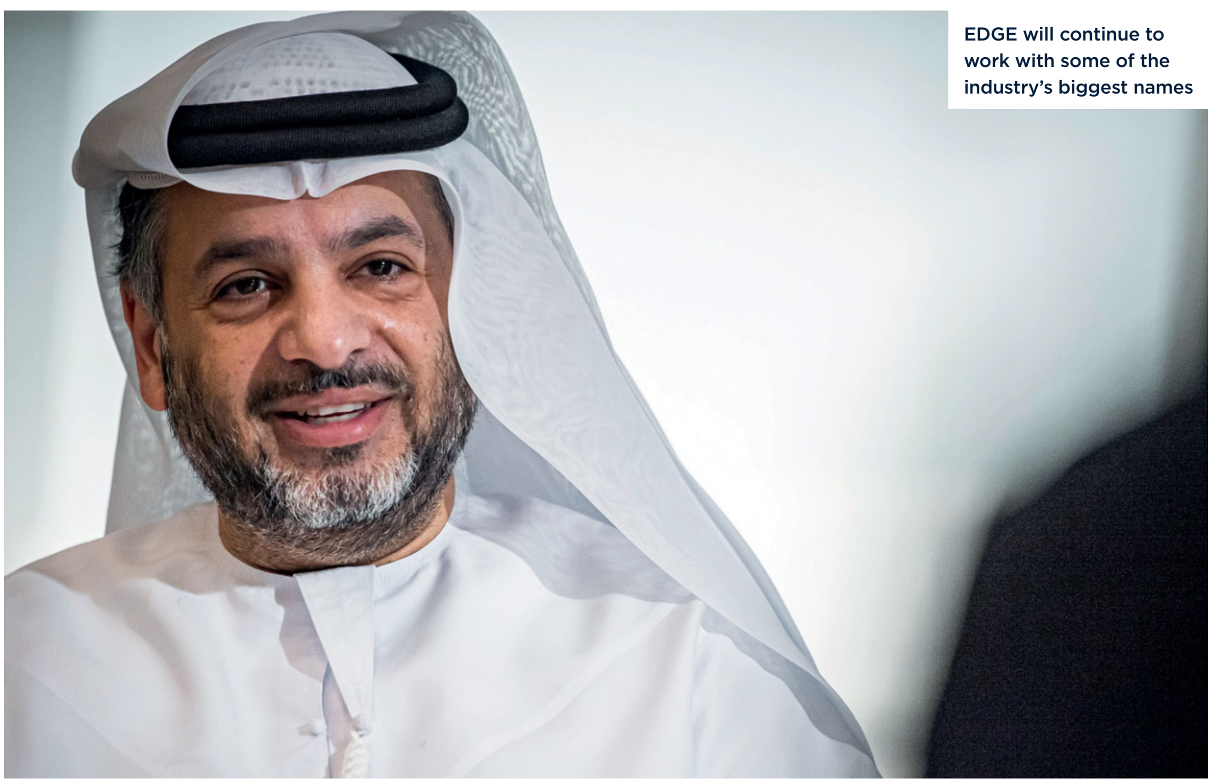
EDGE's ranking among largest 25 arms companies by size, according to Stockholm International Peace Research Institute (SIPRI)

140,000 SQ M

Size of AMMROC's main buildings at Al Ain, one of the largest MRO facilities in industry

Start-up with scale

EDGE combines the benefits of a state-backed group that is now one of the top 25 defence contractors with the agility and ingenuity of a brand new company, maintains H.E Faisal Al Bannai



EDGE will continue to work with some of the industry's biggest names

BillyPix

bigger for the sake of it, according to Al Bannai. "We are a company with some scale," he admits. "But we still function like a start-up. We are supported by a government, so we are not the sort of start-up that could go belly-up tomorrow. However, we have the mentality of a start up in that we encourage agility and speed of decision making to come up with fresh product lines."

LURING TALENT

Like any ambitious new company, EDGE has lured talent from leading global companies. At the same time Al Bannai is aware that part of its role as a flag-bearer for Abu Dhabi and the UAE is to identify and nurture the best Emirati brains. "We are creating a destination for bright nationals to join EDGE," he says. "However, it is not a numbers game. The UAE is not a low-cost labour market. We are offering well-paid, high-tech jobs with good career paths. It will be competitive to join EDGE."

> "We will not just be a re-seller of someone else's products"

Aside from the home market and neighbouring Gulf Cooperation Council states, Al Bannai sees a number of nations in Africa, Asia and South America among EDGE's target customers. But he sees the group's mission as being more than simply being a vendor. Instead, EDGE will offer to work with these countries to build capabilities for their defence sectors, he says.

He also expects EDGE to continue to cooperate with some of the industry's biggest names. Although no longer a joint venture shareholder in its AMMROC military maintenance repair and overhaul business, Lockheed Martin will remain a trusted partner, he says. EDGE companies have also cooperated with South Africa's Denel and Germany's Rheinmetall on missile developments. "EDGE is here to team in joint developments with anyone that will add value," he says.

Last year's Abraham Accords – which established diplomatic relations between the UAE and Israel – has also led to cooperation. In March, EDGE and Israel Aerospace Industries said that they would work together on a counter-UAV system for the Middle East market. While Al Bannai welcomes the agreement, he insists both companies will be contributing proprietary technology. "We want to add value in all our relationships," he says. "We will not just be a re-seller of someone else's products."

