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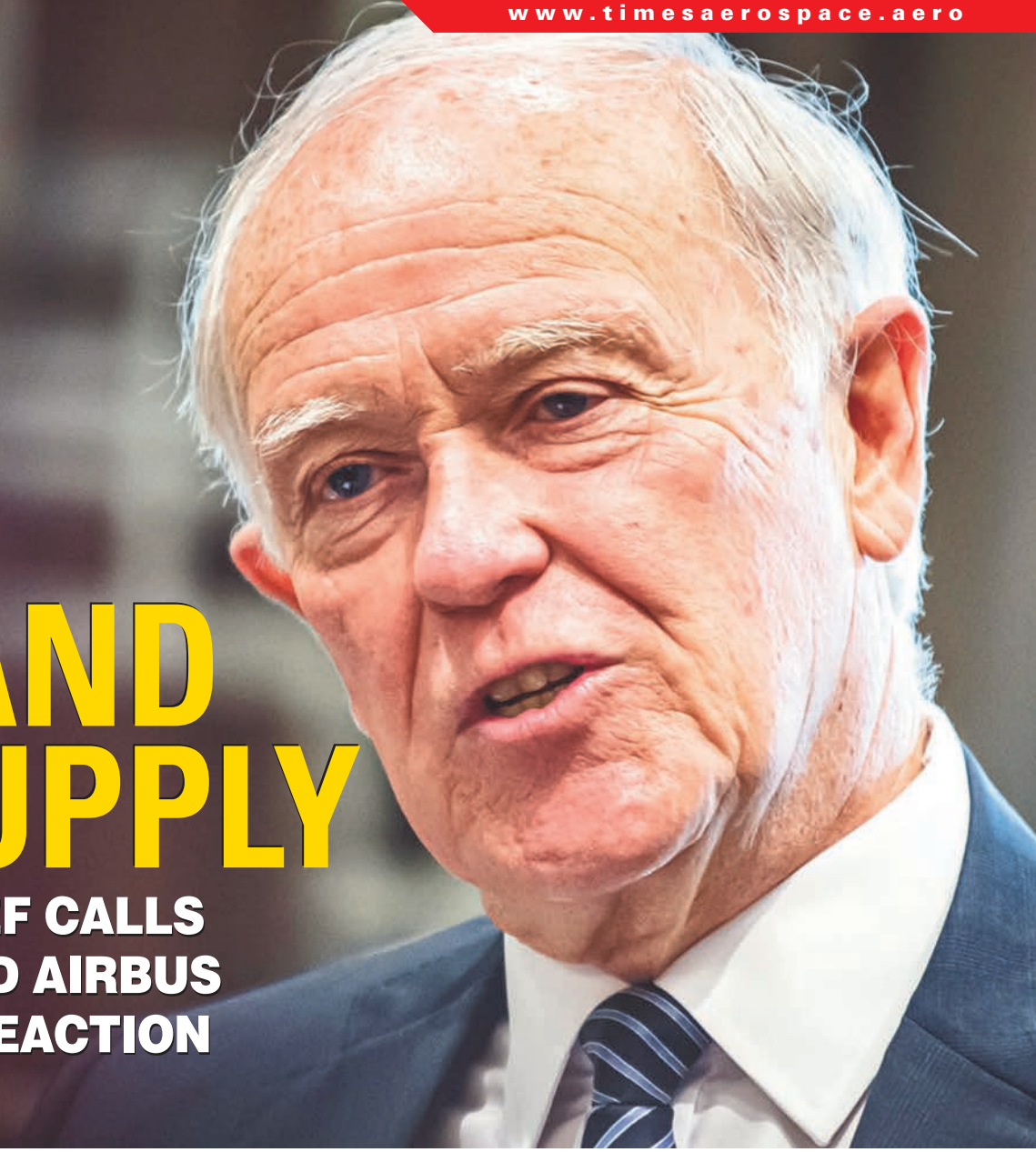
THE MAGAZINE FOR AEROSPACE PROFESSIONALS IN THE MIDDLE EAST, NORTH AFRICA AND TURKEY

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DEMAND ON SUPPLY

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Sir Tim Clark,
Emirates Airlines president.
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EMIRATES STRENGTH IN GOOD TIMES – AND BAD

The horrific rain that swept through the Gulf in April was unprecedented. Having lived in the region at various times over the past 50 years I have witnessed heavy rainfall that has seen a desert suddenly bloom overnight – but never one that created lakes and waterways.

Oman and Dubai seemed to fare the worst. And with the world’s busiest international airport being brought to standstill with a year’s rainfall in a single day, it was a credit to the operator that in one week it was back to normal operations.

Elsewhere in the city, the thousands of abandoned vehicles and flood damaged properties will take a lot longer to recover.

For the first few days after the storm, there was chaos.

Angry stranded passengers claimed a lack of communication.

Flights delayed due to lack of ground or gate staff; ground vehicles unable to bring baggage or catering to the aircraft and crew needing special dispensation from GCAA as duty hours dripped away on the ground.

But credit to the resilience of Emirates Airlines. Images of a Flydubai 737 powering through the waves on a taxiway went viral. A380s were lifting passengers to a drier destination with surprising regularity.

But there are lessons to be learned.

This was an unprecedented natural disaster – but the precedence has been set.

On these pages we have been talking about climate change risks for some time. The aviation industry is working toward its net zero. But this type of event will happen more frequently.

Is there a plan?

In the event of an aircraft accident we have seen airlines respond quickly and effectively with their crisis centres and communication plans. There is no doubt that natural disasters need the same attention to detail and the development of a centralised approach to that vital communication with passengers. There may not be much to say, but the airlines, airports and other stakeholders need to be together to tell as much as they can as quickly as they can.

Reputation in this business is all.

That is something Sir Tim Clark is well aware of.

The Emirates president has been at the helm since Dubai’s airline was a minor regional player; and in our cover story Clark shares the strategy for the next stage of the airline’s development.

He has done a remarkable job and will certainly be a hard act to follow.

Alan Peaford, editor-in-chief



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GIVE THE FUTURE A POSITIVE OUTLOOK



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AIRBUS

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IMAGE: ZAYED INTERNATIONAL AIRPORT

GATEWAY TO A BETTER PASSENGER EXPERIENCE

Zayed International Airport has processed 7.9 million passengers through Abu Dhabi's new terminal since its inauguration on November 15, 2023.

The deployment of a comprehensive border management solution at Abu Dhabi Airport, featuring the world's first multi-biometric entry/exit system, has significantly bolstered border security, while simultaneously enhancing the passenger experience and throughput. The success of this project has led to its extension to the country's four other international airports.

The Single Token Journey (STJ) solution, a highlight of a collaboration with IDEMIA, employs advanced facial recognition technology to streamline the passenger experience. By assigning a unique digital identifier to every traveller, the STJ solution eliminates the need for multiple documents, enabling passengers to move from curb to gate, including the border clearance step, in a record time of just 12 minutes.



Saudi pathway for female engineers

Riyadh Air has taken the first intake of 27 females who commenced their 30-month diploma course on their path to become certified aircraft engineering technicians.

Tony Douglas, CEO of Riyadh Air, said: "Riyadh Air is an airline that will challenge perceptions while representing the modern, dynamic Saudi Arabia. We are fortunate that our engineers are students at the International Aviation Technical College under the Colleges of Excellence banner and accredited by Aviation Australia, one of the most prestigious global aviation schools and we fully expect these ladies to be part of the future leadership of Riyadh Air."

Turkish first

Turkish Technic helped convert an Airbus A330 from a passenger to freight aircraft in February, a first for the MRO company.

Working with Elbe Flugzeugwerke (EFW), the

centre of excellence for Airbus passenger to freighter (P2F) conversions, Turkish Technic has converted and relocated the upper frame shell cut out, a key step for installing the main deck cargo door. This project, the first in a series of P2F conversions, is scheduled for completion in mid-2024.

Block aid

Lockheed Martin marked a milestone in March with the departure of the first ferry cell of three F-16 Block 70 jets from Greenville, South Carolina, to Bahrain.

To date, Lockheed Martin has produced five F-16 Block 70 jets for Bahrain, with an additional 11 in various stages of production and testing. The initial aircraft are performing flight test missions at Edwards Air Force Base, California, with the 416th Flight Test Squadron.

OJ Sanchez, vice president and general manager of the Integrated Fighter Group at Lockheed Martin, said: "With the

introduction of the F-16 Block 70, we are witnessing a significant leap in fighter capabilities. The integration of this proven platform will allow the Royal Bahraini Air Force to safeguard its skies effectively and partner with allies worldwide."

Cargo platform

Accelya, a global software provider to the travel industry, has signed a multi-year FLX cargo renewal with flydubai, creating an end-to-end cargo platform offering.

The new services will enhance flydubai's digital distribution capabilities through a highly-functional, customer self-service tool, as well as enabling connectivity to a wide range of third parties through Accelya's catalogue of APIs. Accelya's end-to-end platform offers insights and data to maximise revenue opportunities and increase margins, as well as create, develop and distribute new products across multiple channels.



IMAGE: ETIHAD AIRWAYS

Etihad roadmap on course with three Boeing 787-9s

Etihad Airways celebrated the arrival of three new Boeing 787-9 aircraft in February.

The new aircraft began operations later that month, helping Etihad to expand in line with its ambitious roadmap, which will see it fly to 125 destinations with more than 160 aircraft by 2030.

Antonaldo Neves, chief executive officer, Etihad Airways, said: "Their arrival is key to our network expansion strategy and comes at the perfect time as we continue to add multiple new destinations and expand frequencies into key markets."

"These new aircraft support our commitment to Abu Dhabi, allowing us to bring more guests to experience the incredible capital of the UAE, either as their end destination or on a stopover when connecting across our expanding network."

Airport winner

AD Airports, the airport operator in Abu Dhabi, won the "Airport Operator of the Year" award in March at the Aviation Achievement Awards 2024.

Elena Sorlini, managing director, and chief executive officer at Abu Dhabi Airports said: "Receiving 'Airport Operator of the Year' is a true reflection of our team's dedication to exceptional airport experience. It's a remarkable accomplishment, which not only reinforces the pivotal role of Abu Dhabi Airports in the regional aviation landscape, but also positions it as a global leader in shaping the future of the travel experience worldwide."

Greens on the menu

Emirates Flight Catering has fully acquired Emirates Bustanica and its consumer brand Bustanica, the world's largest indoor vertical farm.

Located near Al Maktoum International Airport at Dubai World Central, Bustanica's 330,000sqft facility has the capacity to grow more than one million kilograms of exceptional quality leafy greens a year, equivalent to three tonnes daily, while using 95 per cent less water than conventional agriculture.

Operating under the brand name Bustanica, the produce is available across all major retailers in the UAE such as Spinney's, Waitrose, Carrefour, and Choithrams. Customers on Emirates and other airlines enjoy this farm-fresh produce in their salads and meals.

Flynas' future

Flynas has accepted 22 Saudi candidates for the second batch of the Future Engineers' programme. The new candidates have started qualification and training with the aim of graduating as maintenance and aircraft engineers at flynas.



RIYADH AIR CUTS A DEAL WITH SABRE

Riyadh Air has chosen Sabre comprehensive technology solutions to enhance its operational and economic efficiency ahead of its first flight in 2025.

Sabre Network Planning and Optimisation solutions will help Riyadh Air optimally design its networks, accurately forecast demand, and profitably schedule and allocate available capacity.

Vincent Coste, chief commercial officer of Riyadh Air, said the

airline has "carefully selected world-class technical suppliers to power Riyadh Air towards its maiden flight in 2025."

This strategic alliance aims at leveraging cutting-edge technology for sustainable growth, improved efficiency, and enhanced profitability.

The agreement includes Sabre's schedule manager, slot manager, profit manager and market intelligence for data analysis, including network planning and optimisation.



The LOI was signed in the presence of the commander of the Qatar Emiri Air Force, Major General Jassim Al-Mannai and the CEO and COO of ELT Group, Domitilla Benigni.

IMAGE: ELT GROUP AND THE QATAR ARMED FORCES.

ELT and Qatar attracted by electromagnetic deal

ELT Group and the Qatar Armed Forces have signed a LOI stating their common will to cooperate on strategic projects in the field of electromagnetic spectrum operations (EMSO) and in particular on the development of an EW and intelligence centre.

ELT said the signing is 'a confirmation of a solid friendship and long-term cooperation between the group and the Qatar Air Force.'

ELT Group has been present in Qatar since 2017 with the opening of its commercial office, providing support within many national programs thanks to its portfolio of capabilities in the EMSO domain.

Saudi traffic

The General Authority of Civil Aviation (GACA) saw 'outstanding' progress in the Kingdom's air traffic performance in 2023.

The Kingdom saw the total number of flights increase 16 per cent from 701,290 to 814,995 and the number of passengers rise 26 per cent from 88 million to 112 million in 2023, well above pre-pandemic levels. In addition, 2023 saw Saudi Arabia expand its air connectivity to reach 148 destinations with at least 52 flights to and from the Kingdom.

EgyptAir Airshow

EgyptAir has been named as the official carrier for the Egypt International Airshow, taking place on September 2-5 at El Alamein International Airport.

Organisers of the event, Arabian World Events, said: "In partnership with the Ministry of Civil Aviation and other strategic allies, Egypt International Airshow will serve as a platform for fostering commercial partnerships and contributing to long-term commitments across the region."

Bahrain's ISO double

Bahrain Airport Company has achieved its second consecutive ISO recertification. This is for its quality management system, environmental management system, and occupational health and safety management system.

CEO, Mohammed Yousif Al Binfalah, said: "This ISO certification underscores our commitment to achieve excellence in quality, health and safety, and environmental standards."

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We're delighted to announce the Portuguese Air Force now joins the Brazilian Air Force as a C-390 Millennium operator. The first Portuguese aircraft of the newly formed 506 Squadron is now in service at Beja Air Base, with four more aircraft to be added in the near future. A growing number of countries are choosing the C-390 Millennium (including Hungary, Netherlands, Austria, Czech Republic and South Korea) attracted by its unbeatable combination of technology, speed, performance and multi-mission capabilities. Hungary will take delivery of their first C-390 Millennium in 2024 – another milestone for an incredible aircraft that has already achieved 10,000 flight hours with the Brazilian Air Force.

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CHALLENGE.
CREATE.
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Al-Meer's vision

Qatar Airways CEO, Badr Mohammed Al-Meer, has revealed several major new developments in line with his vision for the airline.

