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ARABIAN AEROSPACE

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

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RAFALE PRIZE

EGYPT'S AIR FORCE SWOOPS IN WITH \$4.5BN ORDER

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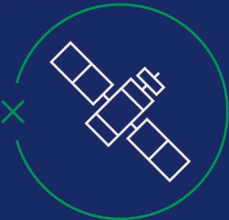
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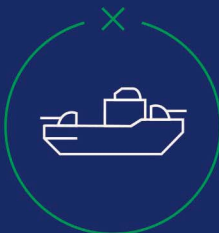
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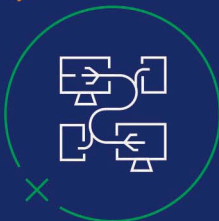
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COVER: The Egyptian Air Force modernisation continues with an estimated \$4.5 billion order for a further batch of 30 Dassault Rafale multi-role fighters.
PICTURE: Dassault Aviation
— A. Pecchi

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We can all have a chance to celebrate

All of us at *Arabian Aerospace* Towers will be celebrating as this edition of the magazine hits the streets. It is our 50th edition, and it is fair to say that a year ago, amidst the gloom and worry of the pandemic, we worried that this golden moment might never come.

But it has, and I would like to acknowledge the support we have received from sponsors and advertisers. Many people say how much they love the magazine, the commentary from a great set of experienced aerospace journalists, the excellent imagery and the great design.

Having been recognised as the best international aerospace magazine before the pandemic, we hope to be able to be there for the next 50 too.

Of course, 50 is a magic number –

many in the GCC are celebrating a golden anniversary since the formation of the nations. Within that is a remarkable story of resilience and belief that has seen our industry grow from within to become a global aviation powerhouse.

The last two years have been horrific. There are many still without a seat on the flightdeck and Victoria Moores' story on pilot mental health is a good opportunity for us to reflect on the changing world we are in, and to look carefully at how we prepare ourselves and our people for the return to work.

In this issue it was great to see both sides of Dassault – the independent French manufacturer – succeeding.

The contract with Egypt will give the Rafale programme a new lease of life and create more export opportunities.

At the same time, the Falcon 10X business jet pushes the bar up for the top end of the VIP jet segment... with an aircraft that will fly on 100% sustainable aviation fuel.

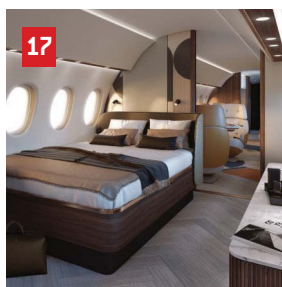
Sustainability is going to be more and more part of everything we do in aerospace, whether it is in defence (military with government support could push the SAF case and reduce emissions), in MRO, or in commercial air transport. Qatar Airways CEO Akbar Al Baker explains how important it will be for us and how our airlines should take the lead.

Green aviation will be a differentiator. The Middle East has a chance to show the world it is committed and then we shall all have a chance to celebrate.

Alan Peaford, editor-in-chief



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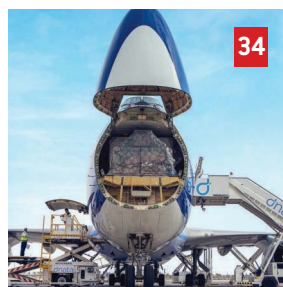
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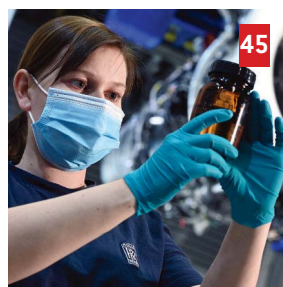
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50 Reducing stress: With new EU pilot mental fitness rules coming into effect, several Middle East carriers are now looking to up their levels of pilot support.

52 All in a day: Tim Hawes, managing director, Tarsus Group.



Abu Dhabi solar-power record puts other car parks in the shade

Abu Dhabi Airports and Masdar, a global leader in renewable energy and sustainable urban development, have completed Abu Dhabi's largest solar-powered car park, which is projected to save 5,300 tonnes of carbon dioxide per year.

The three-megawatt (MW) solar photovoltaic (PV) project has been completed on the car shading at the short-term car park at Abu Dhabi International Airport's Midfield Terminal. It has 7,542 solar panels producing electricity.

The energy generated by the grid-connected system will be used to power the car parking facility, with excess energy fed to other sections of the airport.

Shareef Al Hashmi, chief executive officer of Abu Dhabi Airports, said: "Throughout its development, we have integrated technology that enables sustainability, protects the environment, and creates a cleaner, greener, and more ecologically friendly building."

PICTURE: ABU DHABI AIRPORTS

Sustainable fuel boost is region 'first'

Hellmann Worldwide's Middle East South Asia (MESA) operation has become the first in the region to join the Air France KLM Martinair Cargo (AFKLM Cargo) sustainable aviation fuel (SAF) programme.

Air France-KLM launched its innovative corporate SAF programme in January 2021 to enable companies to play an active role in the future of sustainable travel.

In 2011, the two airlines were among the first to operate commercial flights, demonstrating a possible alternative to fossil fuels.

Sustainable aviation fuels can today be made from waste oils, waste products and forest residues. They can be incorporated into jet fuel without any engine modifications. Their use can reduce CO2 emissions by more than 85% compared to conventional fuel.

The cargo SAF programme makes it possible for shippers and forwarders to power a share of their flights using SAF.

Saudi MRO boost

Saudi Rotorcraft Support Company (SRSC), a Boeing subsidiary joint venture, has been authorised to perform maintenance on rotorcraft

platforms and their accessories by the Saudi General Authority of Civil Aviation (GACA).

"This certification is a significant achievement and will open up several MRO opportunities, not only for Saudi Arabian aviation, but possibly for the Arabian Gulf region as well," said Michael Knight, chief executive officer for SRSC.

Contract cancelled

Abu Dhabi's state-owned airport operator has cancelled a contract with the consortium building a \$2.94 billion terminal at the emirate's main airport.

The group, which comprises Arabtec, Turkey's TAV Insaat, and Athens-based Consolidated Contractors Company, was awarded the contract in 2012 to build the Midfield

Terminal Building at Abu Dhabi International Airport.

It has been reported that Abu Dhabi Airports cancelled the contract after the group over-ran on project costs.

Turkish loss

Turkish Airlines has reported a first-quarter operating loss of \$72 million, an improvement on the \$300 million loss for the same period last year.

The airline generated a \$61 million net profit for the first three months. Its revenues for the quarter remained down by 29% at just under \$1.8 billion.