In fact, electronic warfare and autonomous capabilities are two areas where Al Bannai is confident EDGE can be "a key player on a global scale". An emphasis on developing that indigenous know-how and implementing it in successful products is vital to the company's future, says Al Bannai, who characterises EDGE as an "advanced technology company that happens to be in defence, rather than a defence company that does advanced technology".

EDGE's two-year anniversary coincides with another very significant birthday, as 2021 marks the 50th anniversary of the United Arab Emirates. The federation of seven emirates – Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaimah, Sharjah and Umm al-Qaiwain – founded by the ruler of Abu Dhabi, His Highness Sheikh Zayed Al Nahyan, came into being on 2 December 1971, succeeding the British-administered Trucial States.

While much of the nation's early success was based on oil – Abu Dhabi's first exports were in the 1960s – the country has gone through a massive programme of investment over five decades to develop infrastructure and diversify its economy into areas from high-end tourism and aviation to financial services and high-tech manufacturing. The UAE, under its President His Highness Sheikh Khalifa Al Nahyan, has become a diplomatic leader on the world stage.

Establishing a sovereign capability in defence – working with international partners but also developing home-grown intellectual property and industrial competencies to eventually become a major player in the global market – is very much part of the UAE strategy for the next 50 years. The creation of EDGE in 2019 is a crucial step towards achieving that goal.

13,000

Number of EDGE employees

$1 BILLION

Approximate value of contract won by EDGE unit HALCON to supply Desert Sting lightweight guided missiles to UAE armed forces in 2019

$5 BILLION+

EDGE annual sales

1.3%

EDGE's contribution to $361 billion total revenues that world's top 25 defence companies are responsible for – SIPRI

For the Middle East's big hub carriers, major challenges existed even before the pandemic hit their operations. While services are being gradually restored, can they recapture vital market share?

Qatar Airways retained more of its network than other carriers – but grounded A380s

Vytautas Kielaitis/Shutterstock

Crisis recovery

Lewis Harper

The devastating impact of the Covid-19 pandemic on the airline industry has left many people yearning for a return to how things were in 2019. But the past 20 months of upheaval make it easy to forget that all was not rosy in the industry going into the current crisis.

The Middle East region is a case in point – and its experience helps to frame its challenges coming out of the pandemic.

Towards the end of the last decade, the region's big hub carriers had conceded that years of double-digit growth were over. Among a raft of challenges, competitors were getting better at offering comparable alternatives to their products.

The region's geopolitical situation was unstable, notably amid a continuing blockade of Qatar by several of its neighbours. Tensions between the USA and China were impacting air cargo demand.

Ultimately, there was "a compendium of short-, medium- and long-term events which are affecting demand for air travel", Emirates Airline president Sir Tim Clark told FlightGlobal in September 2019.

All this was feeding through to airline bottom lines.

Etihad Airways was feeling the pressure particularly strongly as its equity partnership strategy fell apart and it worked through a transformation programme to become a "mid-sized airline".

All told, IATA data shows that Middle Eastern carriers recorded the biggest collective net loss among the global regions in 2019, at $1.5 billion, while the Asia-Pacific, Europe and North America were comfortably in profit. The region also recorded the weakest year-on-year passenger traffic increase, of just 2.3%.

Industry observers noted, with some prescience, that the region's airlines were particularly exposed to outside forces, given their relatively large reliance on international traffic and limited recourse to origin-and-destination passengers.

As 2021 nears a close, the impact of those details has been heightened by the pandemic.

Travel restrictions

Compounding the challenges, many Middle East ern operators have a high reliance on the Asia-Pacific region for passengers, exposing them to countries with some of the strictest travel restrictions globally.

The domestic markets that have, at times, been the only significant air connectivity open during the Covid-19 crisis are small or non-existent in the region. Carriers such as Saudia, meanwhile, lost the business associated with what is, in normal times, the huge Muslim pilgrimage to Mecca on the annual Hajj.

At the same time, the big Gulf carriers' fondness for large widebody jets means that even as that connecting traffic returns, they are having to serve it with metal that is unsuited to low-load-factor environments.

On top of that, the Covid-19 recovery is being characterised by leisure and visiting-friends-and-relatives traffic significantly outpacing the high-value corporate travel that helps make expensive widebody jets viable.

IATA data for 2020 and its estimates for full-year 2021 both show the Middle East furthest down on 2019 passenger traffic among the global regions, at -72% and -75% respectively. Its forecast for 2022 – down 55% – predicts that the region will move off the bottom spot, but only at the expense of the small African market.

Some carriers have done their best to maintain global connectivity, including Qatar Airways, which sought to make a virtue of retaining a greater proportion of its network than most other carriers at the height of the crisis. But none have been able to hide from the financial realities of operating an airline during the pandemic.

Losses, where reported by individual airlines, have been large and worsened by aircraft impairments.

Thousands of employees have lost their jobs. Emirates, for example, said in July that it had cut its workforce by nearly one-third during the crisis, similar to cuts seen at Etihad but not quite as deep as those at Qatar Airways. Recruitment drives are returning, but pre-crisis staffing levels are some way off.