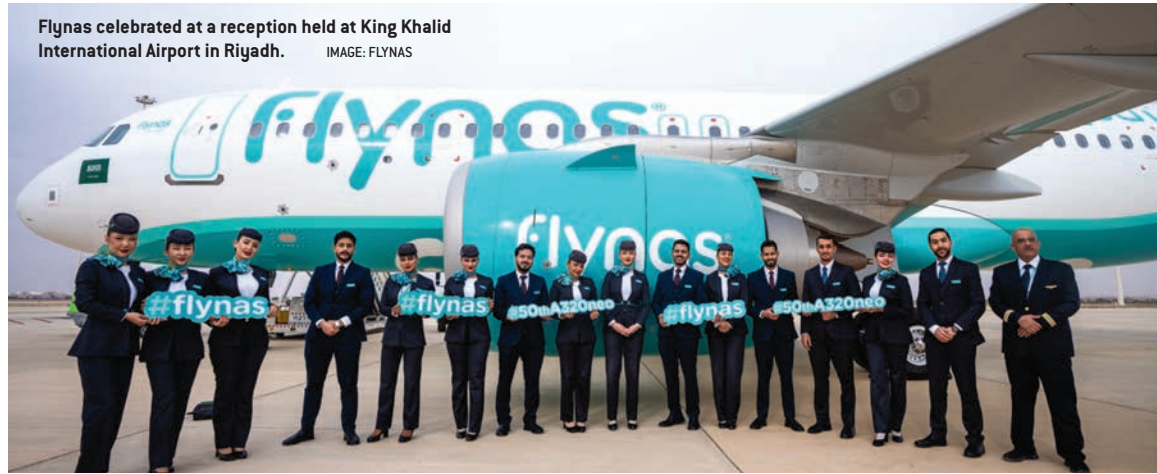
Al-Meer said: "We see a high demand for first class, and as such, have decided to introduce a newly-designed first class cabin unique to Qatar Airways. We are 70 to 80 per cent ready and are only finalising colours."

He also further revealed Qatar Airways' redesign of its premium Qsuite set to debut at this year's Farnborough International Airshow.

Al-Meer also underlined the ways in which digital innovation is helping drive organisational efficiencies, as the airline continues to announce new routes in growth markets including China and India.

Ghadames support

CPaT, a provider of distance learning for the airline and aviation industry, will be providing Ghadames Air with its aircraft systems courses and a library of general subjects for the Boeing B737 Classic and Boeing B777 fleets, along with its cabin crew training suite, which includes Boeing B777 aircraft systems for cabin crew and cabin crew safety and general subjects.



Flynas celebrated at a reception held at King Khalid International Airport in Riyadh. IMAGE: FLYNAS

Flynas takes delivery of 50th Airbus A320neo

Saudi low-cost airline Flynas celebrated a significant achievement as it received its 50th Airbus A320neo jetliner in April – part of Flynas' extensive order of 120 Airbus A320neo aircraft. The milestone was commemorated at a special reception held at King Khalid International Airport, Riyadh.

The airline said it is moving forward in its ambitious plans to double the fleet size after the board of directors approved an increase in purchase orders to 250 aircraft.

Captain Greg Darrow, vice president of sales, said: "Through providing their flight operations team with high-quality and interactive learning, we are committed to supporting Ghadames Air's success as they expand their airline."

Cyber protection

Royal Jordanian Airlines, in collaboration with MetaCompliance, have launched an interactive awareness platform for its employees in the field of cybersecurity.

The aim is to spread

digital culture and provide advice and guidance that will protect employees in cyberspace.

AI solutions

Riyadh Air has signed a strategic partnership aimed at revolutionising the aviation industry through AI applications. Utilising cutting-edge cloud and AI technologies, the partnership will focus on building Riyadh Air's data analytics platform and developing AI solutions across its main business and corporate functions.

This is in line with Flynas' strategic plan launched under the title 'We Connect the World to the Kingdom', in parallel with the objectives of the Pilgrims Experience Program (PEP).

This will facilitate access to the two holy mosques and the National Civil Aviation Strategy to enable national air carriers to contribute to connecting KSA with 250 international destinations and to accommodate 330 million passengers and to host 100 million tourists yearly by 2030.

Riyadh Air will be able to hyper-personalise its guest experience and elevate its guest service through intelligent channels, optimise its flight and ground operations through real-time data insights and predictions, and launch fit-for-purpose offerings of air and non-air products through highly-efficient and targeted sales channels.

Dnata US contract

Dnata has been awarded a multi-year contract by Etihad Airways in the USA. The new partnership will

see Dnata provide quality inflight catering services to the Abu Dhabi-based airline from its facility at Boston Logan Airport. Peter DeVito, CEO, Dnata Catering North America, said: "Our experienced team will consistently deliver outstanding culinary products that contribute to the passenger's exceptional journey."

"We look forward to working closely with Etihad and will continue to invest in our people, infrastructure and products to be the best in everything we do."

BELL STRENGTHENS ITS ABU DHABI RELATIONS WITH CSF AGREEMENT

Bell has signed an agreement with Abu Dhabi Aviation to establish its role as an authorised Bell customer service facility (CSF). It will provide service for Bell 212, Bell 412 and the SUBARU Bell 412EPX commercial aircraft.

"Bell's Global Customer Solutions network accommodates all operator needs and increases accessibility to world-class maintenance and training," said Chris Schaefer, vice president, Global Customer Solutions. "We're honoured to strengthen our relationship with Abu Dhabi Aviation and continue providing exceptional support and service options to the UAE and Middle East region."

"Bell's quality customer and maintenance services have enabled us to achieve and sustain excellent operational readiness on our Bell fleet," said an ADA representative. "We're thrilled to continue our long-standing relationship."



IMAGE: BELL



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Emirates has always taken a firm hand to back its belief on demand and the airline's president Sir Tim Clark explained to Paul Relman how, despite supply chain frustration, the growth will go on.

WHY CLARK'S TAIL IS UP

Sir Tim Clark was in a feisty mood when he addressed the UK Aviation Club in London at the end of February. He pointed the finger at Airbus and Boeing for contributing to the supply-chain malaise, which is causing the ongoing delays to aircraft deliveries amid the struggle to increase production rates. He also expressed frustration around the much-delayed certification of the Boeing 777X and reiterated the need for Rolls-Royce to improve the durability of the Trent XWB engine on the A350-1000 if Emirates is to order it.

Overall, Clark is upbeat about the demand recovery as the airline sector powers back into its next growth cycle. "We never believed that demand would do anything other than bounce back with a significant robustness. Emirates was a 'first mover', we got our fleet armed and ready to go. We got the Airbus A380s etc flying as quickly as we could.

"Looking forward, we see no decline in any of our segments. We see real growth in some of the existing segments. In essence, as I look forward over the next 10-15 years - notwithstanding the geo-politics, the socio-economic stresses etc - one thing is coming through very clearly: that demand for air traffic remains very, very robust."

The airline now has all but 22 of its 252 passenger airliners back in service, with 22 A380s still to be progressively reactivated through to early 2026. The Emirates cargo business also has 14 widebody freighters in service. During last November's Dubai air show, Clark signed firm orders for another 110 Airbus and Boeing widebodies for delivery through to the mid-2030s. The deals comprised 55 Boeing 777-9s, 35 777-8s, five 787-10s and 15 A350-900s. The airline's total backlog stands at 305 passenger widebodies, along with a further five freighters.

In terms of business recovery, Clark does not expect Emirates' passenger numbers to fully recover to the pre-Covid highs of around 59

Key role: Emirates will continue to operate the A380s until at least the late 2030s, but they could remain in service until early 2040s.

IMAGE: EMIRATES



million annually during the financial year which ended on 31 March, as the fleet is still not back to full strength. In its last fiscal year (to 31 March 2023), Emirates carried 44 million passengers.

"We're not back to those [pre-Covid] passenger numbers, but we're not far behind. When we get those A380s back in, we'll push the numbers back up again," he said.

After deliveries averaged around 20 passenger aircraft a year during the 2010s, shipments to Emirates have been flatlining since the pandemic. The 123rd and final Emirates A380 was received in December 2021 and the next passenger aircraft delivery to the airline is due in August when the first of 65 A350-900s will arrive.

Emirates should have begun receiving its Boeing 777-9 order in 2020, but a series of programme slips means deliveries are not expected until at least late 2025. The 777X

series has suffered a series of delays to certification, largely due to increased regulatory scrutiny around Boeing and around approval of derivative aircraft in the wake of the two 737 Max tragedies. When asked about the latest delivery schedule Clark jokes "every day is a different day at Boeing ... it could be the back end of next year, but more likely early 2026".

Clark remains unconvinced by Boeing's alternating schedule guidance: "Frankly, with what's being going on over there [at Boeing] and the FAA's increased surveillance and scrutiny of what they're doing, I'm beginning to doubt [the latest date] as well."

To compensate for the 777-9 delay, Emirates has extended the use of its predecessor, the 777-300ER. Meanwhile, the A380 fleet will be coming back to full strength over the next two years. "We took the decision to kick in a \$3 billion refurbishment programme for the 777s



“We’re not back to those pre-Covid passenger numbers, but we’re not far behind. When we get those A380s back in, we’ll push the numbers back up again.”

SIR TIM CLARK

and A380s. We're gutting the aeroplanes, rebuilding them with the latest products, so we can keep those going. That gives us the ability to maintain the network without having to worry about the foibles of deliveries not arriving on time."

Emirates will continue to operate the A380s until at least the late 2030s, said Clark, but they could remain in service until early 2040s, subject to the supply of replacements.

Like many in the airline industry, Clark is unimpressed at the hash the OEMs and their supply chains have been making in building back production. "I got the impression on both sides of the Atlantic that they were asleep at the wheel" during the pandemic, he said. The airframe manufacturers were "passing messages that they didn't think things were going to recover" before 2026-2028. That prompted both manufacturers during 2020 to "take the initiative to start shutting down... and seemed to be oblivious to the fact that the supply chains into them would also die a death - they didn't have the capital robustness to be able to stay in business".

Clark said the OEMs are now "reaping the whirlwind" of that situation, and "getting the supply chain back is taking an awful long time. There is no shortage of aircraft orders, but the difficulty is with the OEMs getting aircraft out the door."

The current lack of fleet growth has been holding back Emirates' expansion, said Clark. "There is so much more [we could fly]: South America, Africa, Asia... If I could just get another 50 per cent more aircraft in the air, I'd do it."

Sales in another key market, China, are still down but Clark expects this to rebound sharply at some point, especially for leisure travel.

Clark said he is well accustomed to the rise of Emirates "imitators" around the region, the most recent being Saudi Arabia's Riyadh Air, which like Turkish Airlines, Qatar Airways and

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Etihad, looks set to adopt some Emirates’ best practice. While his general attitude is that there is “plenty of demand for all”, Clark concedes that “sometimes it’s kept me up at night. But in the end, I have a firm belief in what we can do. And the more noise there is about what we do, the easier I sleep in my bed.”

One notable absentee from the Emirates’ Dubai announcements was an order for the Rolls-Royce Trent XWB-97-powered A350-1000. Clark is clearly keen for what is now the largest Airbus widebody to join the fleet, having already created potential cabin layouts.

□ □ □ □ □

But he will not place an order until Rolls-Royce “gets the engine right” and makes the pricing “affordable”. Clark had made his position clear at the Dubai Air Show and said he was “deeply disappointed that we couldn’t have what we needed on that engine”. But Rolls-Royce CEO Tufan Erginbilgic has recently assured him that “something like £1 billion has been committed to sort the engine out”.

Clark’s beef is around the XWB-97’s durability and poor time-on-wing (TOW) performance in the Emirates operating environment.

Derby has undertaken to double the TOW, but Clark said more improvement will be needed,

claiming TOW is currently only “about 500 cycles” and the airline wants “about 2,500... so they’re not there yet”.

Clark said that while the aviation industry’s efforts to address sustainability are applaudable, “some realism” needs to be injected into the debate: “We have some pretty onerous and difficult targets to achieve ‘net-zero’ carbon emissions by 2050. It’s all very well to talk about SAF, but getting there is the biggest single problem – decarbonising the planet in the time that people want mankind to do that is going to be a herculean task.

“I fret that the airframe manufacturers are absolutely fixated on single-aisle and hydrogen [propulsion] – that’s not going to crack the problem. They’re not talking about the next generation of twin [aisle]. What you see today is what you’re going to get – A350-1000 on the right and on the left 787 and 777-9 - which will be the biggest aircraft flying. After that, nothing else.”

Emirates and sister carrier Flydubai are “bolted at the hip”, said Clark, and between them have created a “network that is one of the largest in the world”.

Flydubai announced its first widebody order at the Dubai air show last year with a deal for 30 787-9s for delivery from “2026-2027”. These will join the airline’s existing all-737 fleet and will be used to “go to places we wouldn’t”, said Clark.

Looking to the future, the airline faces two key decisions around timings: that of the move to Al-Maktoum International (Dubai World Central/DWC) airport and the succession of Clark at the Emirates’ helm.

Annual traffic at Dubai’s main airport DXB has reached 85 million passengers and Clark said that while there is theoretically a lot more headroom across the day, the airport will struggle to accommodate the airline’s daily operating peaks as frequencies and passenger numbers rise. So DWC will be central to Emirates future success, and a government decision around funding for the next phase of the new airport’s expansion is eagerly awaited.

□ □ □ □ □

Clark, who has been at the helm of Emirates since 2003, had been set to retire in 2020 until the Covid-19 crisis prompted an extension. The recent promotion of 19 senior executives included the appointment to new “deputy president” positions of two Emiratis long-tipped as potential Clark successors – chief operating officer Adel Al Redha and chief commercial officer Adnan Kazim.

“This round of promotions was preparation not for my departure, but for the airline for what I call the third epoch – believe me there’s an awful lot coming,” Clark said. ▲

JOBY SIGNS CONTRACTS FOR FIRST UAE VERTIPOINTS

Plans to make the UAE one of the first sites for revolutionary urban air mobility (UAM) have advanced with two significant contracts.

Two sites, in Dubai and Abu Dhabi, have been identified as initial locations for the new generation of electrically-powered vertical take-off (e-VTOL) aircraft that are predicted to become part of the aeronautical landscape in the coming decade.

US eVTOL aircraft manufacturer Joby has signed an agreement with Dubai’s Road and Transport Authority, granting the company exclusive rights to operate air taxis in Dubai for six years, from early 2026.

Joby has also signed an agreement with Skyports, which will design, build and operate four initial vertiport sites across Dubai – Dubai International Airport (DXB), Palm Jumeirah, Dubai Marina and Dubai Downtown.

Joby’s aircraft is designed to carry a pilot and four passengers at up to 200mph/320kph. This would enable it to fly from DXB to Palm Jumeirah in just 10 minutes, compared with 45 minutes by road, for example.

The presence of a vertiport outside DXB’s Terminal 3, home of Emirates Airline, has led some to speculate that premium passengers flying into the airport could transfer to an eVTOL aircraft to get to their final destination.

Asked about this during an event in London in February, Emirates’ president Tim Clark said that while he was not involved in the discussions between the various parties, “If there’s an



opportunity, then we’ll certainly be talking to them. But we’ll just watch and wait to see what happens.

“They’ve got a lot of testing to do yet. I hope they’ve got all their performance calculations right, given the extreme temperatures out there in the summer.”

Meanwhile, another US eVTOL developer, Archer, has chosen Abu Dhabi’s Falcon Aviation as its vertiport infrastructure partner in Dubai and Abu

Dhabi. The aim is to use Archer’s Midnight vehicle as soon as 2025.

The two companies will develop vertiports at Falcon Heliport at Atlantis, the Palm in Dubai and the Marina Mall heliport in Abu Dhabi’s Corniche.

The notoriously busy road between Abu Dhabi and Dubai, which can take two hours to negotiate, is an obvious route for an eVTOL aircraft, which could cut the journey time to 30 minutes. ▲

E2 FAMILY KEEPS ROYAL JORDANIAN ON TRACK FOR GROWTH

Royal Jordanian has become the first Embraer E195-E2 operator in the Middle East with the delivery of two aircraft early this year. The airline is pursuing its fleet expansion and modernisation plan, despite geopolitical tensions.