P7 adds simulator

Sharjah-based P7 Aviation has added a Boeing B747 full-flight simulator to its

training portfolio, adding to its current Airbus A320 and Boeing 737 Classic training capability.

P7 chief executive officer, Khushbeg Jattana, said: "The global pandemic has resulted in a number of passenger airlines retiring their Boeing 747 aircraft but these aircraft have found another use – cargo."

Park named

Yas Island's custom-built open-air venue is now known as Etihad Park. The new name is part of a larger partnership deal announced between Etihad Airways and Flash Entertainment.

The newly named venue is the latest addition to Etihad's growing list of sponsored entertainment hubs, following the introduction of Etihad Arena earlier this year.

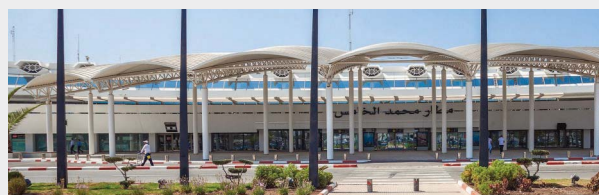
New Dubai HQ

Stanton and Partners Aviation, which is dedicated to the sale and purchase of private jets catering exclusively to ultra-high-net-worth individuals, has launched its new international headquarters in the Dubai International Financial Centre (DIFC).

Founder, Allan Stanton, said: "As the world is on its way to recovery and mitigating the impact of Covid-19, investors are focused on maintaining the integrity of their assets, while acquiring meaningful new ones."

"With our exclusive global network of ultra-high-net-worth individuals, we bring together a stellar team of industry heavyweights to lead the charge in this new era of private aviation."

Casablanca ONDA way to domestic bliss...



PICTURES: ONDA

A new terminal, dedicated to domestic flights, started operating at Casablanca Mohammed V International Airport on May 21. It is part of a larger Moroccan Airports Authority (ONDA) project aiming to set up a common arrival area at Terminal 1 and 2.

According to ONDA, the purpose of building the new terminal is to separate the flow of passengers from international and domestic flights, to improve the passenger experience on domestic flights by offering spaces combining comfort and quality of service, and to increase capacity."

The Casablanca hub now offers 169 weekly frequencies, operated by Royal Air Maroc and Air Arabia, connecting the city to 13 national destinations – Marrakech, Dakhla, Agadir, Laayoune, Tangier, Errachidia, Fès, Tétouan, Oujda, Guelmim, Ouarzazate, Zagora, and Nador.

A pilot in a white uniform shirt and glasses is shown from the side, wearing a Bose ProFlight Series 2 aviation headset. He is in the cockpit of an aircraft, with his hands on the controls. The background shows the cockpit instruments and the view out of the window.

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Entertaining a new deal for SAL and Sela

Saudi Logistics Services (SAL) has signed an agreement to provide ground-handling services at main airports to support events management company, Sela's, programme of seasonal entertainment and activities.

SAL CEO, Omar Hariri, said: "We are sure this cooperation will result in higher quality service to all the upcoming events in the kingdom."

Loai Kamakhi, general manager business solutions at Saudi-based Sela, added: "Working side-by-side with SAL is a huge step forward for both companies and contributes to Sela's goal of unlocking the outstanding potential of logistics, especially in the field of events and entertainment."

LTME /Joramco get technical together

Lufthansa Technik Middle East (LTME) and Joramco, the Amman-based MRO and the engineering arm of Dubai Aerospace Enterprise (DAE), have signed a memorandum of understanding (MoU) over technical expertise.

The agreement will allow Joramco to enhance its in-house capabilities with the help of LTME, and allow LTME to relocate a number of its spares to the Joramco facility for consignment stock and repair capability.

This allows LTME to enhance its MRO business as it is Joramco's preferred MRO service provider for nacelles.

Joramco chief executive officer, Jeff Wilkinson, said: "This agreement marks a significant step forward and the start of what is sure to be a highly productive and beneficial partnership for both companies."

Doing the washing up... by Royal appointment



GE Aviation has awarded Royal Jordanian Airlines (RJ) a technical licence to use its patented 360 Foam Wash system.

The licence allows Royal Jordanian to perform 360 Foam Wash on its fleet of GENx-1B engines for Boeing 787 aircraft completely on its own.

GE's 360 Foam Wash is an alternative to the water wash method. It restores engine performance, leading to reductions in fuel consumption. The process involves injecting a specially formulated, proprietary solution that removes dust and dirt particles in the engine.

The system is self-contained, allowing it to be used inside maintenance hangars or outdoors. The system is approved for use on multiple GE engine programmes, including models of GE90, GENx, CF34 and CF6.

Cleaning up: RJ now has a technical licence to use the 360 Foam Wash system.

PICTURE: GE AVIATION

Vital supplies: Oman Air operated flights to India over 15 days.

PICTURE: OMAN AIR.



Oman Air gives a lift to India medical supplies

Oman Air has activated an emergency cargo-lift initiative to help ferry critical medical aid to India.

The flights, rolled out over 15 days, guaranteed 10 tonnes of free cargo space on several Indian routes to assist humanitarian organisations and agencies in the transport of essential medical equipment and supplies.

Abdulaziz Al Raisi, Oman Air chief executive officer, said: "Oman Air will continue to do its part, as it has throughout the Covid-19 pandemic, to transport essential medical supplies and emergency relief to those in need."

"India continues to battle the pandemic with tremendous courage and unity, and Oman Air stands ready to assist humanitarian organisations and agencies in the transport of critical medical aid from Muscat to city hubs across India."

■ Meanwhile, Emirates has also set up a humanitarian airbridge between Dubai and India to transport urgent medical and relief items. The carrier is offering cargo capacity free of charge on an 'as available' basis on all of its flights to nine cities in India to help international NGOs deliver relief supplies rapidly to where they are needed.

Healthy accreditation

Dubai International has received Airport Council International health accreditation for its work on ensuring the health and safety of passengers and airport workers. The programme is designed to help reassure the travelling public about the safety of airport facilities and the precautions being taken by airports to reduce any risk to their health.

Turkey training

Bluewings Aviation, a general aviation company based in Çorlu, Turkey, has bought an ALSIM AL250 simulator to address initial phase training needs. It offers both classic and glass cockpit instrumentation for each flight model. More than 65 are in operation worldwide.

It's a pass!

EgyptAir Training Academy has successfully passed the European Aviation Safety Agency (EASA) initial qualification audit for its newest A220-300 full-flight simulator.