Helpfully, the biggest carriers have often found a sympathetic ear from governments when it comes to requests for financial help. But that has not always been the case.

"It is no secret that El Al is in the deepest crisis in its history," said the carrier as recently as September, as it demanded compensation of $100 million from the Israeli government to offset the effect of state decisions on the airline's operations.

Financial outlook

The pain is set to continue for some months yet.

"Middle Eastern carriers will see limited improvement in their financial performance from a $6.8 billion loss in 2021 to a $4.6 billion loss in 2022," IATA says in its latest outlook report. "Without large domestic markets, the region's major carriers rely significantly on connecting traffic, especially to Asia-Pacific, which has been slow to re-open to international traffic."

But the news is not all bad. Indeed, as much as the pandemic period has created new challenges for all airlines, it also saw the resolution of some of the pre-crisis issues that were weighing on Middle Eastern airline expectations.

First, concerns about geopolitical tensions affecting air cargo prospects are long forgotten amid a surge in demand for such services. That boost from cargo services has helped airlines to offset some of their lost passenger revenue and might be a trend that endures well into the future.

"We do not take a decision now to operate a flight or to resume a flight just because there is passenger demand," said Qatar Airways chief commercial officer Thierry Antinori earlier this year. "What is very new [is that] we permanently think [about] the integration of cargo."

Emirates notes that nearly a third of its passenger aircraft have been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Innovation
Future Flight
Workforce

used for cargo operations during the pandemic.

Indeed, FlightGlobal's latest World Airline Rankings data shows that while Middle Eastern carriers were hardest hit in terms of passenger traffic in 2020, their strong cargo activity meant the region did not lag in terms of revenues. Middle Eastern carrier income was still down 58% for the year, but this was not as pronounced as the 60% and 61% falls among leading European and Latin America carriers respectively.

Among other encouraging developments, the Qatar blockade was lifted following a reconciliation agreement reached at a Gulf Cooperation Council summit in January.

Diplomatic relations

Months before that agreement, the normalisation of diplomatic relations between Israel and several Arab states opened up new network opportunities for a number of carriers. Etihad's first scheduled flight to Israel touched down at Tel Aviv Ben Gurion airport on 6 April this year, for example.

That came on top of the easing in tensions between the US majors and Gulf giants over subsidies and fifth freedom routes, which had cooled enough just before the crisis for American Airlines and Qatar Airways to reinstate a codeshare agreement in February 2020, two years after it had been suspended.

And in terms of the operating environment amid Covid-19, most Middle Eastern carriers are no longer facing the border shutdowns in their home countries that had been making passenger operations all but impossible. Bahrain, Qatar and the United Arab Emirates (UAE) have been among the quickest vaccinators of their populations in the world, with Saudi Arabia not far behind.

The Middle East has also seen some interesting developments among low-cost carriers during the crisis – including rare airline start-ups.

Notably, Wizz Air Abu Dhabi launched flights in January, with its managing director Kees Van Schaick describing the airline as the pioneer of a "new model of air travel" for the UAE capital.

That launch created competition for Air Arabia Abu Dhabi, a partnership between the Sharjah-based carrier and Etihad that launched in mid-2020.

Emirates and UAE low-cost carrier Flydubai were already two years into a much closer relationship when the pandemic hit.

Speaking this year, Etihad Aviation Group chief executive Tony Douglas said that during the Covid-19 recovery, "the trick is to make sure that one has a blend of propositions that give choice to the marketplace" and that a tie-up with a low-cost carrier was a crucial part of that.

Air Arabia itself is a rare example of a carrier that has been able to record a profit during the pandemic. It has also been on the expansion path elsewhere, with plans to launch units in Armenia and Pakistan.

But while the region's budget carriers have sometimes faced better operating environments than their long-haul-focused peers, they have not been immune to the impact of the pandemic.

Air Arabia recorded a profit during the pandemic and is planning expansion

Anton Volynets/Shutterstock

Etihad has been operating flights to Israel since April

Etihad Airways

In July, Flydubai cut to 172 the number of Boeing 737 Max aircraft it has on order, after cancelling 65 of its firm commitments to the type following a review of its post-pandemic fleet plans.

Elsewhere in the Middle East, fleet make-up remains a point on which there are different opinions among airline chiefs as they consider how the region might emerge from the crisis – particularly with heightened scrutiny around sustainability challenges.

While Qatar Airways is expected to bring some of its Airbus A380s back into service this year to cover for the A350s that have been grounded amid concerns about premature surface degradation, the Oneworld carrier remains unconvinced about the type's utility in a sustainability-focused world.

Among various negative comments about the superjumbo, Qatar Airways chief executive Akbar Al Baker has described the type as "one of the worst aircraft, when it comes to emissions, that is flying around today".

In Abu Dhabi, Etihad's 10 A380s have been grounded "indefinitely".

Clark, however, insists that A380s will be an important part of Emirates' fleet into the 2030s.

The return of the business traffic that helps make such aircraft economically viable remains another point of debate. Airline chiefs will variously say anything from the corporate market being structurally smaller for the foreseeable future, through to a belief that it will bounce back much more quickly than most dare imagine.

Helpfully for Emirates, the loss of some corporate customers might not mean fewer people flying, in Clark's view. "The corporate segment might diminish over time. But the same seats will be filled by people who have hitherto not been able to afford that seat," he said earlier this year.