The full agreement, announced in May 2023, concerns eight aircraft – six aircraft from Azorra’s existing backlog with Embraer, and two further E195-E2 firm orders from the airline directly with Embraer.

“We’re confident Royal Jordanian will soon see the environmental and economic advantages of operating these new E2 aircraft, while offering superior levels of passenger comfort,” said John Evans, CEO and founder of Azorra.

The E2 family of aircraft is geared to strengthen Royal Jordanian’s strategic aims by complementing its larger narrow body aircraft. According to Samer Majali, vice chairman and CEO of Royal Jordanian, this will help meet “capacity to demand, reduce operating costs and carbon emissions, while delivering a significant upgrade to passenger experience and comfort”.

Arjan Meijer, president and CEO of Embraer Commercial Aviation, underlined that with the E2 family of advanced-generation E-Jets, Royal Jordanian can simultaneously realise its growth, profitability and sustainability ambitions.

In line with its widebody fleet development strategy, Jordan’s flag carrier ordered four Boeing 787-9 Dreamliner jets at the Dubai Airshow. It also reconfirmed a previous order for two 787-9s, bringing its total 787-9 backlog to six.

The E2 family is geared to strengthen Royal Jordanian's strategic aims. IMAGE: EMBRAER - ANA CAROLINE



“This move aligns seamlessly with our broader strategy of fleet modernisation, emphasising fuel efficiency, sustainability and passenger comfort. As we embark on this journey, we are confident that the Dreamliner’s cutting-edge technology will play a pivotal role in elevating our operational capabilities,” said Majali.

Building on Royal Jordanian’s fleet of seven 787-8 aircraft, this additional member of the Dreamliner

family will enable the airline to fly more passengers and enhance its cargo capacity.

Looking ahead, Royal Jordanian remains optimistic about continued growth while acknowledging potential risks stemming from external factors that are impacting demand and operating costs.

As CEO Majali points out, the war between Israel and Hamas in Gaza is causing cancellations, but the Royal Jordanian team looks at its future with confidence. ▲



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Saudi Arabian low-cost carrier Flyadeal welcomed its new chief executive, Steven Greenway, at the start of the year, and he's back in his element, as he explained to **Chuck Grieve**.

IT'S A SMALL WORLD FOR GREENWAY...

Steven Greenway is a self-confessed workaholic with a particular passion for the "dynamic challenges" that start-ups present. If you want something built quickly from nothing, he's your man.

His own global footprint over the last 25 years rivals those of some of the airlines he's advised – 12 bases across four continents and numerous other ports of call where assignments have taken him.

Now he's back in the Middle East, at the helm of Flyadeal, the Kingdom's only home-grown low-cost carrier (LCC). Typically it seems, he couldn't wait for his paperwork to be finalised before he was behind his desk. He started officially on January 1.

It's no surprise that he's not a "big corporate guy". For him, small is beautiful: more intimate, more fun. "You can make a decision and see the impact of it straight away. That's the key thing for me."

He found that in the LCC environment – "very tight, very small unit" – where he's built his career. Not that he planned it that way: "Things came along," he said.

What came along has taken him literally around the world from his native Australia in roles with companies and airlines too numerous to list. Of his many achievements, one he's particularly proud of was his part in turning the business plan for Scoot, SIA's LCC subsidiary, into a functioning airline in just nine months. That was 2012, and "they're still using in-flight music that I selected," he said.

No stranger to the Middle East, he'd found Kuwait interesting in his year there with Jazeera Airways; Dubai and Emirates were exciting; and Saudi Arabia was intriguing before fate kept him in Asia for several years.

"I was in Asia when it was booming," he said. "The Middle East today is almost a replica of Asia 10 years ago. The industry is thriving. I've seen this before."

It helps that the authorities have "grasped how important the aviation industry is" to development and growth. "They get it. They recognise that if you're going to have a modern transportation infrastructure, you need commercial aviation."

Compare that with Europe, he added, where aviation is a bad word and "you're responsible for the ills of everything".

Greenway is excited about what's happening in Saudi Arabia and compares it with the opening of China from earlier decades. "It's a large country that all of a sudden opened up to the world. Visitors are starting to discover the country and Saudis are discovering their own country."

The airline currently serves 18 domestic and 11 international year-round and seasonal destinations in the Middle East and Europe from bases in Jeddah, Riyadh and Dammam. It plans to grow its fleet to 100 aircraft by 2030, tripling in size in just over four years, a "fast evolution" in response to the rapid growth in the market in response to Saudi Arabia's Vision 2030.

"We're seeing customer segments that didn't exist before," said Greenway. Groups of women travelling independently is one; another is the influx of foreigners drawn by attractions such as the Red Sea resorts and "places even locals didn't know existed".

"We're riding the back of that wave."

Several years ago, Greenway was semi-retired and rather enjoying it. He had decided to try "something different", and joined the boards of several companies active in areas including travel tech, heavy industry, training and security.

"I met a lot of interesting people who I wouldn't have met otherwise," he said.

Continued
on Page 18 ▲

Flyadeal's Greenway:
"You can make a decision and see the impact of it straight away. That's the key thing for me."

IMAGE: BILLYPIX

LOW-COST CARRIERS

CONTINUED FROM PAGE 17

From 2021-2023, he was with the technology company Pangiam, a pioneer of biometric verification whose scanners are found in most US airports. Said Greenway: "I ran it as president for a couple of years in [Washington] DC until it was sold."

Back in London, he was wondering what to do besides indulge his passion for cooking. "My friends said 'Why not go back to what you love?', so it was fortuitous when I was approached to run Flyadeal."

It wasn't a difficult decision. "I'd worked in the Middle East before, I like the people in the industry, it's booming and there are some interesting things going on." Greenway did what anyone in his situation would and phoned a friend or two. "All of them said 'Go! You won't regret it.' One step led to another, and here I am."

He had the advantage of having already worked in the Kingdom in 2015, when he opened the Saudi Arabian office of Scoot. But that didn't prepare him for what he's found on his return.

"I was amazed at how things have changed," he said. "Riyadh is the real driver – it's booming. Everything has come alive. It's incredibly different to what I remember."

The pace of change is staggering. When he



Flyadeal plans to grow its fleet to 100 aircraft by 2030, tripling in size in just over four years.
IMAGE: AIRBUS

spoke to *Arabian Aerospace*, he had just received specifications for the new Red Sea Airport planned to open in 2025. "We're presented with all these choices," he said. "Brand new markets, airports being built to stimulate regional growth: there's no historical data to help you figure out what you're going to do."

He's confident Flyadeal will be up to the challenge. He inherited "a well-run company... a great airline with the DNA of an LCC." His job over the next year will be "getting ourselves fighting fit for the next steps."

A fleet of 33 aircraft carrying 10 million passengers a year is not a small operation, he said, but it is "critical" to have the right people to enable the kind of exponential growth envisaged. Its current talent pool of about 1,200 people will swell to 2,000 by the end of the year; the airline has invested heavily in its own MRO line and base capabilities.

Greenway finds himself in an envious position: "I do things because I want to. I love this region, the airline and the challenge. I don't need much more to keep me happy." ▲



Fly Baghdad was grounded in late January after its bank accounts were frozen as part of the sanctions.
IMAGE: FLY BAGHDAD

A legal stand-off between the US government and Iraqi airline Fly Baghdad beckons, as the company denies US charges of aiding the Iranian government.

Iraqi airline Fly Baghdad is gearing up for a legal challenge to the US government, after Washington sanctioned the carrier for allegedly ferrying Iranian weapons and personnel around the Middle East.

The airline strongly denies the charges, which led to it being grounded in late January after its bank accounts were frozen as part of the sanctions.

The US Office of Foreign Assets Control (OFAC), which oversees sanctions against Iran, accused the airline and its CEO, Basheer Abdulkadhim Alwan al-Shabanni, of providing material support to Iranian-backed militias.

Specifically, it alleged that Fly Baghdad had provided assistance to Iran's Islamic Revolutionary Guard and its proxy groups in Iraq, Syria and Lebanon, by transporting personnel and weapons to Syria and Lebanon.

FLY BAGHDAD PREPARES LEGAL CHALLENGE TO US GOVERNMENT

The sanctions led to Fly Baghdad suspending flights briefly after the announcement, then briefly restarting them. It suspended them again a few days later following the freezing of its bank accounts by the Iraqi government.

The airline has furiously rejected the US allegations: "Fly Baghdad denounces this decision as it is not based on any material or moral evidence that could convict the company. The company has worked for years under the direct supervision of the Iraqi government, represented by the Iraqi Civil Aviation Authority and the Ministry of Transport," it said in a statement.

"How can a passenger airline fly to countries' airports transporting weapons and fighters and

ammunition without knowledge of the state?" added Fly Baghdad's aviation security manager, Nameer Al-Qaisi, speaking to Abu Dhabi's *The National* newspaper.

However, on January 25, it said it had halted all flights at the request of the Iraqi government while a government investigative committee looked into the matter.

The airline subsequently told the *Arab World Press* news agency that the company's board of lawyers were preparing an appeal against the US action.

Fly Baghdad operates nine Boeing 737s, in -700, -800 and -900ER variants. It also has single examples of MHIR CRJ200 and CRJ900 regional jets, although these are believed not to be operational. ▲

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FREQUENTIS
FOR A SAFER WORLD

While much public attention has been given recently to newcomer Riyadh Air and flag-carrier Saudia, privately-owned low-cost carrier Flynas is steadily increasing its activities, both in the domestic market and internationally. Alan Dron investigates.

New aircraft can take Flynas to new heights

Saudi Arabian low-cost carrier (LCC) Flynas is preparing for a major expansion, with plans for a huge order of aircraft this year.

The company's board gave approval for the expansion last year and, speaking at the Expo Hajj exhibition in January, Flynas CEO and managing director, Bandar Almohanna said the company aims to sign orders for up to 250 new aircraft by year-end.

At present, the company has a fleet of around 60 Airbus A320ceo and neo models, plus four A330-300 widebodies. The planned new aircraft – whichever models are chosen – will take several years to be delivered, given the vast order backlogs at both Airbus and Boeing, although acquiring aircraft from lessors may reduce that time-lag.

Once operational, the new arrivals will take the Jeddah-based LCC to a new level, in terms of offering new routes and increased frequencies on existing sectors.

The A330s are deployed on Hajj and Umrah pilgrimage flights. These form a significant business sector for Flynas, and the airline flew more than 100,000 pilgrims from more than 13 countries during the last Hajj season of 1444 AH (2023). Since Flynas' launch in 2007, it has carried more than two million pilgrims to make their devotions in Saudi Arabia.

Even before the planned expansion of the fleet,

Once operational, the new arrivals will take the Jeddah-based LCC to a new level, in terms of offering new routes and increased frequencies on existing sectors.

Flynas has reported record performance figures. In 2023, it carried 11.1 million passengers, a 28 per cent increase over 2022.

Last year was one of considerable expansion, with no fewer than 19 new aircraft delivered, an increase of 35 per cent on the fleet size compared with 2022. The company also launched services to a remarkable 57 new destinations in 10 countries during the year, inaugurated its fourth operations base at Prince Mohammed bin Abdulaziz International Airport in Madinah, and increased seat capacity by 22 per cent for domestic and international flights.

"We have succeeded in doubling the size of our fleet by more than 100 per cent in less than two years," noted Almohanna. "Flynas is determined to pursue its expansion to new markets, with announcements to be made during the first quarter of 2024 [these had not been announced at the time of writing], as the aviation industry in the Kingdom is experiencing unprecedented development thanks to the prosperity of the Kingdom's economy, with the support of Saudi Vision 2030 programmes in various sectors, notably tourism and travel."

Vision 2030 is the plan to diversify the Kingdom's economy away from hydrocarbons. Tourism and the air transport sector form major planks of the plan, with the country aiming to welcome 150 million



Flynas has a fleet of around 60 Airbus A320ceo and neo models. IMAGE: AIRBUS

tourists a year by the end of the decade.

Flynas is also seeking to increase its flights to Europe. Among recent route launches, it has announced three flights a week from Jeddah to both Brussels and Marseille and more services are planned.

Heading east, the airline, like many Gulf carriers, has an extensive network of destinations in the Indian subcontinent, taking advantage of the huge flows of workers and families that travel between the two regions every year.

More recently, Flynas has also sought to tap into the new market of Central Asia, providing flights to cities previously poorly served by international services, such as Tashkent and Namangan (Uzbekistan), Bishkek and Osh (Kyrgyzstan) and Almaty (Kazakhstan.) The largely Moslem populations of those states have an interest not only in travelling to Saudi Arabia for religious reasons, but also to use it as a jumping-off point for travel further afield.

Like other Saudi airlines, Flynas is benefitting from its partnership with the country's Air Connectivity Program (ACP), which aims to develop existing and new routes to attract tourists to Saudi Arabia. ACP offers market entry support, ensuring route sustainability.

Flynas is also looking to move into completely new areas of activity. In a move designed to tap into what promises to be one of the most exciting aviation sectors of the next 10 years, in December last year, the airline signed a memorandum of understanding (MoU) with Brazilian urban air mobility manufacturer Eve Air Mobility to explore the future of electric vertical take-off and landing (eVTOL) aircraft operations in Saudi Arabia.

The two companies will explore the possibility of starting eVTOL operations in Riyadh and Jeddah in 2026.

The first generation of this new class of small aircraft is designed to ferry four passengers and a

pilot on ultra-short journeys – for example, covering the last leg between a passenger arriving at an airport and their final destination, perhaps a downtown hotel or a holiday resort.

Once the aircraft has gained in-service experience and the necessary regulatory approvals have been achieved, the aim is that it will be able to operate autonomously – without a pilot – and carry up to six people.

□□□□□

Eve's aircraft combines conventional fixed wings with multiple rotors like a helicopter with a pusher propeller. With a range of 60 miles (100 km), the aircraft is designed to offer a sustainable commute and reduced-noise footprint, with substantial noise reduction during cruise. The latter quality is particularly important given the aim to operate from urban sites.

"This partnership [with Flynas] represents not only a milestone in our shared vision for sustainable air travel, but also a commitment to shaping a more efficient, eco-friendly and accessible transportation landscape," said Johann Bordais, CEO of Eve.

"We look forward to embarking on this groundbreaking journey with Flynas as we join forces to advance the future of air mobility in Saudi Arabia."

The agreement will contribute to Saudi Arabia's aviation industry by building and supporting the future local ecosystem for electric flights.

The partnership will also contribute to Vision 2030 sustainability goals and the ambitious targets for this in the aviation sector.

This collaborative effort between Eve and Flynas and the introduction of eVTOL flights to Saudi Arabia will provide travellers with another option for urban transportation, the companies say. ▲



RAM'S CARBON NEUTRAL DREAM COMES

Royal Air Maroc launched the first eco-responsible flight between Casablanca and Dakar aboard a Boeing 787 on the sidelines of COP28 in Dubai.

Morocco's national carrier and the Mohammed VI Foundation for Environmental Protection have joined forces to ensure the sustainable development of the aviation sector through a clear long-term vision.

Last December, Royal Air Maroc (RAM) and Afrikaia SMDC launched the first carbon-neutral African flight, using sustainable aviation fuel (SAF). RAM and the Mohammed

VI Foundation also planted thousands of trees in desert areas in Morocco to offset the carbon emissions emitted during this flight.