The EASA audit team praised the technical status

and the performance of the device, the first in the Middle East region.

Cool containers

Jettainer, a unit load device management services provider, has extended its long-standing partnership with Etihad Cargo to look after the carrier's cool containers. Jettainer's temperature control competence centre is located within the airline's Abu Dhabi headquarters.

Closer cooperation

Oman Air and Qatar Airways have expanded their codeshare partnership to cover more than 80 destinations on Qatar Airways' network. This follows the announcement in December that the airlines would strengthen their strategic cooperation.

Fire-fighter take-off

Turkish Aerospace's Aksungur unmanned aerial vehicle (UAV) flew its first mission in June. Aksungur will be located at Adana Sakirpasa Airport and will be operated by the General Directorate of Forestry for fire-fighting purposes.

Tel Aviv FBO for ExecuJet

ExecuJet has opened a fixed-base operation (FBO) service in Tel Aviv, Israel.

The facility will be managed in partnership with leading Israeli aviation and tourism company, Flyeast, and will be part of the luxury Fattal Terminal at Ben Gurion Airport. Services offered will include VIP passenger processing, supervisory aircraft handling, concierge services, flight arrangements and charter solutions.

Mike Berry, ExecuJet's vice president Middle East, said: "We're now finalising key project elements, such as passenger flow within the VIP passenger lounge within the terminal. We're planning to deliver the highest service levels to our many valued clients."

Angola bound

Abu Dhabi Aviation has leased two new AW-139 helicopters to Angola operator, Bestfly, with the first being handed over to the Luanda-headquartered company by Leonardo in June. The helicopters will be employed primarily on offshore services for the oil and gas industry, said Bestfly CEO, Nuno Pereira. They will be outfitted for medevac duties.

Bestfly has contracts with several major oil companies such as Total, Exxon and BP.

Travel safe

Flydubai has partnered with Alhosn, the official UAE app for contact tracing and health testing related to Covid-19, to provide passengers with digital verification of medical records while travelling from the UAE.

Breezing on

Turkish Aerospace is building the region's largest subsonic wind tunnel facility. Work is already under way and will allow the company to carry out wind tunnel tests on the proposed new Turkish Fighter Aircraft, as well as for the development of indigenous, rotary-wing and fixed-wing aircraft.

Concourse D opens

Dubai International's Terminal 1 and Concourse D, closed since March 2020, welcomed its first passengers in June since it closed following the partial suspension of operations at DXB as part of the measures to control the spread of Covid-19. Concourse 1 welcomed the arrival of Flynas flight XY201 from Riyadh.

Aymeric Méchin:
"The Covid-19 crisis is pushing us toward more flexibility."

PICTURE: AFI KLM E&M.



Gearing up for MRO's post-Covid revolution

Gulf Air has renewed its contract with Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) for support equipment on the A320neo/ceo aircraft family, including a new fleet of A321neos.

Aymeric Méchin, AFI KLM E&M's VP sales Africa & Middle East said: "The Covid-19 crisis is pushing us toward more flexibility as we are taking into account the fact that people are flying less. We are, therefore, tailoring our services to meet client needs."

AFI KLM E&M offers comprehensive technical support to the main airlines in the region, including Emirates, Etihad, Qatar Airways, Oman Air, Kuwait Airways, Air Arabia, and Saudia.

It offers a wide range of services for B777, A320, A330, and B737 aircraft, and covers engine types such as the CFM56-5B, CFM56-7, and GE90.

It is also an auxiliary power unit (APU) specialist and provides dedicated MRO services, via its fully owned subsidiary, EPCOR, and for nacelles via Aerostructures Middle East Services, a joint venture with Safran Nacelles, based in Dubai.

Handling well

Munawala Ground Services, Abu Dhabi Airports' ground-handling service provider, has received the International Air Transport Association (IATA) safety audit for ground operations (ISAGO) registration, marking its commitment to safety and security.

The award follows a comprehensive audit of Munawala's management and safety systems at its headquarters in Abu Dhabi, as well as its ground-handling operations at Al Ain International Airport.

Perfect 10

Royal Jordanian (RJ) has renewed its International Air Transport Association (IATA) operational safety audit (IOSA) certificate for the 10th time.

RJ vice chairman and CEO, Samer Majali, said the achievement is the result of "diligence and professionalism".

Sirius move

Sirius Aviation Capital Holdings (Sirius), a global aircraft lessor headquartered in the Abu Dhabi Global Market (ADGM), has acquired 10 single-aisle, mid-life aircraft from BOC Aviation, a member of Bank of China Group.

Gulfstream G700 takes the pressure off

Gulfstream Aerospace has announced that its all-new Gulfstream G700 jet will operate at a lower cabin pressure to enhance the passenger experience.

Originally announced with a cabin altitude of 3,290 feet/1,003 metres when flying at 41,000ft (12,497m), the pressure at that height has now been improved to 2,916ft (889m).

Gulfstream president, Mark Burns, said: "This new, industry-leading cabin altitude is a result of our ongoing investments in customer health and safety and will provide even more comfort for passengers over the ultra-long-range flights that the G700 is capable of achieving."

The Gulfstream cabin experience on the G700 also includes 100% fresh, never recycled air; whisper-quiet noise levels; 20 of the industry's largest windows; an all-new, high-definition circadian lighting system; and award-winning seat design, with advanced ergonomics.