Price-conscious

Nevertheless, Emirates has brought forward deliveries of its final three A380s to later this year, which will double the number of its superjumbos to feature its nascent premium economy cabin – a product that might come into its own in a market featuring more price-conscious travellers.

Whatever the make-up of future demand, the chiefs of all the big hub carriers believe that the region's status as a connecting post for long-haul flights will not be fundamentally damaged by the pandemic.

Clark has previously stated that "people should be thinking about the upside, not the downside" of future traffic projections, as he outlined a vision for Emirates to eventually expand into thinner routes using incoming A350 and 787 jets.

Qatar Airways, meanwhile, recently noted that it had rebuilt its network from a low of 33 destinations to more than 140, helping to ensure it is "well-positioned to take advantage of the recovery of international travel".

Elsewhere, Douglas said in September that the "hub status of Abu Dhabi and the UAE in general, given the fact that we are six flying hours from two-thirds of the world's population, will continue to be a very significant part of our operating model".

And Etihad might rightly curse its luck that under the leadership of Douglas, its transformation effort was beginning to have a positive impact in the first few months of 2020, before the industry was plunged into its biggest crisis.

Half-way through a five-year transformation programme, the carrier had already taken out costs running into the hundreds of millions of dollars and cancelled orders for dozens of A350 and 777X aircraft in 2019.

Despite those developments at Etihad, Middle Eastern airlines retain some of the world's largest widebody orderbooks as they come out of the crisis.

Cirium fleets data shows that Emirates has some 197 outstanding orders for widebody aircraft, as of mid-October, including 101 777-9s, 50 A350-900s and 30 787-9s.

With 76 A380s still grounded and just 44 in service, the number of aircraft on order is more than Emirates' in-service fleet of 188 jets.

Qatar Airways has 106 widebodies on order, including 50 777-9s and 23 A350-1000s. It also has an outstanding order for 50 A321neo narrowbodies, Cirium data shows. The Doha-based carrier has 200 aircraft in service.

Meanwhile, Etihad has 72 widebodies on order, including 17 777-9s and 15 A350-1000s. It also has 26 A321neos on order. The Abu Dhabi-based carrier has 70 aircraft in service, Cirium data shows.

Outstanding orders

Saudia remains a big widebody player in the region, with 86 such aircraft in service in mid-October, alongside 60 narrowbodies. It has been adding 787-10s to its fleet and has outstanding orders for dozens of A320neos and A321neos – some of which will enter service with its low-cost unit Flyadeal.

Other carriers, including Gulf Air, Oman Air and Royal Jordanian, also have widebody deliveries currently outstanding.

The still-impressive orderbooks at the Middle East's airlines bring to mind what now looks like the golden age for the region's air transport industry in the early 2010s. Most memorably, on the first day of Dubai air show in 2013, Emirates, Etihad and Qatar Airways signed orders and commitments for a total of 225 777X aircraft. Etihad then added an order for 30 787-10s and Flydubai committed to buy up 100 737 Max aircraft and 11 737NGs.

In stark contrast, the early 2020s are likely to be charactised by the region's airline sector needing to demonstrate that despite going into the pandemic crisis on the back foot, the fundamentals of the business still stand up in a post-Covid-19 world.


A350
1000

Backed by the Biden administration and Israel, the UAE's attempt to buy stealthy F-35As looks set to propel its air force to the next level of combat capability and give it an edge over potential foes

Mirage 2000-9 and F-16 operator will be adding F-35A to its inventory

US Air Force

Worth the wait

Craig Hoyle

In November last year, amid the tumultuous final days of Donald Trump's presidency, the US government gave its approval for what would previously have been an unthinkable arms sale to the United Arab Emirates (UAE).

Worth almost $23.4 billion, the proposed package includes 50 Lockheed Martin F-35As, 18 General Atomics Aeronautical Systems MQ-9B SkyGuardian unmanned air vehicles (UAVs) and a broad array of precision-guided weapons.

Selling a fifth-generation stealth fighter to the UAE only became a possibility following the signature of the Abraham Accords – a peace agreement between the Middle East state and Israel – just two months earlier. Brokered via the USA, the pact normalised relations between the nations, enabling direct commercial flights and the development of new trade links.

While the UAE has long been interested in the F-35A, which made its first Dubai flying display appearance two years ago, getting to this point took many twists. Over the past decade-plus, it had also flirted with potential acquisitions of the Dassault Rafale or Eurofighter Typhoon, and additional Lockheed F-16E/Fs.

Expectations of a Rafale buy grew around the Dubai show in 2009, but two years later a request for information linked to a planned 60-aircraft acquisition also considered the rival Typhoon. In November 2013, then-UK prime minister David Cameron visited the show, in the hope of getting an agreement for the Eurofighter over the line.

But in a disappointing twist for the European bidders, the requirement subsequently evaporated. In its place, the UAE sought a follow-on purchase of 30 F-16s in an advanced Block 61 standard, with a deal also to include the modernisation of its existing fleet of the type to the new configuration.

The UAE previously acquired 80 Block 60-standard F-16s, with Cirium fleets data showing that 78 remain in its active inventory, aged between 10 and 17 years. Its air force also operates 59 Dassault Mirage 2000-9 fighters, which have been in use for between 16 and 31 years.