Abdelhamid Addou, CEO of RAM, said: "This operation is part of the efforts that we are deploying jointly with the Mohammed VI Foundation for Environmental Protection, to support research and experiments carried out by the industry, researchers and specialists to reduce considerably the carbon imprint of the aviation sector.

"This portrays our mutual commitment to accelerate the decarbonisation process of

TRUE WITH FIRST ECO FLIGHT

Moroccan air transport, alongside the major industry stakeholders, to achieve carbon neutrality by 2050."

The first step of RAM's strategic plan will be to incorporate 10 per cent SAF as of 2030.

According to Said El Baghdadi, Afrikaia SMDC, managing director, "this flight is a new milestone to promote sustainable fuels" in Morocco. "It is a vital component of the roadmap to decarbonise air transport."

The launch of this eco-responsible flight is aligned with the Kingdom's sustainable development policy to encourage the use of

renewable energies and key green technologies.

RAM has also set up a fuel efficiency programme (FEP), enabling the airline to reduce its fuel consumption by 10 per cent. RAM obtained IATA's IEnvA certification (based on environmental and sustainability standards) in 2023 due to this proactive policy.

RAM was re-elected best airline in Africa during the 20th edition of the "GT tested reader survey" of *Global Traveller* magazine.

It was also named "Best regional airline in Africa" for the ninth consecutive year at the Skytrax Airline Awards in 2023. ▲





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Majid Khan, the new head of the Saudi Air Connectivity Program (ACP), is confident he can help the country in its mission to increase inbound traffic.

Mark Pilling investigates.

Waking the sleeping tiger

The Saudi Air Connectivity Program (ACP) is a key tool the Kingdom's Ministry of Tourism is deploying to help meet its ambitious target of attracting 150 million visitors by 2030.

Leadership of the ACP passed to Majid Khan in January, with the network development executive arriving from a successful four-year stint spearheading Istanbul Airport's swift rise as a global connector.

Khan is undoubtedly taking on the most challenging role in his career, becoming one of the many senior aviation industry imports working on satisfying Saudi Arabia's new-found desire to boost inbound tourism as part of the country's Vision 2030 to diversify the oil-rich nation's economy.

"I was attracted to this challenge because Saudi Arabia is a sleeping tiger," Khan told *Arabian Aerospace*. "It's an untouched market and I believe the potential of tourism is massive in Saudi Arabia."

Formed in 2021 as part of Vision 2030, in a LinkedIn post Khan described ACP as "a unique and dynamic initiative, responsible for boosting air connectivity in Saudi Arabia and working alongside both the tourism and the aviation ecosystem to turn the Kingdom into a global aviation hub."



But why does the country and its network of 29 airports need such a body?

Part of the reason is the scale of the task, in addition to the aggressive timelines, which means everyone must rally behind achieving the eye-watering 150 million target in just seven years.

"The reason the ACP was created was to get the whole ecosystem together," explained Khan. This includes Visit Saudi, airports, and airlines. "We support route development for the 29 airports with the focus on boosting inbound tourism. We are not talking about Umrah [pilgrimage] traffic here, but pure leisure."

Khan has quickly realised that education is a big part of ACP's job at this stage. "Many people do not have enough understanding about the Saudi Arabian tourism market. People still think it's desert, it's oil and you only fly to Saudi Arabia because you must," he said.

"What we are trying to create is the understanding that Saudi Arabia is not an alternative, but a new tourism destination to what you see in Europe, Asia, or North America," he said.

Luring airlines means much more than simply throwing incentives at them.

"Incentives are one of the enablers [to develop new routes], but are not sustainable on the long run," he added.



▼ It's an untouched market and I believe the potential of tourism is massive in Saudi Arabia. ▲
MAJID KHAN

What is sustainable is an attractive tourism product. Saudi Arabia has a way to go on this front, but is working fast to develop its leisure offering and promote its existing destinations.

"This is about educating people about what there is to do in Riyadh, what can be done in Medina besides the pilgrimage, about the winter destinations and the potential for cruises," said Khan. "Then there's the Red Sea, which is the new Maldives."

"Together with our partners in Saudi Arabia's tourism and aviation sectors, we are developing initiatives to cater to Asian travellers," said Khan.

While flag carrier Saudia, and Riyadh Air when it begins operations, and other national airlines, are important partners for ACP, it will not support routes that are predominantly outbound markets, said Khan.

ACP has already supported several new routes including Jeddah to Brussels; Jeddah to Bishkek, the capital of Kyrgyzstan (all flynas); Warsaw-Riyadh (LOT); and Beijing to Jeddah and Riyadh (Hainan Airlines).

Already in the first quarter of 2024, ACP has confirmed four new airline routes: China Southern Airlines will begin operations from Shenzhen and Beijing to Riyadh; China Eastern Airlines will introduce flights from Shanghai to Riyadh; ITA Airways has confirmed routes from Rome to Jeddah and Riyadh; and Eurowings will launch flights from Berlin and Cologne to Jeddah. ▲

IMAGE: TIMES AEROSPACE



A meeting of sunshine or showers?

The 80th IATA Annual General Meeting and World Air Transport Summit is being hosted in Dubai from June 2-4. What does the meeting have in store asks Mark Pilling?

As the bosses of the world’s airlines prepare to gather in the sparkling metropolis of Dubai for their most important annual meeting, they face a juxtaposition of issues that will surprise even the most veteran executive. On the one hand traffic growth and profitability has returned strongly in the past one to two years for many in the industry. Not even the drag of China’s slow pull-up from the pandemic has thwarted calls to forget performance comparisons with 2019 and pre-Covid days. Now it is all about onwards from 2024. On the other hand, conflicts, such as the Ukraine-Russia war, the Israel Gaza war, and Iran’s mid-April drone and missile attack on Israel, cast a long shadow.

Another crisis was unfolding as this story was being written at the home base of IATA AGM host Emirates. Unprecedented rainfall in the UAE caused flooding and incredible chaos at Dubai International Airport on April 18 with flights cancelled or diverted and passengers stranded. Kamil Al-Awadhi, IATA’s regional vice president Africa and Middle East, snatched a few minutes with *Arabian Aerospace* to discuss the agenda issues for Arab carriers at the AGM. He was rushing between crisis meetings, as well as monitoring several crisis control groups, to help co-ordinate industry efforts to navigate all these challenges. Arab carriers are hardly strangers to geopolitical upheavals and conflict that produce significant disruption to the air transport industry. Led by IATA and ICAO, the industry has contingency plans in place to manage crisis situations. The need to ensure flights are diverted around war zones, especially when there are missile attacks, is obvious in the

“You can be assured I will be hammering new countries that we have seen relaxing a bit about paying their dues.”

KAMIL AL-AWADHI

light of the shooting down over Ukraine of MH17 by a Russian-made missile in 2014. “Our first priority is always the safety and security of operations,” said Al-Awadhi. Then the talk turns to business sustainability and how the region’s carriers can tackle them and maintain growth. “There have been so many obstacles it’s virtually impossible to predict what is next,” he said. The need to re-route and re-schedule flights and find alternative flights home for disrupted passengers comes at a significant cost to airlines. The cost of restoring operations at Dubai International, both to the airport, Emirates and all carriers involved will run into millions of dollars. “However, the industry is resilient,” said Al-Awadhi. The topic of resilience amid continuing challenges will undoubtedly be a major topic at the AGM. Sir Tim Clark, president of Emirates Airline, will relish hosting the meeting in such times. There will inevitably be speculation at the AGM about Clark’s eventual successor. This was heightened in March when Emirates announced that chief operations officer Adel Al Redha and chief commercial officer Adnan Kazim were both promoted to the position of deputy president, effectively lining them up in a race for the top job.

□□□□□

One of the region’s other major players has already seen a change of the guard at the top. In November 2023, after 27 years at the helm of Qatar Airways, His Highness Akbar Al-Baker stepped down from the group CEO position to be replaced by Engr Badr Mohammed Al-Meer. He arrived at Qatar Airways following 10 years as the chief operating officer of Hamad International Airport and was elected to IATA’s board of governors in December. As Al-Awadhi works up his agenda for the AGM, one topic – blocked funds – will certainly be on it. “You can be assured I will be hammering new countries that we have seen relaxing a bit about paying their dues,” he said. It is a campaign IATA and Al-Awadhi have been pursuing for years, but more publicly in recent times. And there are successes. For instance, the Nigerian Government, which had owed the most to airlines, has been working “extremely well” with IATA. “We have seen an incredible release of funds by the government over the past two months,” said Al-Awadhi, with the level of dues falling by at least 50 per cent of what is owed. As ever, there will clearly be no shortage of issues to debate in Dubai. As IATA noted in expressing the context of the AGM: “The event takes stock of the tremendous economic, political, social, and technical forces that are shaping aviation as air transport returns to growth and progresses towards net zero carbon emissions by 2050.” ▲



The Evolution of the Super-efficient Rolls-Royce Trent family

At the end of last year, Rolls-Royce committed to investing more than £1bn in a programme that will deliver further improvements to its Trent engine family. The aviation industry demands ever-improving performance, reliability and efficiency from aircraft and engine manufacturers. The Rolls-Royce Trent engine family has already established itself as the most successful ever, having accrued more than 180 million flying hours, and the company is working hard to harness further technological advances and meet the ever growing requirements of its customers, ensuring continuous benefit and success for years to come. Since the first Trent engine took flight 30 years ago, Rolls-Royce has introduced new manufacturing methods, materials, aerodynamics and digital technologies. With this new billion-pound commitment, customers will benefit from new technology packages for four of the latest members of the Trent family, delivering a combination of improved time on wing, fuel efficiency and durability. These achievements result from the engine’s use of improved technology, lightweight materials and a high bypass ratio. This last feature is difficult to achieve in practice as it increases the size and

weight of the engine; it is the use of advanced lightweight materials that allows Rolls-Royce to achieve it to an unprecedented degree with the Trent XWB. Rolls-Royce is introducing a suite of technologies for the Trent XWB that will provide a further 1% improvement in fuel efficiency as well as increase the engine’s already industry-leading durability and reliability. For the Trent XWB-97, the company is developing a series of technology packages that will also increase its time on the wing by 100% on the most challenging of missions. In addition to all these benefits, Rolls-Royce can provide a comprehensive service under its TotalCare package, transferring engine-time-on-wing and maintenance cost risk back to the manufacturer and providing operational certainty to airlines. This premium service is an industry leader. It is supported by data received from the Rolls-Royce advanced Engine Health Monitoring (EHM) system and implemented through its global network of Customer Service Centres. The Trent XWB family is also one of the beneficiaries of another Rolls-Royce technological advance, developed to help aviation address the climate change challenge. Research and analysis worldwide has shown that the quickest and simplest way to achieve this is for the sector to adopt Sustainable Aviation Fuels (SAF) instead of conventional fossil fuels. The use of 100% SAF could reduce aviation carbon emissions by up to 80%. Rolls-Royce has successfully demonstrated that all its in-production commercial and business jet engines are compatible, under in-service conditions, with 100% SAF. Rolls-Royce is the first jet engine manufacturer to achieve this.

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Numerous incidents involving GPS spoofing, jamming or even failure of navigation systems have been recorded, particularly by planes flying over Egypt, Iraq, Iran, Israel, Lebanon as well as the Black Sea region.

Anuradha Deenapanray Chappard reports.



Concerns on the flight deck as GPS jamming becomes a bigger threat.
IMAGE: STUART BAILEY (STUARTBAILEYPHOTO.COM)

How airlines can navigate GPS spoofing

Several airlines have witnessed "spoofing" attacks during the past months. This hacking method disorients GPS devices sending erroneous signals to pilots. Many of them have reported failures of their GPS and even of their navigation system when flying over the Middle East and Northern Europe.

According to experts "if a GPS position signal is faked, most aircraft are incapable of detecting the ruse. For many, it has led to total navigation failure. For others, it has led to subtle and undetected erroneous tracking".

In the worst cases, this has led to a complete loss of on-board navigation requiring ATC vectors, failure of inertial reference system (IRS - the navigational nerve centre), and unnoticed off-track navigation towards danger areas and hostile airspace.

Airlines, civil aviation and regulatory authorities are keeping a close eye on this growing phenomenon.

The UAE's General Civil Aviation Authority (GCAA) issued a safety alert last October after it noticed that "potential GPS spoofing activities were experimented by various air operators in the North of Middle East region", adding that "these events may cause complete loss of navigational capability".

The GCAA recommended all UAE air operators to ensure that flight crews promptly report any interruption, degradation or anomalous performance of GPS, assess operational risks and limitations linked to the loss of on-board GPS signal, and use alternate navigation systems when flying in or near the affected areas.

The European Union Aviation Safety Agency (EASA) and the International Air Transport Association (IATA) held a joint workshop hosted at EASA's headquarters to combat incidents of GNSS spoofing and jamming, last January.

"GNSS systems offer tremendous advantages to aviation in increasing the safety of operations in a busy shared airspace," said EASA acting executive director Luc Tytgat. "But we have seen a sharp rise in attacks on these systems, which poses a safety risk. EASA is tackling the risk specific to these new technologies.

"We immediately need to ensure that pilots and crews can identify the risks and know how to react and land safely. In the medium term, we will need to adapt the certification requirements of the navigation and landing systems. For the longer term, we need to ensure we are involved in the design of future satellite navigation systems. Countering this risk is a priority for the Agency."

EASA will inform the relevant stakeholders (airlines, air navigation service providers (ANSPs), manufacturing industry and airports) about attacks.

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According to Willie Walsh, IATA's director general, "airlines are seeing a significant rise in incidents of GNSS interference. To counter this, we need coordinated collection and sharing of GNSS safety data; universal procedural GNSS incident guidance from aircraft manufacturers; and a commitment from states to retain traditional navigation systems as backup in cases where GNSS are spoofed or jammed".

He underlined that airlines will be critical partners. "And whatever actions are taken, they must be the focal point of the solution as they are the front line facing the risk."

The Federal Aviation Administration (FAA) points to another possibility, that of the ongoing electronic warfare, particularly in Ukraine and more recently in Israel. By disrupting GPS signals to, for example, neutralise enemy drones, belligerents can unknowingly disrupt the navigation tools of commercial flights.

This has garnered attention on the fragility of GPS signals. "Emirates operates a fleet of modern aircraft which are equipped with multiple highly-accurate navigation systems and do not rely exclusively on GPS.

"Our pilots undergo comprehensive training, and our flight operations protocols are regularly reviewed to ensure they reflect all the latest safety requirements and industry best practices. We actively engage with regulators, aircraft manufacturers, and industry bodies to address any potential operational safety risks. The safety of our passengers and crew is always our number one priority", an Emirates spokesperson said.

These disruptions pose significant challenges to the broader spectrum of industries which rely on precise geolocation services, including aviation. Such attacks belong to the domain of cybersecurity, a safety threat for which EASA has developed a toolkit. The National Aviation Authorities (NAAs) in Europe had explicitly tasked EASA with taking measures to counter this risk.

▼ Airlines must be the focal point of the solution as they are the front line facing the risk. ▲
WILLIE WALSH



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Hamad Al Marar: tasked with continuing the steep upward trajectory of the young Edge group.
IMAGE: BILLYPIX

AT THE CUTTING EDGE OF TALENT

The UAE's fast-growing defence technology conglomerate Edge Group has a new leader in Hamad Al Marar, but its vision and mission are undisturbed. **Mark Pilling** reports.