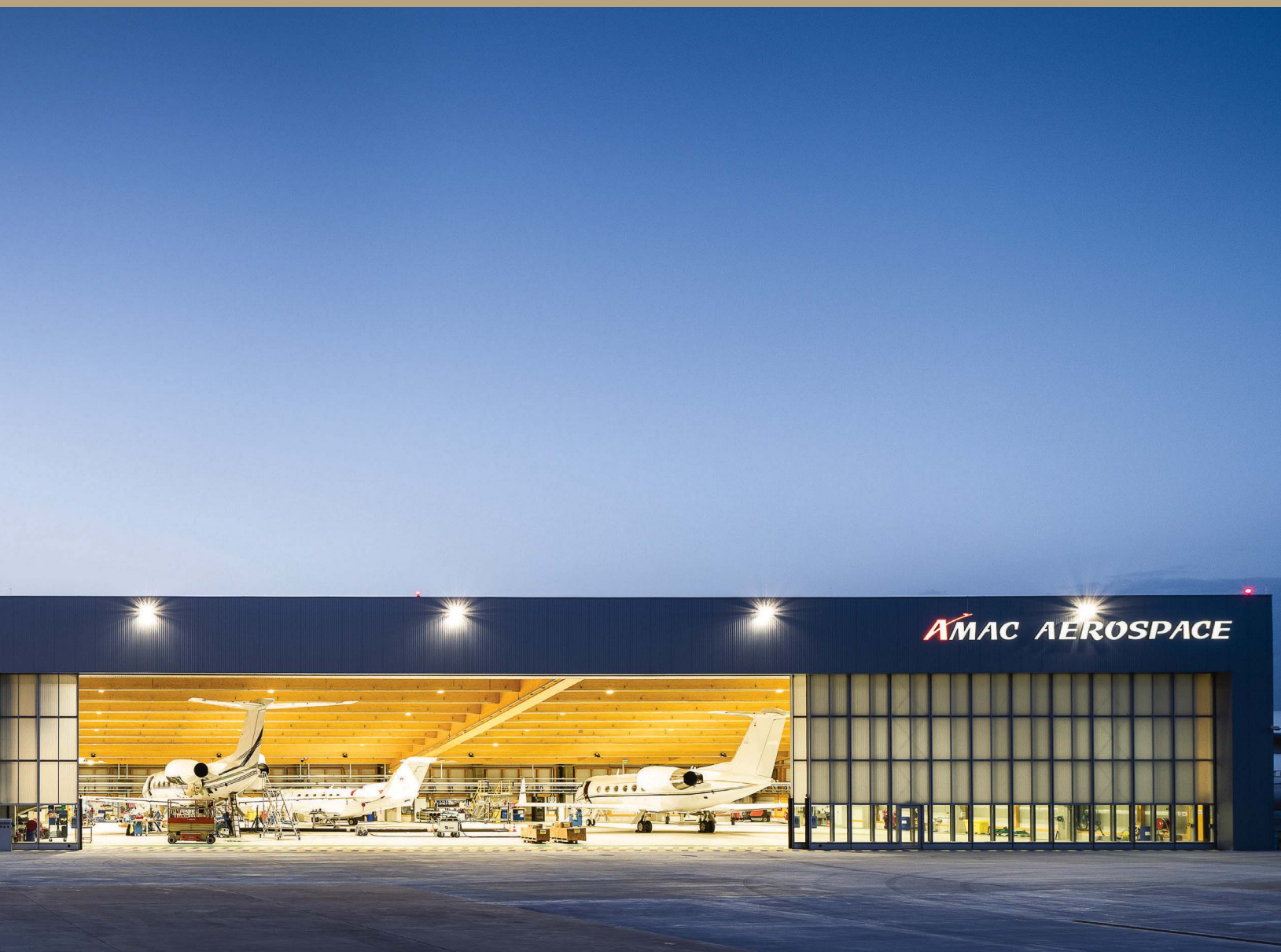
The G700: Travelling in more comfort for ultra-long-range flights.

PICTURE: GULFSTREAM AEROSPACE.



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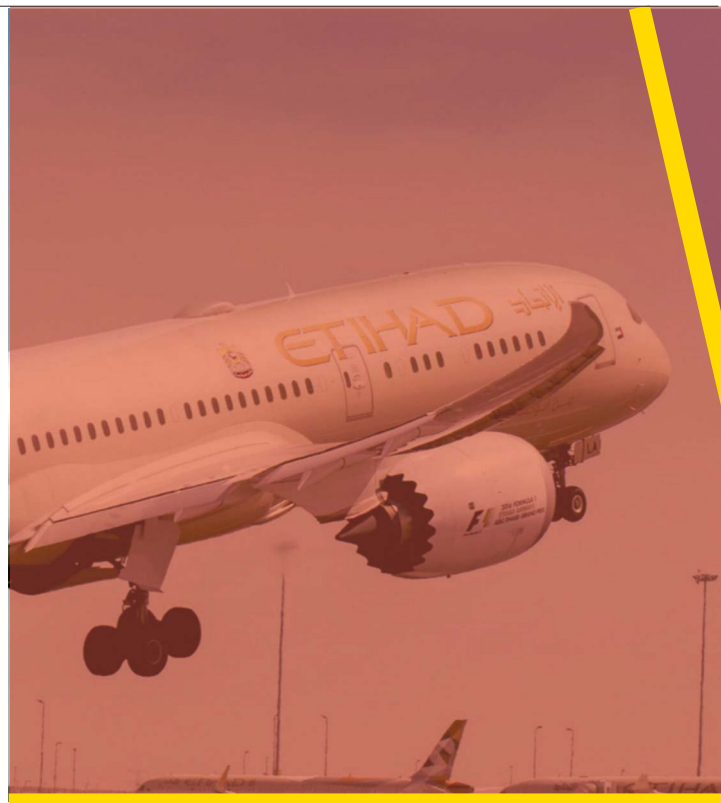
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The 'big three' Gulf carriers are taking a huge financial hit because of the pandemic, but their geographic advantage offers good recovery prospects.

Mark Pilling reports.

THE LOSS WORLD



Emirates is the second of the 'big three' Gulf carriers to reveal its financial performance for the past year, with the Dubai-based carrier falling into the red for the first time in 32 years.

Etihad Airways unveiled a substantial operating loss for the 2020 calendar year in March, while Qatar Airways is expected to announce its numbers in the coming weeks, with significant losses inevitable.

The unprecedented scale of these losses has led the governments in Abu Dhabi, Dubai, and Doha to inject billions of dollars into state-owned Etihad Airways, Emirates and Qatar Airways.

For Emirates, the financial impact of flight and travel restrictions because of the Covid-19 pandemic is starkly illustrated in its figures. At group level it posted a loss of AED22.1 billion (\$6.0 billion) for the financial year ended March 31 2021 compared with an AED1.7 billion (\$456 million) profit for last year.

Total revenue declined

Emirates Airlines fell to a loss of AED20.3 billion (\$5.5 billion) after posting an AED1.1 billion (\$288 million) profit in 2019/20. Total revenue for the airline also declined 66% to AED30.9 billion (\$8.4 billion), although operating costs only decreased by 46% in the same period.

Etihad's results for the 2020 calendar year saw it turn in an operating loss of \$1.7 billion with the airline part of the business seeing revenues dive 74% to \$1.2 billion in 2020.

The scale of these losses is hardly surprising



PICTURE: CTAIRA

For anybody in the international market, recovery is going to lag.

CHRIS TARRY

and generally in line with network carriers of comparable size in other parts of the world, according to Chris Tarry, senior analyst at consultancy CTAIRA.

"All three Gulf carriers are completely exposed to international markets with no domestic services to fall back on, as US or Chinese carriers do," said Tarry.