Unusually, the outgoing Trump administration notified Congress of its approval for the mammoth arms package, rather than following the normal sales process, which first seeks its backing.

Announcing the deal, then-secretary of state Mike Pompeo referred to "the UAE's need for advanced defence capabilities to deter and defend itself against heightened threats from Iran". Also made with the support of the Israeli government, the approval was intended to send a clear message to the authorities in Tehran.

Washington had previously ruled out selling the F-35 outside of Israel in the Middle East, in a bid to ensure that its ally's military maintains a qualitative edge over potential future foes.

Israeli endorsement

The Israeli air force has been using F-35I Adir strike aircraft operationally since December 2017. Cirium data shows that the service has built its active fleet to 27 examples, with a further six on firm order. Israel's current plans call for an eventually 50-strong fleet of the type.

In late January, current secretary of state Anthony Blinken confirmed that the proposed sale to the UAE was being assessed, noting: "it is typical at the start of an administration to review any pending sales, to make sure that what is being considered is something that advances our strategic objectives and advances our foreign policy."

Reports in mid-April indicated that Washington would proceed as planned.

"We can confirm that the administration is moving forward with these proposed defence sales to the UAE, even as we continue consulting with Emirati officials to ensure we have clear mutual understandings with respect to Emirati obligations and actions before, during, and after delivery," the Department of State says.

"Projected delivery dates on these sales, if implemented, would be several years in the future. Thus, we anticipate a robust and sustained dialogue with the UAE to ensure that any defence transfers meet our mutual strategic objectives to bu ild a stronger, interoperable, and more capable security partnership," it continues.

"We continue to reinforce with the UAE and all recipients of US defence articles and services [that] US-origin defence equipment must be adequately secured and used in a manner that is consistent with respect for human rights and fully complies with the laws of armed conflict."

In addition to its $10.4 billion fighter purchase, the UAE's new arms package includes air-to-air and air-to-surface weapons worth $10 billion and SkyGuardian UAVs valued at an estimated $2.97 billion, the US Defence Security Cooperation Agency says.

The General Atomics-produced MQ-9Bs would be equipped with Leonardo's Seaspray 7500 maritime search radar, and carry Lockheed AGM-114R Hellfire air-to-surface missiles and Raytheon Paveway II-series guided bombs. Other weapon options could include Boeing Joint Direct Attack Munitions and GBU-39 Small Diameter Bombs.

General Atomics is to supply 18 SkyGuardians in an armed configuration, for almost $3 billion

General Atomics Aeronautical Systems

Fielding the SkyGuardian will mark a capability jump for the UAE air force, which has previously acquired General Atomics' unarmed Predator XP. It also received approval from the US Congress in May 2019 to buy 20 Insitu RQ-21A Blackjack UAVs, under a deal worth a potential $80 million.

As a result of the Abraham Accords, major players such as Elbit Systems and Israel Aerospace Industries can this year exhibit their UAV products at a Dubai air show. This will provide stiff competition for China's AVIC, which has attended previous events to promote products including the armed Wing Loong I and II vehicles and U8EW unmanned rotorcraft.

But fielding F-35As will be a hugely more significant step for the UAE, which has waited while the other Gulf Cooperation Council (GCC) member states have embarked on major combat aircraft acquisitions over the past several years.

Ten more AH-64s are on order for joint air command

BillyPix

Spending spree

Bahrain is expected to receive its first of 16 new F-16Vs late this year, with the active electronically scanned array (AESA) radar-equipped assets to bolster its in-service fleet of 21 F-16C/Ds.

Long-term Boeing F/A-18C/D operator Kuwait is acquiring 28 examples each of the E/F-model Super Hornet and multi-role Typhoon, with the latter featuring a Leonardo ECRS Mk0 AESA array.

Qatar's combat aircraft expansion is the most dramatic fleet development in the region in recent years, with Doha's aged Dassault/Dornier Alpha Jets and Mirage 2000-5s already joined by Rafales and Typhoons, and Boeing F-15QAs to follow. In all, its air force will be introducing a combined 94 of the new models.

Saudi Arabia, meanwhile, has completed its introduction of advanced F-15SAs, which have joined earlier examples of the type, with its air combat fleet also including 72 Typhoons and Panavia Tornado strike aircraft.

Remaining GCC member Oman has no current fighter requirement, due to it already operating F-16C/Ds, Typhoons and armed BAE Systems Hawk 203s.

In addition to its future stealth fighters – which Cirium indicates could be produced in the 2025-2031 period – several further acquisitions are planned by the UAE. At the 2019 show, it announced plans to purchase another three A330 multi-role tanker transports (MRTTs), in a move that would double its fleet of the Airbus Defence & Space type. Its trio of Rolls-Royce Trent 700-engined and refuelling boom-equipped MRTTs were delivered between 2010 and 2011.

No deal has yet been signed, opening the potential for an order to be advanced at this year's event.

The US Air Force gave a Dubai show and Middle East-region debut to its 767-based KC-46A in 2019, and Boeing has previously suggested that the UAE could also acquire its Pegasus as part of a future strengthening of its tanker capabilities.