Without hesitation, Hamad Al Marar, Edge Group's new managing director and CEO, names the number one strategic challenge in his role: Talent attraction.

"For me it is always the number one. The need to preserve talent, retain it and develop it against rivals," said Al Marar, speaking in a quiet meeting room at the Edge Group's large stand at the World Defense Show in Riyadh in early February.

Al Marar had been informed of his promotion just days before the show.

Edge appointed Al Marar, who has spent four years in the group's senior management team latterly as president of its missile and weapons cluster, to the top job on February 1.

He has the task of continuing the steep upward trajectory of this young group, which described itself, without irony, in its

marketing material for WDS as "marking four years of stellar growth as one of the world's fastest growing advanced technology and defence conglomerates."

Edge boasted "an impressive portfolio of 160 innovative systems and solutions - a major accomplishment in a relatively short timeframe, and a global footprint that covers more than 50 countries across five continents.

"Edge is aggressively pursuing its product development roadmap and is fast becoming a partner of choice in the domains of autonomous systems, smart weapons, electronic warfare and secure communications."

Al Marar stressed that Edge's strategy to develop and manufacture defence products and systems for the UAE armed forces remains unchanged as does its aim to do this locally.

He added that the group is on track to gain

40 percent of its orders from customers outside the UAE within three years.

Today, the UAE military represents some 90 per cent of Edge's business, with just 10 per cent coming from international contracts, said Al Marar.

However, this is changing quickly and achieving a 60/40 UAE/international business backlog split would represent a major transformation for state-owned Edge.

"If you take the trajectory we had - we made \$60 million in orders in 2019, now [in 2023] it is \$2 billion - this is the target we strive for and it's a healthy and doable one," explained Al Marar.

In 2023 Edge Group as a company achieved total revenue of \$5 billion, he said. Alongside this it booked orders worth \$5 billion giving it a total order backlog totalling \$10.8 billion.

Al Marar's experience in developing the UAE's defence and tech manufacturing

expertise over the past nearly two decades made him a sound choice. His career began in the government's offset bureau, working with overseas suppliers to bring local production into the UAE.

He was also involved with Tawazun, the government entity tasked with privatising state-owned enterprises and turning them into commercial entities prior to the formation of Edge Group in 2019.

Al Marar gained exposure in programme management working on Tawazun's joint venture with South Africa's Denel on precision-guided systems made in Abu Dhabi and he has worked on acquisitions, enabling him to cut his teeth in this arena too.

To super-charge its growth, Edge has been on an acquisition drive in the past two years and has a roadmap of technologies and capabilities it is seeking to add to the portfolio.

"A large portion of the group's robust growth strategy is anchored in its acquisitions of highly-specialised defence companies and small and medium-sized

enterprises, which complement the established capabilities within Edge, allowing it to continuously grow and transform based on the requirements of its customers, which today include the armed forces of several nations around the world," he said.

Edge has acquired 12 overseas companies in the past two years with others in the pipeline and the group will make a swift decision on a deal if it makes sense, said Al Marar.

As important as it is to bring in newcomers, skills, and talent to Edge, for Al Marar a major priority for 2024 is product delivery. "It is important to understand that we are slowly recovering from the Covid dislocations of the supply chain," he explained.

Supply chain issues have impacted some Edge programmes, and Al Marar wants improvement this year. "We are not immune to the issues," he noted.

He trusts that his direct experience in programme management equips him with the skills to lead in this regard and encourage his colleagues to trust that he understands what help they need to succeed.

So where in Al Marar's view does Edge Group have the edge in the competitive world of defence technology?

He listed several advantages that in his view come into play: the ability to deliver a practical solution that is close to customer needs in short timescales; this is aided by its innovative and modern production approach - developed because it does not have economies of scale in the UAE enjoyed by some competitors; product availability; and fast decision making.

To strengthen its international acquisition strategy, in November 2023 Edge fully acquired the state-owned Strategic Development Fund (SDF), which will manage the group's global portfolio through direct venture partnerships and venture capital investments.

Al Marar's elevation to lead Edge enables him to "continue the journey" in playing a key role in developing the UAE's defence technology manufacturing base. He feels a responsibility both to his country and to the 10,000-strong workforce and their families at Edge to provide a thriving enterprise that gives them job satisfaction, security, and motivation.

With his focus on people, in addition to ensuring existing and future products deliver, is clearly how Al Marar believes he should be judged as he gets to grip with his time leading Edge. ▲



A mock-up of a Calidus B-250 cockpit on display at Saudi's WDS exhibition showed off the L3 Harris tactical mission systems.
IMAGE: ALAN WARNES

WHY THE CALIDUS B-250 REALLY IS THE LIGHT FANTASTIC

Tucked away in the UAE Hall at the recent World Defense Show in Riyadh was a mock-up cockpit of a Calidus B-250, displaying the L3 Harris avionics systems that is to be integrated into the light attack version of the turboprop aircraft.

L3Harris announced on the last day of the exhibition, on February 8, that a memorandum of understanding had been signed with UAE's Calidus Aerospace to develop a mission system for the B-250. David Cotham, general manager, ForceX, L3Harris said: "L3Harris is committed to Calidus for the successful completion of the B-250 program and the vital capability this provides to the UAE Air Force."

This seems to be quite a surprise move, given the ITAR restrictions that will apply to the system. However, another L3Harris statement stressed that it would develop an "exportable" multi-mission Calidus B-250 and other future platforms with mission solutions.

Additionally, the companies aim to pursue MRO and mission system integration opportunities on other fixed wing, rotary wing and UAS systems.

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The MoU comes more than three years after both companies during Dubai Airshow 2021 announced they had reached an agreement on the system kits, specially designed for the UAE's B-250 mission, featuring an integrated suite of L3Harris' mission management solutions, that included the Wescam MX-15D electro-optical/infrared (EO/IR) sensor; the Vortex data link; Falcon III multichannel airborne networking radio; and other aircraft avionics products.

According to the February 8 announcement, L3 Harris has also recently delivered the first of 12 kits to Calidus. This comes at a time when integration of EDGE's Desert Sting series of munitions is under way on the B-250. Deliveries of the first aircraft according to CEO Khalifa Alblooshi is expected in 2026, nearly 10 years after the programme was launched.

The B-250 has suffered from serious delays due to alleged design flaws since being launched in 2017 but now appears to be back on track. The UAEAF&AD has ordered 12 light attack versions of the B-250, with options for another 12. The first production aircraft is expected to 'fly within a few months' according to a Calidus source, who didn't want to be named.

ALAN WARNES



SAMI Aerospace has big ambitions in the unmanned aerial vehicle sector, with this UCAV being the centre of attention at the SAMI stand.
IMAGE: ALAN WARNES



Assembly of the Baykar Bayraktar Akinci unmanned combat air vehicle will soon get underway by SAMI.
IMAGE: ALAN WARNES

Saudi Arabia's SAMI (Saudi Arabia Military Industries), a Saudi Public Investment created in January 2018, is expanding at quite a ferocious pace. That's been a priority for CEO Walid Abukhaled, who has worked hard to ensure SAMI meets the objectives of Saudi Vision 2030, with the need to localise 50 per cent of Saudi's defence spending a top priority. Alan Warnes investigates.

In February 2022, that number stood at three per cent, today the figure is 15 per cent and SAMI is managing to increase that percentage by setting up joint ventures – 11 of them to date, with US, European and South Korean companies as one route.

The most recent being the agreement between the Saudi MOD and Turkey's Baykar, which will allow SAMI to assemble the Bayraktar Akinci twin turboprop unmanned aircraft system (UAS). The SAMI CEO told reporters during Dubai Air Show last year, "We will build the Akinci airframe, produce the avionics, cabling and harnesses, to manufacture the aircraft in Saudi Arabia."

He added that the domestic development of UAS products was a priority and a 'strategic element' in SAMI's aerospace business. The recent World Defense Show, held in Riyadh from February 4-8, saw its ambitions in the shape of a futuristic unmanned combat aerial vehicle that one source claimed could be flying within two years.

There are many strains to SAMI Aerospace. On October 24 last year, the commander of the Royal Saudi Air Force, Prince Turki bin Bandar unveiled a new strategy and identity for the newly-created SAMI Aerospace Mechanics following the acquisition of Aircraft Accessories and Components Co in early 2023.

Speaking on the occasion, he said: "We all understand the importance of the role national companies play in building local capabilities and competencies in the field of aircraft maintenance.

"The role of the workers in these factories is just as important as the role of our soldiers in maintaining the security and safety of our country, so I would like to thank everyone who has contributed to this important transformation."

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The SAMI Aerospace chairman, Abdulsalam Al-Ghamdi, said: "Today we celebrate the launch of a new strategy and identity for SAMI Aerospace Mechanics, which we believe transitions us from a defence-centric MRO to a formidable player on the global civil and defence aviation stage, and a major contributor to achieving a transformation in the aerospace centre."

Meanwhile, the acquisition of Alsalam Aerospace Industries is all but completed, with an announcement on the cards for quite a while now. Alsalam based in Riyadh is a provider of aircraft maintenance, repair and overhaul services as well as upgrading the Boeing F-15S/SA Eagle.

The company performs heavy maintenance and modification on civil and military aircraft at its facilities in Riyadh, Saudi Arabia and has three climate-controlled widebody hangars

with dedicated military hangars with a wide range of support shop capabilities including composite repairs.

Another major Saudi aerospace company, Advanced Electronics Company (AEC) was acquired by SAMI in December 2020 and rebranded SAMI Advanced Electronics.

It was the biggest military industries deal ever concluded in Saudi Arabia. Specialising in the likes of modern electronics like radars, as well as digital and security services and military satellite systems, will allow SAMI to build up another pillar, and integrate into its vision.

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Rebranding of the new businesses was evident at the SAMI Aerospace stand at WDS in February – with Alsalam Aerospace Industries referred to as SAMI Aerospace Airframes.

Abullah Almaghlooth, director SAMI Aerospace - Airframes division, is part of the team that manages and establishes a clear strategy of the MRO, formerly Alsalam Aircraft Industries, but preferred to discuss the new division not the individual parts that SAMI has rebranded.

"SAMI Aerospace Airframes is responsible for the maintenance, repair and overhaul of several aircraft platforms in addition to supervising the supply chain that feeds into that. We have great capabilities that have been developed and upscaled by SAMI.

"As part of those responsibilities, we maintain mechanical components such as fuel systems and propellers. There is also the airframe repair and overhaul, in addition to unscheduled and scheduled depot maintenance."

SAMI Aerospace Airframes has two main hubs according to Almaghlooth

without wanting to name them although one is known to be at King Khalid International airport where the bulk of the MRO work is carried out. That is in addition to the military bases, where SAMI engineers carry out both first- and second-line maintenance.

"We look after the likes of F-15s, Typhoons, Hawks, C-130s, E-3 AWACS, 707 tankers, and A330 Multirole Tanker Transport (MRTT) in addition to helicopters. We are building up great capabilities on the latter, like airframe maintenance, technical support and technical supply for the AS 332 Super Pumas and AS 565MB Panthers."

SAMI has of course been involved in the Boeing F-15S to F-15SA Eagle upgrade and Almaghlooth said, "We have done a lot of great work on the upgrade – it's very complex and the work has to be precise, like disassembly and assembly of these aircraft and manufacturing of the wings and fuselage."

Boeing told the author that if the US aerospace giant was to win an order for 54 F-15EX Eagle IIs, then SAMI could be involved in the upgrade of existing F-15SAs too.

"Interesting," said Almaghlooth, "But I'm not really part of that vision, at the end of the day it's a government decision, and I'm sure they will make the right one, not only in terms of the great capabilities but more importantly on what it will add to the country in terms of localisation. I mean in terms of skills and production, when we can build the people and facilities.

"We have been doing a lot of localisation for the past 30 years, so it's not something new for us. It is very important to look into what the added value is on top of what has been done over the past 30 years. That is the most important thing."

▼ We have been doing a lot of localisation for the past 30 years, so its not something new for us. It is very important to look into what the added value is on top of what has been done over the past 30 years.▲
ABULLAH ALMAGHLOOTH

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Could SAMI Aerospace support whatever happens there next?

"It's a BAE facility," Almaghlooth said, adding "but SAMI could support and be willing to help and do as much as possible to ensure that the capabilities built up over the past five years under BAE Systems is not lost. Something will happen there for sure."

He continued: "There is always a way to redeploy people and make use of their capabilities. Of course, it would be great if you have a continuous programme to follow on, but you know things take time. I'm pretty sure those capabilities will not be lost by the country. We will capitalise on and utilise them elsewhere whether its for maintenance, for an engineering capability or transferring the know-how to a new generation so they can make use of it."

The SAMI Aerospace Airframes director finished: "We have good ambitions and we are looking forward to building our capabilities that will bring value to our people and enhance the defensive needs of the country." ▲

SAMI'S IN THE FAST LANE TO VISION 2030

Saudi Arabia's sixth generation fighter plans: Does Korea's KF-21 pose a threat to FCAP? **Jon Lake** reports.

Even as the long-standing Royal Saudi Air Force 'Future Fighter' requirement is under way, with a contest between the Eurofighter Typhoon (thought to be the favourite), the Boeing F-15EX, and Dassault Rafale, Saudi Arabia is also looking further ahead to its next generation 'combat air' requirements.

With the US unwilling to supply even the 'fifth generation' F-35A, there would seem to be little prospect of Saudi Arabia being allowed to acquire the even more advanced 'sixth generation' NGAD fighter.

That leaves the Kingdom with two sixth generation fighter options – the Franco-German-Spanish SCAF and the Anglo-Japanese-Italian GCAP, with the latter representing a collection of more familiar partners, including long-term partner BAE Systems.

Anglo-Saudi co-operation in combat air has always been organised on a Government-to-Government basis, and Saudi Arabia and the UK are known to have been looking at how they might collaborate on future combat air requirements for some years.

"Combat air plays a really important part of the strategic UK-Saudi Arabian relationship as a whole," explained John Stocker, BAE Systems business development director for FCAS.

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On March 1, 2023 His Royal Highness Prince Khalid bin Salman, Saudi Arabia's minister of defence, announced that he and UK defence secretary Ben Wallace had signed a declaration of intent under which the Kingdom would participate in the UK's Future Combat Air System (FCAS) programme, and Wallace said that this declaration of intent had initiated a partnering feasibility study to explore how the Anglo-Saudi combat air relationship could best be positioned for the future.

The UK clarified that this was quite distinct from the FCAS system of systems project, and from the UK-Italian-Japanese GCAP manned fighter programme.

For the UK, GCAP (also known as Tempest) will sit at the heart of the FCAS system of systems, whereas Japan is not participating in the wider FCAS venture.

It has subsequently emerged that UK-Saudi collaboration in this area is known as the Future Combat Air Partnership (FCAP). Stocker characterised the Future Combat Air Partnership as more of a strategic vision than a programme of record. He said that the UK Government was working to understand the direction



WHAT STYLE OF CAP IS FIT FOR THE KINGDOM?

of travel of the "broad combat air relationship" with Saudi Arabia, and said that BAE Systems is working to: "Understand the role that different programmes could potentially play in supporting the long term UK-Saudi objectives."

"The field is wide open, and we're not suggesting that anyone is focused on any particular outcomes at this stage from a KSA point of view. There are many things that could sit under FCAP," Stocker insisted, but he did acknowledge that the statement of intent signed in March 2023 "included, amongst other things, the FCAS angle."