"For anybody in the international market, recovery is going to lag."

Although all three Gulf carriers have taken advantage of strong cargo business during the pandemic, the impact on the lifeblood of their operations, the sale of seats, has been profound.

Emirates carried a mere 6.6 million passengers

in 2020-21, down by 88%. Seat capacity was down by 83% and passenger load factors struggled to 44.3%.

Etihad carried just 4.2 million passengers in 2020, compared to 17.5 million in 2019, at a load factor of 52.9%.

All three, in common with counterparts everywhere, took a huge axe to costs, slashing capacity, grounding, and retiring aircraft, cutting capital expenditure by deferring aircraft deliveries, and raising money through borrowing. Workforce sizes have been cut dramatically. At the Emirates Group level, the total workforce fell by 31% to 75,145 employees.

Turning to governments

Such actions and the profound falls in revenue have seen airlines of all shapes and sizes turning to their governments to bail them out. Emirates said it received a capital injection of AED11.3 billion (\$3.1 billion) from shareholder the Government of Dubai, while Qatar Airways has said that it has received \$3 billion in support from the Qatari Government.

In a statement Etihad said: "The Government of Abu Dhabi continues to consider Etihad Airways as a strategic asset to support the Abu Dhabi vision and its economic diversification. Our A/stable rating was reaffirmed by [credit rating specialist] Fitch in April 2020 and again in 2021, despite the current crisis, with a key factor being Etihad's strong links to the Abu Dhabi Government. In 2020 the support continued, allowing Etihad to maintain a satisfactory liquidity level despite the lack of passenger revenues linked to the pandemic."



PICTURES: ETIHADAIRWAYS.COM, EMIRATES.COM, QATARAIRWAYS.COM

Andrew Lobbenberg, a leading airline equity analyst at global financial group HSBC, said: "There has been widespread state support of airlines around the world and the support for the Gulf carriers is consistent with that received by carriers in Europe, the USA and Asia."

The injection of money, combined with the wide-ranging restructuring measures, gives carriers a platform to start looking forward once more.

His Highness Sheikh Ahmed bin Saeed Al Maktoum, chairman and chief executive, Emirates Airline and Group, put the situation into perspective. "No one knows when the pandemic will be over, but we know recovery will be patchy," he said. "Economies and companies that entered pandemic times in a strong position will be better placed to bounce back."

Growth and profitability

"Until 2020-21, Emirates and Dnata have had a track record of growth and profitability, based on solid business models, steady investments in capability and infrastructure, a strong drive for innovation, and a deep talent pool led by a stable leadership team. These fundamental ingredients of our success remain unchanged."

"Together with Dubai's undiminished ambitions to grow economic activity and build a city for the future, I am confident that Emirates and Dnata will recover and be stronger than before."

Analysts believe the reasons why the Gulf has become such an important airline hotbed remain in place. "The original logic for the Gulf hubs is based on geography. They are at the crossroads of

PICTURE: AVIADO PARTNERS



It will be an advantage to have a wide-body fleet mix with the flexibility to nimbly add and subtract seats to match demand.

SHAKEEL ADAM

highly populated, fast-growing regions of the world such as India and China," said HSBC's Lobbenberg.

Shakeel Adam, an airline restructuring and turnaround expert, and managing director at consultancy Aviado Partners, said: "Airlines in the best position will be the ones with the biggest potential footprint. With their diverse networks, these carriers have a natural hedge in place to withstand market fluctuations."

That said, each carrier has its own strategic challenges to work through, particularly with respect to fleet shape and size. "With the market recovery likely to be inconsistent and

unpredictable, airlines will be fearful of over-capacity, and it will be an advantage to have a wide-body fleet mix with the flexibility to nimbly add and subtract seats to match demand," explained Adam.

Emirates, for instance, has less flexibility because its wide-body fleet is heavily biased towards high-capacity Airbus A380s and Boeing 777s. Qatar Airways, on the other hand, which has already said that it will retire its 10 A380s by 2024, has a fleet of predominantly smaller 787 and A350 wide-bodies as it emerges from the pandemic. This will enable it to move quickly to shift capacity appropriate to market demand, said Adam.

Swift action

Etihad's swift action to indefinitely ground its 10 Airbus A380s is seen as a good move. Like Qatar Airways, it is re-modelling its fleet around 787s and A350s.

Emirates says the A380 will retain a key role in its fleet for the next 10-15 years, but the addition of the 777-9, the baseline variant of the 777X, is delayed by four years until 2024. The absence of a smaller wide-body is seen as a weakness for Emirates, and that is a fleet gap that analysts believe Emirates will look to plug.

From strengthening the balance sheet to right-sizing the network and fleet, the Gulf carriers have their work cut out as a predicted erratic recovery plays out. Whether their recovery path means they can get into the black in the next financial year is highly uncertain and dubious. What is certain is that, for a time at least, these businesses will be much smaller.

MAN ON AN EMISSION

The future of the Qatar Airways fleet will consist of aircraft with the lowest emissions, according to CEO, Akbar Al Baker, during a recent webinar.

Keith Mwanalushi assesses the carrier's fleet strategy as it emerges from a turbulent year.

PICTURE: AIRBUS



Better for the planet: Qatar plans to continue to invest in aircraft with lower emissions.

PICTURE: AIRBUS

“We have grounded the A380 simply because it is a very fuel inefficient aircraft and, at the same time, I do not think there is a market for it in the foreseeable future.”

AKBAR AL BAKER

Over the last few months, Qatar Airways has been reinstating many of the air services that were cut or reduced during the peak of the Covid-19 pandemic.

By June last year, the Gulf carrier had repatriated more than 1.8 million passengers and transported at least 175,000 tonnes of medical aid.

Fast forward to summer 2021 and the airline plans to serve more than 140 destinations. Beyond that, new aircraft, cabin products, and new partnerships are on the horizon.

Key to the airline's strategy is its fleet. “The mainstays of our airline are the 787s, which are extremely fuel-efficient, and the Airbus A350,” said Al Baker.

Including aircraft on order, the airline has 53 A350s in the fleet and 40 787 dash eights and nines. However, in early June, it was reported that the surface below the paint on some of its A350s was deteriorating faster than expected and the carrier insisted it would not take more deliveries of the carbon-composite wide-body jet until the problem was resolved. Airbus will, no doubt, be working hard to speedily resolve the situation.

Qatar Airways has also stopped using its A380 fleet.