Also at the last event, Saab was awarded a follow-on deal to provide two more Bombardier Global 6000-based GlobalEye surveillance aircraft. The Swedish supplier – which finalised the just-over $1 billion contract last December – had brought one of its previously three on-order examples to make its show debut.

Selection by the UAE in 2015 – then as a two-aircraft deal – brought launch order success for the GlobalEye product, which combines airborne, land and maritime surveillance capabilities. A third example was ordered in 2017.

The platform's primary sensor is its Saab Erieye ER AESA radar, while it also carries an electro-optical/infrared sensor and Seaspray 7500E maritime radar. The aircraft also has electronic warfare capability, with electronic support measures equipment installed on its wingtips. With five onboard operator stations, the type has an endurance of around 11h.

Saab performed GlobalEye deliveries in April and September 2020, and February 2021. The remaining two aircraft from the programme are at its Linkoping modification site. Bombardier announced in late August that it had transferred the final "green" airframe.

"The aircraft was delivered to Saab from Bombardier's Toronto manufacturing site and underwent interior completions work at Flying Colours in Peterborough, Ontario, prior to arriving in Sweden," the business jet supplier says. It describes this process as introducing "a practical, functional interior for the mission system operators".

In January, Saab said that work under its latest contract is due for completion by 2025.

The company has yet to secure a second customer for its GlobalEye, but has offered two examples to Finland as part of its HX fighter proposal, where it is proposing to supply 65 Gripen Es to Helsinki. The Swedish air force has also expressed interest in the modified business jet as a potential replacement for its two Saab 340-based airborne early warning and control system aircraft.

Other potential UAE procurements could include in the airlift sector – in 2009 it gained approval for a potential 12-aircraft acquisition of Lockheed C-130Js; a deal which failed to progress. The service now operates four H-model Hercules, and the same number of commercial L-100s.

An advanced jet trainer need also could emerge, especially if the planned F-35A purchase moves ahead. The UAE currently uses a small fleet of Hawk 102s, along with Pilatus PC-21 turboprops, and several years ago expressed interest in the Leonardo M-346, including armed examples.

Beyond these prospects, the UAE's acknowledged procurement activity appears modest, with only 24 Calidus B-250 armed turboprops and 10 Boeing AH-64E attack helicopters on firm order.

Rapid expansion

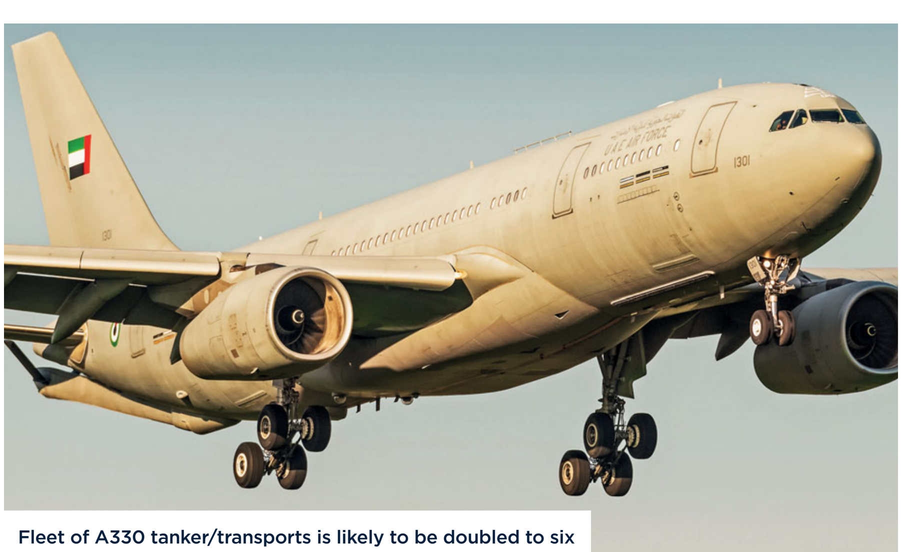
However, it should be noted that the nation has completed a major fleet expansion over recent years. The 2011-2012 version of Flight International's World Air Forces directory saw its in-service fleet stand at 373 aircraft, while Cirium data shows that it now has 553, split between its air force (322) and joint air command (231).

The most marked increase in its capability over the past decade has been seen in the combat helicopter category, where its active inventory has soared by 126 aircraft, from just 97. Its strength also has grown in all five of our other directory categories.

Cirium data shows that the UAE's current inventory accounts for 28% of the GCC group's combined 1,951 military aircraft. This puts it in second place behind Saudi Arabia: Riyadh's armed forces have 897 aircraft, or a 46% share. The rest of the regional fleet is made up with assets operated by Qatar (161/8%), Oman (128/7%), Bahrain (110/6%) and Kuwait (102/5%).

Looked at in terms of equipment mix, the UAE's 119 combat aircraft represent 22% of its total fleet, versus a 40% share for its 223 combat helicopters. Some 146 training aircraft/helicopters account for a further 26%, with the remainder split between transports (39/7%), special mission types (23/4%), and a trio of tankers; or less than 1%.

With its F-35A deal seemingly still on track, the UAE's future fleet mix looks set to become more potent, giving it a stealthy edge over potential foes, while satisfying the strategic requirements of both the USA and Israel.