It is clear that Saudi Arabia aspires to become a full partner in the Global Combat Air Programme, which was always intended to be what John Stocker called: "international by design, as a foundational principle."

But bringing new partners into the programme is complicated, and requires the agreement of the three existing national partners. Japan is known to have been opposed to Saudi involvement, primarily because it feared the impact on the GCAP timeline.

The GCAP programme followed a very rapid timescale after its launch in December 2022, and there was a determination that nothing should be allowed to delay this process, which is intended to lead to service entry in 2035.



A new model of the GCAP manned fighter – known to be of great interest to the RSAF, and at the heart of the Future Combat Air Partnership.
IMAGE: JON LAKE

A direct request to participate in GCAP was reportedly made during Japanese prime minister Fumio Kishida's meeting with Crown Prince Mohammed bin Salman in Jeddah in July 2023, but this was politely rebuffed. However, on March 26, 2024, it was reported that the Japanese government had decided to allow the export of the next-generation GCAP fighter to third party countries.

Things may become even easier when the UK's concept and assessment phase ends in 2025, and when the joint development phase starts. This might provide a suitable entry point for new partners, since many critical decisions will have been made by the three core partners, and there will be less scope for delays.

FCAP may not be the only game in town for the Saudis. A South Korean delegation visited Saudi Arabia between January 23-26, meeting with Dr. Khalid bin Hussein Al-Biyari, Saudi Arabia's deputy defence minister. They discussed the joint development of an advanced fighter based on the design of the KAI KF-21 Boramae. But while some believe that such a project could threaten FCAP, others say that it could be a more near-term programme, producing a 'less than fifth gen aircraft', but providing useful skills and experience prior to any Saudi participation in GCAP.

Raytheon Saudi Arabia: Enabling indigenous supply chain and fostering a vibrant defense ecosystem in the Kingdom

Raytheon Saudi Arabia is an integral part of the Kingdom's security. In addition to supplying combat-proven capabilities for the Saudi armed forces, as a local company, it is also a key driver of the country's defense localization ambitions. Ahmad Al Salamah, Managing Director of Raytheon Saudi Arabia, an RTX business, provides more insight:



WHAT MAKES THE SAUDI DEFENSE ECOSYSTEM AN IDEAL ENVIRONMENT FOR LOCAL BASED MANUFACTURING PROJECTS?

Saudi Arabia's bold economic aspirations – spelled out first in Vision 2030 – set out a long-term plan for the Kingdom that focuses on a wide range of industries to transform the Kingdom into a diversified, knowledge-based economy. One of the key areas of this vision is the development of a strong domestic defense industry to help enhance the country's security, create high skilled jobs and drive economic growth.

With localization at the heart of this plan, and the Kingdom having the infrastructure to achieve that, we are working closely with Saudi entities to bring manufacturing capabilities to the Kingdom and help integrate Saudi companies within RTX's global supply chain. Today, for example, Zahid Industries has already started the production of Raytheon's AN/TPY-2

missile defense radar's major component, the Prime Power Unit (PPU), and very recently, we also announced that we are working with the General Authority for Military Industries (GAMI) towards qualifying a number of local companies to manufacture major components of Raytheon's Patriot air and missile defense system.

In short, a commitment to developing a strong supplier base and continuous coordination between government institutions is what we believe are enabling the Kingdom to position itself as an ideal environment for local manufacturing.

WHAT ARE RAYTHEON'S MOST RECENT LOCALIZATION PROJECTS IN THE KINGDOM?

The Patriot air and missile defense system has been a critical component of the Kingdom's national defense, providing security for its critical infrastructure,

citizens, and residents. We are exploring the manufacturing and testing of a number of key components (launchers, canisters, among others) within the Kingdom's Patriot air defense system, with many of our local partners such as SAMI, AIC for Steel and Zahid Industries. This reaffirms our commitment to the Kingdom's defense industry, creating significant value and self-reliance to foster growth within the region, and supporting the Kingdom's security and industrialization ambitions.

AS MD OF RAYTHEON SAUDI ARABIA, HOW DO YOU PLAN TO ENSURE THE COMPANY CONTINUES TO BE A KEY PARTNER IN THE KINGDOM?

As part of RTX's dedication to making Raytheon Saudi Arabia a truly Saudi entity, I am proud to be the first Saudi national appointed to this role, leading the RTX-KSA partnership and working towards strengthening our relationship further.

Our commitment extends beyond driving the country's industrial localization ambitions. We are also dedicated to supporting the country's human capital goals by indirectly providing highly skilled jobs for Saudis and residents through our various local production plans. Additionally, we host annual internship programs that offer Saudi students coaching, guidance, and on-the-job training from specialists and experienced personnel to help them jumpstart their careers. Today, Raytheon Saudi Arabia employs over 250 people in Riyadh and Jeddah, with Saudi nationals accounting for 60% of the workforce.

My ambition is to keep working closely with government and industry partners, and to leverage RTX's global expertise, to ensure Raytheon Saudi Arabia is a key partner for the country's vibrant defense ecosystem, an enabler of the indigenous supply chain, and one of the most desirable places to work for people in the Kingdom.



Riyadh's King Salman International Airport: It is expected to become the world's largest airport.
IMAGE: FOSTER + PARTNERS

SOAR POINTS

Amidst the resurgence in air travel with Airports Council International (ACI) World forecasting that global air traffic will hit a milestone in 2024, soaring to 9.7 billion passengers, the Middle East's air transport hubs are positioned as pivotal players. Gigi King takes a closer look.

Projections indicate that airports across the region, of which there are currently more than 110, will handle 1.1 billion passengers by 2040. This is more than double the 2019 figure of 405 million passengers and will necessitate around US\$151 billion in capacity expansion.

Saudi Arabia is spearheading this investment in airport infrastructure. Following the opening of Red Sea International Airport at the end of last year, project developer Red Sea Global (RSG) has now been tasked with overseeing the refurbishment of Al Wajh Airport.

John Pagano, RSG's CEO, said the refurbishment will make Al Wajh a "modern airport for the people of Tabuk, ensuring it is ready and equipped to support the needs of the growing local community."

Plans are also in the pipeline for Neom International Airport, which will ultimately replace the existing Neom Bay. Although not in an official capacity, Iranian architecture firm Kalbod Design Studio has released a series of its own renditions for the airport city concept, which it envisions will have "multifaceted functionality," featuring museums, galleries, and exhibitions as well as different micro-climate areas.

Transformation is also in store for King Abdulaziz International, including a new Hajj and Umrah terminal and the construction of a fourth runway in 2025.

And in March this year, UK construction firm Mace was appointed the delivery partner for Riyadh's King Salman International Airport, which has been designed by Foster + Partners and is expected to become the world's largest airport upon its 2030 opening.

Additionally, Abha International Airport is set for significant expansion involving the construction of a 69,400 square metre terminal, slated for completion in 2028.

Beyond Saudi Arabia, authorities are also ploughing investment into their airport infrastructure. Earlier this year, Oman's Ministry for Transport and Communications and Information (MTCIT) identified a site for the new Musandam Airport.

The hub will be able to handle up to Boeing 737- and Airbus A320-sized aircraft upon its 2028 opening. Bahrain also plans to open a second airport within the decade, while in Kuwait a US\$4.36 billion investment is funding a terminal expansion project to boost passenger handling capacity to 13 million passengers per year by 2025.

At Dubai International, where passenger traffic will exceed 88 million in 2024, Paul Griffiths Dubai Airports' CEO emphasised the commitment to developing its airports: "Looking ahead we're launching significant projects to refurbish facilities at DXB and fortify our infrastructure for future growth."

While the plan is to maximise current capacity at DXB, ultimately the ambition is for the phased expansion of Dubai World Central (DWC) so that all operations can be transferred there.

Underpinning all this infrastructural development is the wider adoption of automated services and biometric technology to streamline the airport journey.

At Abu Dhabi's Zayed International Airport, the deployment of a comprehensive border management solution featuring the world's first multi-biometric entry/exit system by

IDEMIA, has significantly bolstered border security while simultaneously enhancing the passenger experience.

Elena Sorlini, MD and CEO, Zayed International Airport, noted: "Once fully implemented Abu Dhabi will pioneer as the world's first airport with biometrics integrated at every stage ensuring travellers enjoy a seamless, safe and secure journey."

Aviation solutions provider Jacobs is also seeing the wider adoption of new technologies to enhance the passenger journey, including biometric technology, automation in cargo warehouses and alternative fuels for aircraft.

As the region's airport community expands and evolves, these hubs are helping shape the Middle East's future and its global standing. They transcend being mere terminals for travel, evolving into dynamic symbols of ambition, innovation and progress.



Kalbod Design Studio concept for Neom International 4.
IMAGE: KALBOD



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Following the opening of its new terminal A in November 2023, Zayed International Airport (formerly Abu Dhabi International) is on an upward trajectory expecting to handle around 45 million passengers annually. **Gigi King** investigates.

HEADS UP ON PAD POWER



Clear view: Controllers can really focus on what's going on outside the tower window, as there is less head-down time.
IMAGE: FREQUENTIS

Managing traffic at the air transport hub (which currently sees between 600 and 800 aircraft movements a day) involves a comprehensive approach to ensure safe, efficient and sustainable operations.

The deployment of TowerPad as part of Frequentis' advanced automated tower product suite is enabling just that, providing the automation and surveillance of airport surface movements at the air transport hub, which is operated by Abu Dhabi Airports.

Since deploying TowerPad in 2022, the airport has achieved an 80 per cent reduction in "stop and go" operations, as well as a 70 per cent reduction in operator workload and 30 per cent higher aircraft ground movements.

Josef Kutschi, managing director Frequentis Middle East, explained that by providing artificial intelligence to support advanced user-centric automation services, TowerPad gives air traffic controllers (ATCOs) a clear view of all ground and airspace operations. He also noted: "In addition to enhancing safety and efficiency, it reduces taxi times and consequently the environmental impact of airport traffic."

All air traffic control (ATC) applications are integrated onto one screen enabling controllers to see everything from approach to ground movements without having to access multiple screens. "Controllers can really focus on what's going on outside the tower window, as there is less head-down time," said Kutschi.

He also explained that the automated technology integrates with the advanced surface movement guidance and control system (A-SMGCS) to provide tailored services covering surveillance, safety control, planning, routing and

guidance, whilst factoring in local procedures and infrastructure constraints.

One of TowerPad's key benefits, according to Kutschi, is its ability to reduce taxi times and maintain the flow of traffic, thus helping to decarbonise ground operations at the airport by enabling significant cuts in fuel burn and toxic emissions. "Our routing and guidance function enables us to determine the quickest route to the runway and avoid queues on holding points, therefore reducing unnecessary fuel burn," he said.

Kutschi added that the ability to forecast movements is key here. "By predicting certain routes from the stands to the threshold of the runway as well as the other aircraft that are being readied for departure, we

can sequence operations to minimise aircraft stopping and then moving on again, which is a major cause of fuel burn when taxiing."

Close collaboration with the airport's ground handling teams to understand turnaround processes and times has also been integral to this process.

The big challenge in terms of implementing the automated technology at Zayed International was the change in how tower operations are managed. "It was a rigorous process, but we engaged with Abu Dhabi's Global Air Navigation Services (GANS) from an early stage and worked hand-in-hand with their air traffic controllers to understand their requirements and ensure a smooth transition," Kutschi said.



Noting that the collaboration with Abu Dhabi Airports has marked the first roll out of TowerPad in the region, Kutschi revealed that following its success at Zayed International, Frequentis now hopes to deploy its technology at other airports across the Middle East. "With hundreds of aircraft on order for the big three Gulf carriers over the next decade, our focus is on facilitating that increase in air traffic for airports as seamlessly, safely and sustainably as possible," he said.

As for the wider use of AI in tower operations, Kutschi concluded that while automated services will be more widely adopted, they won't ever replace ATCOs as a resource. "AI should be seen as a support function that can augment controller operations and alleviate workload. However, controllers should always be able to override any recommendations made by an AI agent or automated service, to ensure they remain firmly in control," he said. ▲

Dubai Airports' AOCC is the nerve centre that ensures the safe and efficient flow of passengers and planes at Dubai International and Dubai World Central. **Gigi King** reports.

DUBAI'S SMOOTH OPERATORS

Those who were at Dubai Air Show last year will recall the deluge that marked the final day of the show and caused chaos across the city. Torrential rain flooded roads leaving cars abandoned en-route to the airport.

Flight operations at Dubai International (DXB) were disrupted while the downpour threatened to wreak havoc for the final day of the show at Dubai World Central (DWC). Working through the night and coordinating with Dubai's Road Transport Authority (RTA) to ensure operations could continue as smoothly as possible and passengers could access both airports was Dubai Airports' Airport Operations Control Centre (AOCC).

"It was a challenging 24 hours for the whole team," recounted Kan Ni vice president, AOCC at Dubai Airports. "While air show delegates were celebrating at the gala dinner, the majority of our operations staff were clearing drains, pumping excess water and reconstructing stands to salvage the air show's final day and keep commercial operations running as smoothly as possible at DXB."

It's not just inclement weather that the AOCC monitors and develops contingency plans for. Ni heads an expansive team responsible for orchestrating the seamless flow of more than 250,000 daily passengers, as well as aircraft and baggage through DXB.

Describing the control centre as the "conductor of the orchestra", Ni emphasised the collaborative nature of his team's work with various stakeholders across the airport ecosystem.

□□□□□

Located at DXB and operating round the clock, 365 days a year, Dubai Airports' AOCC, is arguably one of the biggest and most sophisticated facilities of its kind.

A massive video wall monitors aircraft and passenger movements, while the control room accommodates staff representing different stakeholders, including ground and baggage handling partner Dnata, which takes up one side of the building, as well as Dubai Police, Dubai customs and immigration, RTA, ambulance and firefighting services.

According to Ni, there are never less than 70 people working in the AOCC. The team also has a hotline to air traffic control and the airlines' network control centre. "This collaborative approach enables a swift response to emerging situations, with resources deployed promptly as needed," he said.

Efficient communication and visibility of all operations is paramount, particularly given DXB's staggering passenger traffic, which is expected to exceed 88 million this year. Recognising this, Dubai Airports introduced its revised passenger flow model at DXB in 2023.

The real-time data analytics system is tailored to the



Our collaborative approach enables a swift response to emerging situations, with resources deployed promptly as needed. **KAN NI**

IMAGE: DUBAI AIRPORTS

airport's operational needs. Ni explained that the in-house tool, which was originally trialled in 2019, is used in conjunction with Xovis, a situational awareness tool leveraging a network of sensors to monitor passenger movements, queues, airfield activity and flight data information in real time.

In addition, it can forecast passenger flow based on the throughput rate and build-up of passengers at high touch points.

With Dubai Airports' continued roll out of biometric technology and its plans to ultimately transition all operations over from DXB to DWC within the next decade, effective data collection, analysis and integration as well as predictive technology has an increasingly critical role to play in ensuring smooth operations.

Although Dubai Airports has yet to confirm the planned date for the full transfer of operations, CEO Paul Griffiths has previously referenced 2032 as the earliest probable date for a move from the current airport.