“We have grounded the A380 simply because it is a very fuel inefficient aircraft and, at the same time, I do not think there is a market for it in the foreseeable future,” said Al Baker.

Clearly, those A380s are still young airframes. However, Al Baker admitted that, looking back, purchasing the superjumbos was a mistake. “People who have large numbers of A380s are going to suffer in two ways; one is operating costs and, secondly, people who are very conscious about emissions will avoid travelling on an A380,” he said.

“I know the passengers love it and it's a quiet and smart

aeroplane, but the damage it does to the environment should be the priority, and not the comfort.”

Key to the future of the fleet will be the new 777X aircraft, which are scheduled for delivery from 2023 to replace the current triple sevens.

Al Baker expressed confidence in Boeing delivering the aircraft on time and said Qatar would be ready to take delivery of the aircraft. “The only problem is other suppliers; there is huge pressure on the supply chain, due to the pandemic, and due to this sudden production drawback by both airlines and aircraft manufacturers, where airlines want to delay the delivery of their aircraft because of the downturn in business.”

Pressure on the supply chain

Al Baker highlighted the pressure on the supply chain, especially those that supply small but vital parts for aircraft.

Qatar is also expecting some 50 A321neos, of which some are the long-range (LR) versions. Al Baker confirmed that the airline will take all the aircraft on order.

“The LR is a perfect aeroplane for us to use when the trend is off-season, so that we don't go with something with, maybe, a 60% load factor,” he explained. “The 321 gives us the optimum volume that we need to operate off-season into intercontinental routes.”

So, the A321LR is an ideal fit but Al Baker is put off by the even longer-range forthcoming A321XLR. “We are not interested in them. I don't want to put my passengers in a narrow-body aircraft travelling nine and 10 hours,” he said.

Qatar plans to continue to invest in aircraft that have lower emissions and are environmentally credible, and Al Baker has called on aircraft manufacturers, engine manufacturers, and fuel suppliers to invest in R&D to come up with new technology.

“The OEMs are avoiding investing money, but they need to use the windfall profits they make when they sell aeroplanes in order to protect our environment and help airlines, like Qatar Airways, to reduce emissions and to have growth with zero emission increase when we are expanding,” he said.

With regards to becoming a carbon neutral airline, Al Baker made no promises but is adamant that he wants to do everything possible to invest in new technology, which will keep on reducing the emission footprint.



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Etihad Airways believes that the more airlines – even direct competitors – that start operating into its Abu Dhabi base, the better. Alan Dron finds out why.

Competition will give us an extra edge

Etihad Airways' fleet will see major changes in the next few years as the airline comes out of the pandemic in its new, mid-sized format, according to Etihad Aviation Group CEO, Tony Douglas.

The Abu Dhabi-based carrier will not only be ditching its 10 Airbus A380s – “It’s entirely likely we will not be utilising them going forward,” said Douglas – but will also drop the next-largest type in its inventory, the Boeing 777-300ER.

Etihad has 19 of the Boeing wide-bodies, but current plans are that “we will progressively exit them reasonably quickly”.

The new backbone of the fleet will be the Boeing 787, of which Etihad has 40 -9 and -10s. Douglas speaks highly of the twinjet: “Its operational economics and its scale means that we can be a lot more agile. I can operate two 787-9s on the same route as one A380 and make more money. What that means is that if there’s only half the volume I can take one of them off. You can’t do that with an A380.”

Etihad has made it clear that its future lies very much with long-haul services. But this does not mean a shaky future for its fleet of 30 Airbus A320 and A321s.

“Obviously, a long-haul network can’t sustain itself without appropriate feed and connectivity, so the narrow-body fleet will continue to be important to us,” said Douglas.

“The more feed into Abu Dhabi, the more the home-based carrier will take benefits from it.”

TONY DOUGLAS

Etihad has an order in place for A321neos, but these are not scheduled for delivery until 2025-26, which gives the airline some room to manoeuvre as it continues its transformation in the long-haul sector. “Should we need to modernise and replace narrow-body feed going forward, what we’ve got is the option to do so,” he explained.

Competition at Etihad’s Abu Dhabi home hub is hotting up with the arrival of Hungary’s low-cost carrier, Wizz Air Abu Dhabi (WAAD), which has said it plans to base 100 aircraft in the Gulf by 2035. This will run up against Etihad’s low-cost joint venture, Air Arabia Abu Dhabi, in which Etihad has a 51% stake.

However, Douglas believes that, as more carriers begin flying routes in and out of Abu Dhabi International Airport, the greater the beneficial effects for Etihad.

“We’re delighted that Wizz Air Abu Dhabi has established itself as well, because that will bring through-traffic on the narrow-body feed side,” he said.

Indeed, he added: “I’d be happy if there were further additions to Abu Dhabi International Airport when it comes to alternative carriers; the more feed into Abu Dhabi, the more the home-based carrier will take benefits from it.”

Hugely increase capacity

A question remains, however, over the new Midfield Terminal at Abu Dhabi International Airport, which will hugely increase the facility’s capacity to around 45 million passengers annually.

The terminal was designed with Etihad in mind when the local carrier was expanding rapidly early in the last decade. The airline’s reduction in size since then raises questions as to what extent Midfield is required.

The opening date of the new terminal has been repeatedly delayed – most recently, and understandably, by the Covid-19 pandemic, which largely brought work on it to a halt. The terminal is believed to be ready for opening, but when this will happen is still uncertain; latest estimates are in the second half of this year.

Douglas has no doubt, however, as to the qualities of the new facility. He said he had toured it earlier this year, describing it as “absolutely phenomenal. It’s like moving from a beautiful villa to an amazing palace,” he said, when comparing it to the current terminal.

“It will further enhance the kerb-to-kerb experience of flying in and out of Abu Dhabi, which will connect that phenomenal airport experience with the phenomenal in-flight experience of Etihad. It’s going to be immense, in our opinion.”

The impact of the pandemic on passenger numbers meant that the new terminal’s scale was not currently required, but “passenger numbers are coming back”.





Improvements: The new Boeing 767-300 freighters offer considerably improved range and payload over their predecessors.

PICTURE: DHL EXPRESS MENA

DHL EXPRESSES FAITH IN NEW FREIGHTERS

The boom in e-commerce is fuelling fleet growth at parcels carrier DHL Express MENA.

Alan Dron
reports.

The global pandemic has had many effects on the international business community. One of them is huge growth in e-commerce as consumers increasingly order goods online.

Moving those goods is a major factor behind a leap in the capacity at DHL Express MENA.