Fleet of A330 tanker/transports is likely to be doubled to six

AirTeamImages

Country was the launch customer for Saab's GlobalEye surveillance aircraft

Arnold OA Pinto/Shutterstock

From flights between Gulf cities and Tel Aviv to co-operation on defence technology, a landmark diplomatic deal with Israel has led to a slew of new partnerships

Bridging the Gulf

Israel Aerospace Industries

IAI is setting up two freighter conversion lines for Boeing 777-300ERs in Abu Dhabi

Murdo Morrison

This year's Dubai air show will feature exhibitors from a country that, at the time of the last gathering in 2019, the United Arab Emirates (UAE) did not even officially accept had a right to be on the map.

Events have moved quickly in the 15 months since the Abraham Accords – brokered by then-US President Donald Trump – saw the UAE and Bahrain follow fellow Arab states Egypt and Jordan in establishing diplomatic links with Israel. Aerospace and aviation businesses have been among the big beneficiaries.

Despite the backdrop of Covid-19, the airways between Israel and its Gulf neighbours have begun to fill with connecting flights, and liveries never spotted at certain airports are now a regular sight. Dubai airlines Emirates and Flydubai, as well as Bahrain's Gulf Air, have begun flying to Tel Aviv, and Israeli airlines Arkia and Israir in the opposite direction. Meanwhile, in July El Al and Etihad began a codeshare pact, offering customers of the Israeli flag-carrier a range of previously unavailable global connections through Abu Dhabi.

Travel restrictions

While on-off travel restrictions and a flare-up of the Israel-Hamas conflict earlier this year have been problematic, tourism and business travel should render those routes lucrative once the pandemic recedes.

Israel offers a rich heritage to adherents of the three Abrahamic faiths and, in Tel Aviv, the region's liveliest party spot; the UAE is the Arab world's commercial hub and a leisure destination in its own right. Both nations are keen to boost their high-tech and financial services sectors, and continue punching above their weights in the global economy.

There have also been moves in aviation services, with Etihad's training division providing simulator time to pilots from Israir. The chief executive of the Israeli leisure airline, Uri Sirkis, has pointed out that the 3h flight time from Tel Aviv makes the Abu Dhabi location attractive for him as a business, but he also has broader hopes about the potential of tourism between the two countries. In MRO, Israel Aerospace Industries (IAI) late last year signed a deal to provide line maintenance for Gulf Air at Tel Aviv's Ben Gurion airport.

Significant breakthroughs

But arguably the two most significant breakthroughs made since the signing of the accords in August 2020 are on the industrial and engineering side, with IAI central to both. In August, the state-owned Israeli aerospace and defence group said it was setting up two freighter conversion lines for Boeing 777-300ERs in Abu Dhabi, in co-operation with Etihad Engineering. IAI has already begun its latest programme to modify the large widebody type at its Ben Gurion site.

Meanwhile, IAI announced earlier this year that it was to partner with newly-established Abu Dhabi-based group EDGE on developing a range of anti-unmanned air vehicle (UAV) systems for the UAE and the wider Gulf market. It was the first – and remains the only – major collaboration between the two countries' defence sectors. Under the memorandum of understanding (MoU), EDGE's electronic warfare subsidiary SIGN4L will share technology with IAI, which has spent many years developing missile defence technology as part of its national security infrastructure.

The partnership with Etihad Engineering is one of several passenger-to-freight (P2F) collaborations signed by IAI in the past 12 months, as the growth of e-commerce and pandemic-induced decline in airline belly-hold capacity has boosted P2F demand. The Israel firm is setting up another conversion line for the 777-300ER and -200LR in Seoul, South Korea, as well as one for 767-300ERs in Addis Ababa with Ethiopian Airways. It is also teaming with Italian maintenance company Atitech to establish a 737 P2F facility in Naples.

Yossi Melamed, the general manager of IAI's Aviation Group, says the Abraham Accords meant managers from both outfits could meet for the first time, and explore ways of working together. He has described the partnership as adding "a significant tier to the relations between Israel and the Gulf states". For Etihad Engineering – formerly Abu Dhabi Aircraft Technologies – the attraction is a new business line that allows it to further diversify from in-house maintenance work for the Abu Dhabi flag-carrier and other airlines.

"We were very familiar with the Gulf maintenance operations but we couldn't work with them," says Melamed, who runs one of the world's most prolific freighter conversion businesses for Boeing aircraft. "The accords opened up a relationship, meaning we could visit each other's premises. They are great people, and we are really looking forward to working with them."

Work has already begun on establishing the conversion line, and Melamed expects the first passenger aircraft to arrive in the first quarter of 2023.

Intellectual property

On the counter-UAV tie-up, IAI and EDGE have said the final product will comprise detection and identification systems, "soft kill" solutions for jamming or cyber take-over, and "hard kill" capacity, such as missiles, electromagnetic equipment or lasers. EDGE chief executive Faisal Al Bannai insists that, despite IAI's many years of experience in the field, the MoU will be a partnership in which both companies will contribute intellectual property. "We want to add value in all our relationships," he says. "We will not just be a re-seller of someone else's products."

The Abraham Accords include a mutual recognition by Israel and the Gulf states of the regional threat posed by Iran, which remains hostile to Israel and suspicious of its Sunni neighbours. Although Israel is believed to have been tacitly co-operating on security matters with the UAE and even Saudi Arabia for years, and some trade links had begun to be established, until August 2020 it was difficult to enter the UAE with an Israeli passport. The accords make it possible for Israel and the Gulf countries to co-operate, with the USA and other allies, on wider security priorities.