"From the AOCC's standpoint, the objective is to make sure we have the same visibility and oversight of operations at DWC as we do at DXB. It's about ensuring the right people have access to the right data so they can respond appropriately," Ni said. "However, as we already have existing operations at DWC, we're not starting from scratch. The ball is already rolling."

It's now about amplifying those efforts, while operations are ongoing. "That challenge of working in a live environment where nothing ever goes completely to plan and managing the constant ebb and flow of passengers, aircraft and baggage is what keeps us on our toes," he concluded.

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Sharjah on the charge

Sharjah Airport has embarked on the next step of its major expansion programme. **Alan Dron** investigates.

The centrepiece of the latest stage of Sharjah's growth is the start of construction on a major terminal expansion, designed to accommodate steadily-growing passenger numbers.

Sharjah's crown prince and deputy ruler, Sheikh Sultan bin Muhammed bin Sultan Al Qasimi, laid the foundation stone for the terminal expansion in early January. This is the largest of a series of projects that will enhance the airport at a cost of AED2.5 billion (\$653 million) and which are expected to be completed in 2027. The terminal expansion will account for more than half of the total cost.

The expansion will increase the terminal's annual capacity from eight million to 20 million passengers, with the possibility of increasing it further, to 25 million, in the future.

The higher capacity is needed urgently. According to the recently finalised statistics for 2025, the terminal handled record numbers of passengers – more than 15 million.

The existing terminal covers slightly less than 70,000m². The terminal expansion will create almost 120,000m² of new space, together with the renovation of more than 12,500m² of the existing building.

Once complete, the new terminal will cover an area of approximately 190,000m².

□□□□□

The expansion will allow the airport to separate departing from arriving passengers, upgrade its luggage-handling system and increase the food and beverage area.

Other new facilities will include a new VIP building, an additional transit hotel for passengers, and an increase in the number of waiting areas.

Sharjah Airport is the home base for low-cost carrier Air Arabia, which is steadily expanding its fleet and route network. It currently has a fleet of around 70 Airbus A320/321s and has a further 120 A320neo-family aircraft on order. Not all of these will be based in Sharjah, but throughput of passengers at its home hub will undoubtedly increase as the new arrivals come on-line over the next few years.

▼ Expansion will increase the terminal's annual capacity from eight million to 20 million passengers, with the possibility of increasing it further, to 25 million. ▲

In an indication of how important are the connections between the airport and its largest operator, the new terminal will have a separate entrance and check-in area for Air Arabia passengers, with another entrance and check-in area for travellers using other carriers.

As well as Air Arabia, the airport is a popular destination for airlines from the Indian subcontinent and MENA region. It is also a significant centre for cargo shipments.

To cope with the expected growth in passenger numbers, the number of aircraft gates will increase from 25 to 40. The number of check-in desks will more than double, from 48 to 105, while self-service check-in kiosks will increase from four to 22, with the potential to add another 24 in future. Self-service baggage drop points will grow from five to 11.

For incoming passengers, the number of baggage belts will increase from six to 12, in a new area.

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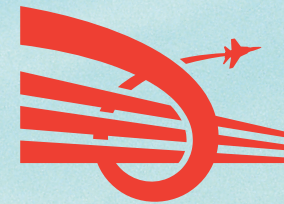
The Sharjah Airport Authority has already completed a number of enabling works within the overall airport expansion project, including a luggage handling station for transfer passengers, which includes electric-powered ground handling equipment, as well as a new water treatment plant, warehousing and a new engineering building.

Reduction of emissions has been a priority when creating the new facilities, according to the authority.

Outside the terminal, a new landside road network will speed up arriving and departing road traffic and the number of car parking spaces will almost double, to just under 2,000.

Airside, the fuel hydrant system network for refuelling aircraft will be expanded and redistributed, and work is already under way to increase the number of aircraft stands, with 12 already completed and work on a further 12 under study. When the project is completed, Sharjah International will have 52 stands.

The expansion will also establish a central utilities plant, covering items such as air conditioning, electricity and water supplies, main operations rooms and a new data centre. ▲



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The Future of MRO Now

By Capt. Fahd Cynndy Chief Executive Officer - Saudia Technic

Saudia Technic has embarked on a new three-year strategic phase. We would like to know more about this strategy, especially the predictive maintenance technology.



Saudia Technic developed and implemented a strategy in 2021 to support and achieve the goals of the National Aviation Strategy, thereby targeting the objectives of Saudi Vision 2030.

The strategy consists of three phases



Properly laying the foundations



Predictive maintenance

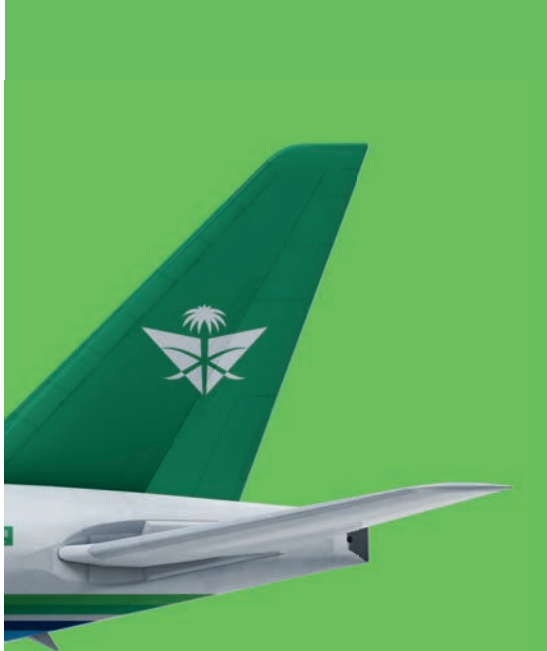


Future growth & sustainability

Each preparing the necessary conditions for the success of the subsequent phase, while supporting and enhancing the positive change achieved in the previous stage.



The successful implementation of the first phase, which involves properly laying the foundations, clearly indicates that our strategy supports and drives a transformative change in the company.



These three stages continuously focus on three dimensions



These focus areas require our ongoing vigilance and commitment



We would like to know more about the levels and applications of safety and security in the workplace and in the services provided by your company?



Capt. Fahd Cynndy
CEO - Saudia Technic

“The safety of workers and the workplace, and adhering to the highest standards of safety and security at Saudia Technic, are among the company’s top priorities and are fundamental to its strategy. The company continuously works to build a deeper, stronger, and more resilient safety culture.”

2021 >>>> 2022



What about expansion and sustainability, are there any plans and figures for expansion?

In 2022, Saudia Technic, as part of its efforts to achieve and support sustainability, encouraged an environmental care culture by finding solutions that enable the production and use of renewable and sustainable energy sources and recycling waste to reduce the environmental impact of operations. This also included improving and renovating the company’s facilities and workplace environment. Employee engagement at Saudia Technic has become the highest in the “Saudia” group.



Technology changes and evolves day by day, how does your company keep up with these changes, and what about workshops and training in this regard?

Training and developing the competencies of the company’s workforce, keeping them updated on the latest developments in their fields, are among the most critical elements of success that the company strives to sustain. In the recent period, Saudia Technic has adopted several projects, initiatives, and training programs to enhance productivity and efficiency among its employees across various specializations.



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First for aid FAI in good health

FAI Aviation Group has taken significant steps to solidify its presence within the Middle East - particularly with its medevac arm. **Marcelle Nethersole** learns more.

FAI Aviation Group is a global provider of mission critical aviation services. The 37-year-old company offers fixed-wing air ambulance, special missions, VIP charter, aircraft management and full MRO services. It has retained a sales and medical assistance office in Dubai for over 20 years. It recently received Commercial Airline Medical Escort (CAME) accreditation from the European Aeromedical Institute (EURAMI) for its Dubai-based medical escort service.

Barbara Baumgartner, managing director, FAI rent-a-jet DMCC branch, said: "This is a fabulous endorsement for FAI and its medical escort service, which underlines our unwavering attention to quality, safety and service excellence in our air medical operations. Our Dubai-based medical escort service is hugely popular with our largest Middle Eastern clients and we look forward to continuing to welcome patients and all who fly with us throughout 2024 and beyond."

The Dubai office offers a medical escort service on commercial aircraft as an additional service to its existing regional air ambulance clients as well as its direct clients.

The company has scooped a number of high-profile awards for its air ambulance work, including last year being awarded "air ambulance company of the year" from Middle East Aviation Awards during the Dubai Airshow.

□□□□□

"As the preferred partner of medical assistance, insurance and government organisations in the region for over two decades, FAI is experienced in meeting all the socio-cultural needs of its clients in the Middle East," said Baumgartner.

"Of course, we also assist end clients to fly their family members for either treatment abroad or repatriate patients back to their home country. We offer an extensive regional network and importantly, a thorough understanding of the special characteristics of the region."

Baumgartner offered a recent example of a medevac flight from the UAE.

"This month we flew a 29-year-old from the UAE to Los Angeles enabling the patient to hopefully use this last life-saving chance of a lung-transplant. It had been medically a very demanding mission but also logistically very challenging. To fly this high-risk critical patient literally around the world, we had to specially reconfigure one of our Challenger aircraft at our base in Germany prior to starting the mission from the UAE," she explained.

Baumgartner said FAI Aviation Group is focusing on expanding its operational capabilities in Dubai recognising the critical importance of high-quality medical services in aviation.

"FAI Aviation Group is actively hiring more UAE-based doctors and nurses with ICU experience," she said. "This expansion is aimed at enhancing the quality and range of its medical aviation services, reflecting its commitment to providing the highest standards of care and safety for its clients."

The group's fleet includes five Bombardier Global Express, six Bombardier Challenger 604s, and five Learjet 60s.



Top flight: FAI has scooped a number of high-profile awards for its air ambulance work. IMAGE: FAI AVIATION GROUP.

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

"Close access to Emirates and Etihad Airways enables efficient crew changes and also provides logistical support for FAI's Asian business operation," explained Baumgartner.

"While FAI does not currently base any aircraft permanently in the region, it will typically have at least one of the fleet operating in the Middle East daily."

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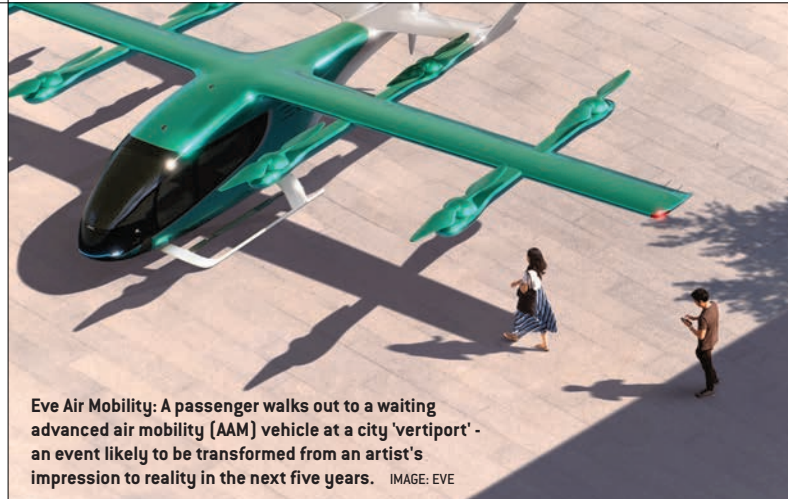
The company recently celebrated a 'key milestone' with its expansion in the region.

"FAI has established a company in the Kingdom of Bahrain. This move aligns closely with the vision of its strategic shareholder, the Bahrain Mumtalakat Holding Company, which is the sovereign wealth fund of Bahrain and a significant minority stakeholder in FAI Aviation Group," said Baumgartner.

"Bahrain offers a strategic advantage with its recent airport expansion and strengthened position in the regional aviation space, positioning the Kingdom not only as a hub for regional traffic, but also as a key gateway for transitory traffic to Asia."

A critical component of FAI Aviation Group's expansion in Bahrain is the pursuit of a Bahrain AOC (air operator certificate) licence, aimed primarily at bolstering its VIP passenger charter business segment.

Baumgartner added: "The pursuit of the AOC licence will enable FAI Aviation Group to operate more effectively within the region, offering enhanced services to its clients and reinforcing its commitment to excellence in aviation."



Eve Air Mobility: A passenger walks out to a waiting advanced air mobility (AAM) vehicle at a city 'vertiport' - an event likely to be transformed from an artist's impression to reality in the next five years. IMAGE: EVE



Wisk Aero: Wisk Aero's aircraft are likely to be among the early arrivals in the race to provide a new generation of electrically powered aircraft. IMAGE: WISK AERO

Saudi mobilises its AAM roadmap

Saudi Arabia is putting policies in place that it hopes will make the country a leader in the rapidly evolving world of Advanced Air Mobility. **Alan Dron** takes a closer look.

It's a brave new world out there, and it's getting closer every day. Decades of science fiction films in which the skies over cities are filled with all types of exotic flying machines seem on the verge of coming true.

Small cargo-carrying drones are already being used in several parts of the world, dropping urgently-needed medicines to locations perhaps 10-20 miles from their launch point. Larger uncrewed aerial vehicles (UAV) are being trialled to deliver mail to remote locations.

And now, the first generation of electrically-powered vertical take-off and landing (eVTOL) aircraft are expected to be in service within the next three years. A few years further down the road, those eVTOLs will be able to fly passengers wherever they want around a city without a pilot at the controls.

While the first generation of eVTOL aircraft will probably be used to transport groups such as arriving airline first-or business-class passengers to their final destinations, the plan globally is that at some point in the not-too-distant future, the aircraft will be as ubiquitous as taxis.

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Of course, that scenario depends on the availability of 'vertiports', as they are becoming known, in urban areas. This is likely to be more difficult in older cities, such as those in Europe – a recent UK media briefing by existing airport operators and others suggested that finding the necessary space and recharging facilities in a city such as London is fraught with difficulties. But this is likely to be much less of a problem in Gulf nations.

With all these factors now in play, Saudi Arabia has announced the Advanced Air Mobility (AAM) in Saudi Arabia initiative, developed by the General Authority of Civil Aviation (GACA).

Enabling Advanced Air Transport in the Kingdom follows 2022's release of the Environmental Sustainability Development Plan in Civil Aviation, which seeks to establish a regulatory framework based on best global practices, aimed at minimising aviation's environmental footprint.

This is an ambitious roadmap to make the Saudi air transport sector the safest and most developed in the Middle East.

▼ This is an ambitious roadmap to make the Saudi air transport sector the safest and most developed in the Middle East. ▲

The initiative includes a wide range of solutions covering the various classes of aircraft mentioned above. These technologies will be characterised by high technical capabilities, says GACA, and will also have the practical effect of alleviating congestion on roads and facilitating easy access to remote areas in the country. The aim is that this will, contribute to overall economic and social development in the country.

The AAM initiative includes the steps that must be taken to create a comprehensive road map that places AAM at the forefront of the aviation industry, said Capt. Sulaiman Al-Muhaimidi, executive vice president of GACA for aviation safety and environmental sustainability.

□□□□□

The new generation of airborne vehicles will revolutionise the movement of passengers and goods, but will also allow faster responses to emergencies, medical evacuation and aid to the population if a natural disaster strikes.

Al-Muhaimidi said tests in the Kingdom, including trials of new air vehicles in various types of terrain and climatic conditions, had produced positive results. Additionally, the use of electric power by most of the new generation of vehicles will add to sustainability and contribute to Saudi Arabia's plans to achieve net-zero carbon emissions by 2060.