The carrier started the year with six Boeing 767-200SF freighters based at its Bahrain hub. By October, that fleet will have shrunk to three, but it will have been joined by seven 767-300s.

The average age of the newcomers is 18 years, less than half that of the aircraft they are replacing and supplementing, “thereby offering operational continuity into the next decade”, noted Richard Gale, head of DHL Aviation Middle East and Africa. On top of that, he added, they offer considerably improved range and payload.

“The freighter type is one of the world’s most efficient, and boasts the lowest direct operating costs and best payload configuration, making it an ideal fit in the midsized cargo market,” said Gale.

The three -200SFs leaving the fleet will return to US-based lessors ABX and Cargo Aircraft Management.

The first of the new aircraft arrived in March and the remaining six will be in place by late October. All are ex-American Airlines passenger aircraft.

Of the six, three were converted by Boeing as 767-300BCFs, while the others went through IAI’s conversion process in Mexico, becoming 767-300BDSFs.

The new freighters have glass cockpits and their later-generation engines, together with winglets that give around a 4% improvement in fuel efficiency, add up to much more capable aircraft. These factors will also help DHL achieve its goal of becoming carbon-neutral by 2050.

The 767-200s’ maximum operating net weight was around 35 tonnes. The new aircraft top out at around 55 tonnes. Payload is up 46% and, whereas the older aircraft

“would start running out of steam at four hours, these are seven to eight hours”, said Gale.

The new aircraft will give a considerable boost to the company’s activities in the region, said Nour Suliman, CEO of DHL Express MENA: “This investment reiterates our focus on continuously deploying innovative solutions and technologies to meet customer demands.”

The aircraft will service high-demand routes across the Gulf Cooperation Council nations and the extended Middle East region, as well as into Africa and the Indian subcontinent.

The longest sector currently operated by DHL Express MENA is a four-hour run south to Nairobi. However, *Arabian Aerospace* understands that the new aircraft could, potentially, fly to destinations as far afield as China or the UK.

“Based on our performance in 2020, where we saw historic peaks in cross-border e-commerce volumes, both globally and in the region, we anticipate this trend will continue, and our enhanced air capacities will enable us to handle the increased demand for delivery expertise in time-definite express shipments,” said Suliman.

“The new aircraft will support our objective to maintain a well-connected regional network and optimise our operations, while simultaneously improving our environmental footprint in line with our zero-emissions strategy.”

DHL Express MENA’s enlargement of its fleet follows a global increase in cargo aircraft as a result of the pandemic. It is often forgotten that at least half the freight carried by air is actually in the underfloor holds of passenger aircraft. When those aircraft were grounded as passenger numbers slumped in spring 2020, a shortage in cargo capacity led to airliners being pressed into service as temporary freighters.

The accompanying surge in e-commerce has meant that express parcel services have grown significantly, encouraging those specialist freight airlines to invest in new capacity.

Both Boeing, with new 767 freighters still coming off the assembly line at Everett – FedEx received its 100th in May – and Airbus, which is close to launching a cargo version of the A350, demonstrate the increased importance of the traditionally less glamorous side of aviation.

And both OEMs, together with a cluster of independent conversion companies, are turning out steadily increasing numbers of passenger-to-freighter (P2F) narrow-body conversions of 737s and A321s.

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Coming soon: An artist's impression of the 10X, which will enter service in 2025.

IMAGE: DASSAULT



TEN OUT OF TEN FOR 10

The latest business jet launch sees competition hotting up in the ultimate private aircraft category.

Alan Peaford
explains why this is good news for Gulf VIPs.

The Gulf states have always had an eye for the very best when it comes to private jets, and the sector that draws the most admiring looks is the ultra-long-range category, with its aircraft offering large, wide, cabins, fast speeds and amazing comfort.

Bombardier had already been first-to-market with its Global 7500 now in service. Gulfstream is set to bring its G700 into service next year – and now Dassault Aviation has entered the fray with the unveiling of the Falcon 10X.

It has been a busy time for the French firm. In April, the Falcon 6X made its first flight and heralded the start of its test programme. Then, in May, CEO, Eric Trappier, revealed the 10X.

Due to enter service in 2025, the Falcon 10X is powered by two Rolls-Royce Pearl engines, will have a 7,500nm range and a cabin cross-section larger than some regional jets. Certainly, it appears to have the most spacious cabin of any purpose-built business jet.

The range of all three of these ultra-large ultra-long-range jets is in the same ball park, and will get the VIP or corporate giants anywhere in the world in a single hop. Certainly from Paris, where the reveal took place, you could fly non-stop to the west coast of Australia, Anchorage, Chile, or Tokyo. And it will be in amazing comfort.

The 10X is a clean-sheet design with a new wing. It will fly at 51,000ft at Mach 0.925, just short of the speed of sound.

So what does \$75 million dollars buy you?

The 10X has a cabin height of 2.03m and a width of 2.77m. That will make it almost 20cm wider and 2 inches (5cm) taller than the widest and tallest purpose-built business jet flying today, according to Dassault's executive vice president, Carlos Brana, who explained how size really does matter.

"The standard configuration of the aircraft is provided

with a four-lounge cabin," he said. "But just by moving the dividers you can either shrink or extend the length of the cabins, so you can even cancel one room. It all depends on the needs of the customers and, of course, we will adapt to what best fits their needs."

From a range of bedroom options and en-suite bathrooms, through to a love-seat dining option and, importantly, seats that you can get in and out of without disturbing your fellow passengers, the space really works.

Dassault has also thought about the men or women at the front on those long-haul flights, offering a reclining seat to

give the non-flying pilot a useful rest space during the cruise.

The technology – much of it derived from the Rafale fighter jet – includes a single lever throttle and, for the first time in the civil aviation, the pilots can simply press a button if they are disoriented or in case of wake turbulence, and the aircraft will automatically recover



Sleep tight: The 10X will allow for a queen size bed and an en suite bathroom.

IMAGE: DASSAULT

to a safe attitude and speed.

Rolls-Royce gets its first outing on a Dassault business jet and its Pearl 10X engine will deliver 18,000 pounds of thrust. It has also been designed to fly on 100% sustainable jet fuel.

Dassault's previous flagship, the 7X, proved popular in the Middle East. Now, with this extra space, extra speed and extra range that will go from the Gulf to most of the world non-stop – and indeed to all the world with a single hop – it is no surprise that this latest contender is already being dubbed 'The perfect ten'.

The competition will be tough. But, already, analysts are predicting that, with the three major players bringing new aircraft to market, this will stimulate the interest and that all three OEMs will succeed.