The immediate visible sign of this for show-goers will be an Israeli representation at the Middle East's premium aerospace show – something that only the most optimistic observer of the region's politics might have thought possible just two years ago.

In fact, Israeli industry's public debut in the Gulf might have come even earlier. But for a travel ban prompted by concern over rising Covid-19 cases, Abu Dhabi's IDEX show – which took place just six months after the signing of the accords, in February – would have featured an Israeli pavilion.

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Abraham Accords saw UAE and Bahrain follow fellow Arab states Egypt and Jordan in establishing diplomatic links with Israel

Mark Cryan, vice-president of customer business for India, Middle East and Africa at Pratt & Whitney, explains how the engine manufacturer has fared through the crisis and is positioning for a return to busy skies

Powering up the recovery

United Technologies Corporation

Q Firstly, how has the pandemic impacted your commercial engines business globally, and what signs of recovery are you seeing?

A Looking back at the immensity of the challenge our industry faced over the past 18 months, it's clear that we are now in a pronounced recovery phase. At Pratt & Whitney, we're well positioned for future growth. We used the pandemic as an opportunity to accelerate upgrades in the GTF fleet, and it's paid off with mature 99.97% dispatch reliability for the A320neo family. So rather than slow down MRO activity during the pandemic, we took the time to improve durability, reduce backlogs in the shops and ensure the GTF fleet would be ready for the recovery.

This has been critical to airlines looking to benefit from the operational savings of their newest, most fuel-efficient aircraft. In fact, we've seen that aircraft in our GTF fleet were some of the last to be grounded and the first to return to service. In the narrowbody segment, the GTF-powered A320neo fleet is now operating at around 80% of pre-pandemic levels, while the V2500-powered A320ceo fleet is around 70%.

Q In terms of this region specifically, we saw a major orders bonanza by Gulf airlines in the first half of the decade, but things have been relatively quiet since. What is your outlook for the Middle East market?

A We are now seeing a significant increase in activity in the narrowbody market as airlines look beyond the pandemic. Throughout this difficult period, we worked closely with our V2500-powered A320ceo family customers like Etihad Airways, Middle East Airlines (MEA), Qatar Airways and Turkish Airlines to pause operations, maintain engines and ultimately return aircraft to service. Here in the Middle East, premier airlines such as MEA and EgyptAir have led the way with their efficient and environmentally friendly GTF-powered A321neo and A220 aircraft respectively. We're now excited to welcome Iraqi Airways to the GTF family as it takes delivery of its first A220. Slightly further afield on the Indian and African continents we are also seeing our airline customers enjoy the benefits of their GTF-powered fleets, and seeing more customers select Airbus and Embraer aircraft powered by our revolutionary engine.

We feel positive about the future of P&W-powered single-aisle aircraft in the Middle East. Both our V2500 and GTF engines outperform the competition in efficiency and associated payload-range advantages – whether you're talking passenger or cargo operations. Our GTF engines are also delivering industry-leading environmental benefits and world-class operating costs.

Q What is the future for the Engines Alliance partnership with GE Aviation, now that the A380 is no longer in production?

A With Engine Alliance, we have a strong partnership with GE Aviation and are well equipped to continue supporting EA-powered A380 operators with a comprehensive technical and aftermarket network.

We're of course very pleased to see A380s gradually returning to the skies, after the pandemic forced the grounding of the global fleet. Based on customer feedback, we're confident this unique aircraft will continue to provide value for operators of high-density routes. We expect many more years of utilization.

Q How has your aftermarket performance been affected during the slowdown, and how are you investing in your local service footprint and supporting your legacy-engine fleet?

A As we learned from previous industry downturns – from 9/11 to the global financial crisis – you must keep investing in MRO capacity to be ready for the recovery.

We have therefore been keeping in close contact with our MRO partners and suppliers to ensure the capacity and part provisioning are there to meet demand as it returns. Our close relationships with customers have given us good visibility around forecasting and scheduling maintenance, which allowed us to tailor maintenance strategies to the realities of the pandemic.

Over the past 18 months, there has been a lot of green-time management, an important resource in the airlines' toolbox. Now we must make sure that the pent-up demand doesn't overwhelm the system when it releases. We are planning engine capacity so that we are well positioned for the upturn in demand and can manage it together with our customers.

We also continue to invest in our global MRO presence to best serve customers. In 2020, three new members joined our GTF MRO network, which has 10 active shops spanning three continents. The V2500 engine has 18 established MRO facilities, including nine IAE partner facilities (three are managed by Pratt & Whitney and its joint ventures). And our mobile team continues to travel globally to provide on-site support.

Q How does it feel being back at the first major air show since early 2020? What sort of week are you looking forward to?

A It feels great that we're starting to return to normal with industry events like this, as well as customer visits, which we've now been doing for some time – of course in accordance with local guidelines for cross-border travel and meeting in person. We're proud to see the GTF engine powering three aircraft models on static display as well as the V2500-powered Embraer C-390 Millennium transport.

This week we're looking forward to meeting face to face with more airlines and lessors and talking about their fleet plans in the months and years to come.