"We're not just building a new mode of transportation; we're creating the backbone for the next era of economic and social development in Saudi Arabia," he said.

The new policy document expresses the country's clear ambition to at least rival the neighbouring UAE, which for many years has pushed the aviation sector to the front of its economy.

International cooperation constitutes a major aspect of the AAM journey in the Kingdom, as memoranda of understanding (MoU) were signed with a number of countries, including South Korea, Singapore and China, in addition to concluding agreements with leading companies in designing and manufacturing AAM aircraft to ensure that the Kingdom achieves an advanced position in this field, especially in the safety and development sectors. ▲



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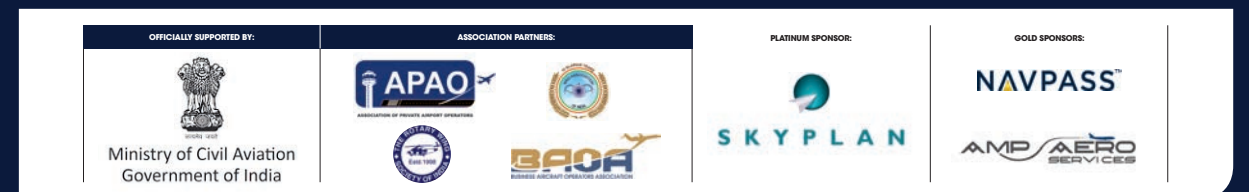
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BOEING TO STRENGTHEN SAUDI TIES WITH RIYADH HQ

During the World Defense Show 2024 in Riyadh, Boeing’s president for Saudi Arabia, Asaad Aljomoai, announced that a formal application had been submitted to sight the company’s Middle East headquarters in the Kingdom.

He said that Boeing will give its “strong support to the development of Saudi led-aerospace and defence capabilities”.

The partnership between Boeing and Saudi Arabia dates back to February 1945, when then U.S. President Franklin D. Roosevelt gifted a twin-engine DC-3 Dakota to King Abdulaziz Al Saud. This also marked the beginning of commercial air travel in the kingdom.

For decades, Boeing’s investments have contributed to the growth of the local aerospace and defence capabilities of the Kingdom, creating jobs and driving innovation.

Boeing has supplied more than 400 defence aircraft to the Saudi Arabian Armed Forces while investing in partnerships with major players in the Saudi aerospace ecosystem like the Royal Saudi Air Force, Saudi Arabian Military Industries (SAMI), the General Authority for Military Industries (GAMI) and the National Guard.

Boeing’s presence at the World Defense Show was marked by a virtual-reality display of its F-15EX cockpit and the T-7A Red Hawk advanced pilot

STRONG SUPPORT: The partnership between Boeing and Saudi Arabia dates back to 1945.

IMAGE: BOEING



training system simulator, highlighting the ground-based training system of Boeing’s next-generation training jet.

The show also featured Boeing’s KC-46A tanker, its ScanEagle VTOL and rotorcraft including the CH-47 Chinook and the AH-64 Apache.

Boeing’s Commercial Market Outlook (CMO) forecast shows a demand for more than 3,000 new aircraft in the Middle East by 2042 with new-technology widebodies leading the way.

“Air travel and cargo demand continue to gain momentum, driven by significant economic growth and national development plans. As airlines in the

region will require efficient and versatile fleet solutions, Boeing products will be ready to meet market demands,” said Darren Hulst, Boeing VP, commercial marketing.

As part of Vision 2030, Saudi Arabia aims to attract investments totaling \$100 billion from both public and private sectors by 2030, spearheading its civil aviation strategy.

The strategy includes the construction of new airports, implementation of state-of-the-art ground services, and a substantial increase in air traffic, with the ultimate goal of welcoming 150 million international visitors by 2030.



The UAE’s Hope probe has now been in orbit around Mars since February 2021.
IMAGE: MBRSC

A MARS A DAY...

The Emirates Mars Mission (EMM) has released a series of new observations drawn from the first measurements of Mars’ atmosphere across a full Martian year (two full Earth years). Steve Nichols reports.

The release celebrates the third year of science data gathering around Mars by the Hope probe and marks the accomplishment of the Mission’s stated science objectives.

The Hope probe, which was launched from Tanegashima Space Centre, Japan in July 2020, is the first mission to provide a complete picture of the Martian atmosphere and its layers. Its data are helping to answer key questions about the global Martian atmosphere and the loss of hydrogen and oxygen gases into space.

Hope has used its scientific instruments, which include visible, infrared and ultraviolet spectrometers, to map and understand the lower atmosphere of Mars and the weather systems that exist.

Scientists around the world have benefitted from the vast amount of data the mission has released so far, including images of the planet’s aurora and abundance of oxygen.

Salem Butti Al Qubaisi, director general of the UAE Space Agency, said: “The Emirates Mars Mission was conceived to provide a national challenge that would accelerate the development not only of the UAE’s engineering capabilities, but to disrupt our education, research and innovation ecosystems.

“There is no doubt at all that it has succeeded in that beyond our wildest expectations. At the outset, the UAE’s leadership made it clear that EMM should make a significant scientific contribution and we can now say that the mission not only fulfilled its original science objectives, but has significantly surpassed them.”

EMM was designed to achieve three objectives that complemented questions posed by the global grouping of Mars scientists and researchers, MEPAG – the Mars Exploration Program Analysis Group. Hope set out to monitor the global, diurnal, and seasonal changes that the Martian atmosphere undergoes due to year-to-year variations including those caused by solar forcing that result in atmospheric escape – particularly of hydrogen and oxygen

and the temporal and spatial behaviour of Mars’ atmosphere.

Hoor Al Mazmi, EMM project manager at the Mohammed Bin Rashid Space Centre (MBRSC), added: “We can say with confidence that EMM has blown past its original stated science objectives. Not only have we achieved our goals, and taken Hope into an extended mission, but we have added unique new discoveries, from investigations of new types of aurora through to the most extensive new observations of Mars’ least known moon, Deimos.

“Hope’s unique elliptical orbit supports these unique observations, giving us a near-complete picture of the planet’s atmospheric dynamics every nine days. That has enabled us to create an incredible depiction of Mars’ changing atmosphere day and night, across the seasons and throughout a full Martian year.”



Mars’ aurorae are unlike the type we have on Earth, which are concentrated at the north and south magnetic poles. Known as a “discrete aurora” on the nighttime side of the Red Planet, the phenomenon is caused by solar energy interacting with crustal formations.

Mohsen Al Awadhi, director of space missions department at the UAE Space Agency, said: “With the probe performing optimally, we performed a manoeuvre to support a season of Deimos observations and I can say today that we still have the option, from an engineering point of view, of further extending the mission.”

But the UAE’s aspirations for Mars don’t stop there. It has also declared that it aims to establish the first inhabitable human settlement on the Red Planet by 2117. The goal is to inspire future generations and “instil a culture based on discovery and education”.

HH Sheikh Mohammed bin Rashid Al Maktoum issued directives to MBRSC to lead the Mars 2117 project and prepare a 100-year plan for its implementation.



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MRO Middle East again provided a forum for assessing the challenges and opportunities confronting the regional industry as it attempts to scale up fast enough to support the ambitions of operators. **Chuck Grieve** reports.

The Middle East has a skills mountain to climb

The shortage of skilled MRO talent hung like a cloud over MRO Middle East as the industry grappled with the quandary of how to staff the myriad facilities planned or under construction.

Conversations at the Dubai show – the biggest to date with more than 8,000 attendees and 250 exhibitors – underlined the fact that nobody is blind to the unique manpower challenges faced by MRO operations in the Gulf. Observers agree, in private at least, that in the GCC countries where demand is highest the problem is rooted in an aversion among today's young people to getting their hands dirty.

So far, solutions are thin on the ground, but innovative approaches to attracting, training and retaining qualified people at least hold promise. Realising that it takes more than the salary to keep people, several organisations are adopting a whole-career approach.

Joramco chief executive Fraser Currie said in an interview that retention of staff “is a challenge”, with poaching still prevalent. But despite the siren call of larger organisations, the Amman-based independent MRO has “very low” attrition, thanks in part to a forward-looking employee engagement scheme launched about two years ago. By adopting “modern concepts of how you build up your entire package and what that package is worth as a total”, Joramco maintains an attrition level that Currie said “most companies in North America and Europe would love to have.”

In booming Saudi Arabia, a massive training academy is planned at Saudia Technic's MRO Village in Jeddah to address the “tremendous shortage in talent” forecast until at least 2035, said Saudia Technic chief executive Fahd Cynndy. In his view, a sustainable talent pipeline needs training capacity and funding, and guaranteed jobs for graduates – all of which his training academy will provide for up to 1,100 students a year.

Looking to support the Saudis is Lufthansa Technik (LHT), whose senior director corporate sales Middle East and Africa, Tim Butzmann, said training is one area under discussion with Saudia Technic. He said his Saudi counterparts were interested in how to capture LHT's work ethic. “They tell us they are more after the attitude, structures, managing and monitoring efficiency etc – how we do it.

“They're not alone – others are interested too.

“What we're currently doing as a first step is inviting key people from Saudia



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Technic to shadow our technicians in our Middle East facility in Dubai. We'll arrange something similar to be done in Germany."

David Doherty, vice-president commercial of Etihad Engineering, told the Go Live! Theatre audience: "There's no point in complaining [about the skilled manpower shortage] if you're not prepared to do something about it."

Etihad Engineering runs development programmes for both Emirati talent and aviation graduates of other nationalities and is thinking outside the box with "old-fashioned" apprenticeships aimed at the next generation of expats in the UAE. Said Doherty: "We have expat school-leavers – people already in the UAE – who at 16-17 normally have to get a job or leave the country. We want to develop something that would let people stay."

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What's envisaged – and already in preliminary discussions – is a three-four year course leading to a City and Guilds-type qualification and guaranteed employment with Etihad Engineering. "If we could do it successfully internally, we could roll it out to other MRO operations who perhaps aren't large enough to justify an apprenticeship scheme of their own."

Such a programme could also help the talent retention problem, appealing to the emotional attachment to the host country that exists among the long-term expat community.

Sanad, the Abu Dhabi-based engine MRO, is tackling the problem with a coordinated approach to training and retaining staff, said chief executive Mansoor Janahi. "We've been working on it for years."

He said the company was working with its parent, Mubadala Investment Company, and several local colleges on a technical apprenticeship programme "to create a sustainable pipeline of talent" into its business. A cohort of 15 high school leavers had been enrolled this year.

For current staff – "our rising stars" – Sanad



David Doherty: "We have expat school-leavers – people already in the UAE – who at 16-17 normally have to get a job or leave the country. We want to develop something that would let people stay."

IMAGE: ETIHAD ENGINEERING

provides leadership development opportunities. Said Janahi: "We did a scheme with Luiss Business School in Rome. We want to give our talent immersive experiences – across-the-board, cross-country leadership development."

The company was also exploring giving its people training exposure with its OEM partners, seeing it as a "strong value proposition" for employees, 15% of whom are women.

Elsewhere, frustrations at a 'broken' supply chain boiled over during panel discussions on use of alternative parts. In an instant poll, the audience criticising contracts, including leasing agreements, for constraining use of USM and PMA parts in the Middle East. Jim O'Sullivan, vice-president business development at Heico, said of current rules: "One size does not fit all – some parts may have even further restrictions."

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"There should be a solution to this challenge since generally, a lessor does not want a surprise at the end of a lease – they want a smooth end and transaction."

Teardown and part-out were part of MTU Maintenance's approach to the changing scenario in the region, said MTU's Sami Ben-Kraiem, vice-president sales and marketing for the Middle East and Southeast Asia. As mature widebody engines such as the GE90-110/115B came out of OEM support contracts, independent MRO providers needed to come up with new solutions for life-limited parts replacement and heavy maintenance.

At MTU, that requirement has translated into adding slots for GE90s at its Hannover base, expanding its GE90 lease pool, and invested in teardowns to increase access to used material, he said.

"This is all an effort to support the world's fleets, especially in times of longer turnaround times as a result of supply chain constraints," he said. "More than ever, we have to put greater emphasis on spare engine levels, USM and pool parts." ▲

SAUDI TECHNIC MAINTENANCE DEAL AND MRO SHOW UPDATES

■ Saudia Technic signed a letter of intent (LOI) with Riyadh Air covering maintenance for its fleet of Boeing 787 Dreamliners in its home hub of Riyadh and at outstations within the Kingdom and abroad.

A further agreement will cover heavy maintenance.

Riyadh Air is scheduled to start operations in 2025. Saudia Technic also signed agreements with Thales, to establish a regional repair centre in the Kingdom; with The Helicopter Company (THC) for heavy checks on the THC fleet; with Airbus Helicopters for its first-authorised service centre in KSA; and with GE Engine Services.

■ Joramco and Satair signed an agreement covering the supply of expendables, a "targeted approach" to enhance supply chain reliability and reduce costs. Joramco also announced "strategic agreements"

with parts supplier Bossard Aerospace, Boeing, and long-term customers MNG Airlines and TUI Fly.

■ ATS Technics announced plans to build a 12,000 sqm EASA-approved maintenance organisation (AMO) base for commercial aircraft at Dubai World Central.

■ Lithuania's FL Technics announced it has expanded its Middle East presence with level 5 GCAA-approved line maintenance services at the new Terminal A of Abu Dhabi's Zayed International airport.

■ Turkish Technic announced it had signed an agreement with Azerbaijani cargo airline Silk Way West for component pooling and MRO services for its Boeing 777F fleet.

■ Sanad announced a new partnership with aircraft lessor Deucalion Aviation for MRO services for its Rolls-Royce Trent 700 engines at Sanad's Abu Dhabi base.

■ Switzerland-based AMAC Aerospace and Mukamalah Aviation of Dammam, Saudi Arabia, signed an agreement at the show to explore a partnership in MRO for fixed and rotary wing aircraft.

■ AerQ dropped hints at the show about the first implementation of its Aerena in-seat 'entertainment-plus' system aboard an Airbus A320 of Lufthansa-owned Discover airlines. The company confirmed it less than two weeks later, announcing that the system was scheduled to be in use from 29 March for the airline's 2024 summer medium-haul schedule. ▲

Upcoming engine shop visit?

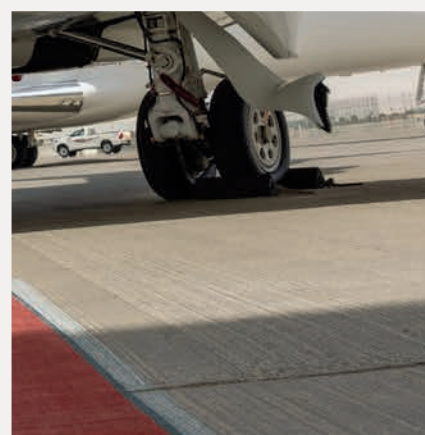
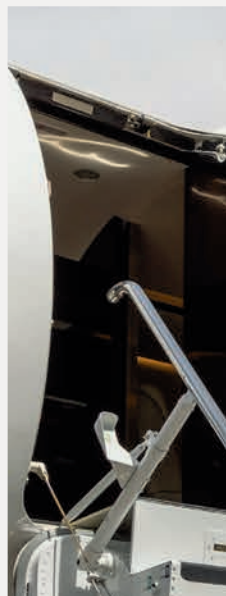
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