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GOT \$4 MILLION SPARE? THEN YOU COULD JOIN THE JETSETS

LET'S SEE FRACTION!

As the number of private jet movements in Dubai continues to climb, a new company has launched, offering flexibly fractional ownership in the region.

Jill Stockbridge reports.

Fractional ownership is a method in which several unrelated parties can share in, and mitigate the risk of, ownership of a high-value tangible asset.

The Jetsets is a new fractional private jet company, led by president John Brayford, who has more than 30 years' experience in aviation in the region and in Europe.

The company also boasts Shareef Ghalib Kattan, a former VP with both NetJets and VistaJet, as senior vice president of sales.

Dubai-based The Jetsets is partnered with Gamma, and will use that company's air operator's certificate (AOC) for its aircraft.

Brayford said: "We are working with Gamma in Sharjah, but we will have a floating base. When an owner purchases his share, he will nominate his home base. Our focus is initially the UAE and Saudi Arabia, but we will move up the Gulf over the next few months. We have to understand, logistically, where the owner would place the aircraft. We need to have clients who would position them close together."

The one-tenth shares are already on sale, and the team is in the process of purchasing the first aircraft, a pre-owned Bombardier Global 6000.

Brayford explained: "In the US, fractional companies market shares based on the list price. The list price of a Global 7500 is about \$75 million, so one tenth shares will cost \$7.5 million. But companies like NetJets don't pay list price, so immediately they are making a profit.

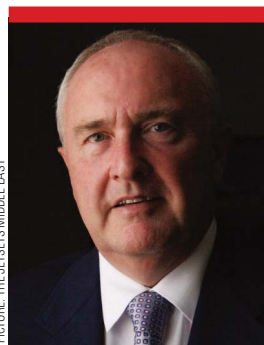
"We found that quite a number of relatively new aircraft come on to the market with only 200-300 hours per year. They are hardly used, but devaluation kicks in, so these aircraft, after three years, are not much over 50% of their new cost.

"So we looked for pristine aircraft, up to three years old, with the balance of the warranty, low cycles and low hours. Even though there is an upturn in charter demand, there is a steady flow of these aircraft coming on to the marketplace, and they are selling at sub \$40 million.

"Part of our business model is to pass on the capital cost, at cost, to the buyers. It will cost around a million dollars to get it to Sharjah and register it with the civil aviation authority, and do everything to get it into a pristine condition. So your one tenth share would be \$4 million,



ILLUSTRATION: STOCK



PICTURE: THE JETSETS MIDDLE EAST

We are trying to find as much flexibility for the customer as possible, and still make money.

JOHN BRAYFORD

maximum, rather than the \$7.5 million you would pay for the same in Europe."

Under the plan, each tenth share gives the fractional owner 1,000 hours per year, with flexibility and transparency as key selling points.


Brayford said: "This is a 10-year contract, where the aircraft depreciates to zero over that period at a fixed annual rate, with an opt-out, an opt-back to a new contract, or an option to switch to any of the products that we may have to offer at that first break point in five years. If you want to opt out, there is a fixed value of your aircraft, based on a straight rate of depreciation.

"We are trying to move away from monthly bills, and the discussion and debate about charges every month. We're starting off with an annual inclusive maintenance and running costs fee, which covers everything apart from the 'unusuals' – things like war zone flying, high-density airport costs, de-icing – which we would quote for separately.

"Because we have gone for 1,000 hours, which is pretty ambitious for these aircraft, we are not going for a carry forward. We will balance the direct operating costs budget and credit back to those who have underutilised a proportion of what they paid at the beginning of the year. We'll balance the fuel account as well. We don't make money on the fuel. The fuel is a shared activity.

"You can bring forward hours, up to 10% of next year's hours if you overshoot, but you can't carry forward any hours into next year, so you start afresh every year.

"We are trying to find as much flexibility for the customer as possible, and still make money. I think we've got that," he concluded.



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Popular: DCAF's facility at Dubai South is seeing growing numbers of users.

PICTURE: DCAF



Why DCAF is Dubai's cup of tea

Figures released by the Mohammed bin Rashid Aerospace Hub at Dubai South reveal that Dubai's business aviation sector continues to lead the industry's recovery in the region.

Jill Stockbridge reports.

According to the latest figures, private jet movements at the Mohammed bin Rashid Aerospace Hub showed a 336% increase in the first quarter this year, reaching 4,904. This compares to 1,460 in Q1 2020 and 1,676 in Q1 2019.

DC Aviation Al-Futtaim (DCAF), which runs a fully integrated stand-alone lounge and hangars facility in Dubai South, has been part of that growth, seeing an increased number of VVIP guests arriving from the Commonwealth of Independent States, Europe, India and Pakistan among others.

The company also saw increased visitors from Israel following the signing of the Abraham Accords agreement to open diplomatic, trade, and economic relations between the two countries.

Holger Ostheimer, managing director of DCAF, said: "Looking at our ground-handling activities, making a comparison of 2019 versus 2021, we have seen a 25% increase of activity in the first quarter. We saw rising numbers of movements even throughout Ramadan, which is generally a quiet period, and we expect this trend to continue for the remainder of the year."

"The increase in flight movement is the result of the increased confidence in the UAE Government's vaccination programme, tourism-related initiatives, and other economic stimulus measures taken to boost consumer and business sentiment."

"We have committed to the governmental regulations that have been imposed, and have incorporated that into our modus vivendi so that, when people enter our facilities, temperatures are taken, hands are sanitised, masks are worn, and everybody is kept at a suitable social distance."

"Sanitation of the facility plays a huge part. There is a continuous effort in physical sanitisation, but we are also fogging the facility every other day. So, by the time you get to the aircraft, you have moved through a safe bubble that should provide you the level of comfort to use our facilities confidently when you depart from here."

The uptick in business jet activity has also seen increases across other areas of DCAF's operation. Ostheimer explained: "The increased level of activity on the ground-handling side has been replicated in other sectors, including aircraft charter, and aircraft maintenance, repair and overhaul."

"Also, we have seen rising levels of enquiries for aircraft management. We are talking to people that we have not spoken to before, who are showing an interest to own and have an aircraft operated. We can provide the whole spectrum of support to business aviation so, for all those people, we are the right port of call."

The company is also gaining new business by developing strategic partnerships, such as the recent contract signed with Click Aviation Network. As part of the agreement, Click customers at DCAF's Dubai South facility will enjoy a dedicated Click Aviation lounge, 24-hour on-site customs and immigration, ground support, a conference room facility, business services, crew lounges and a passenger shower.

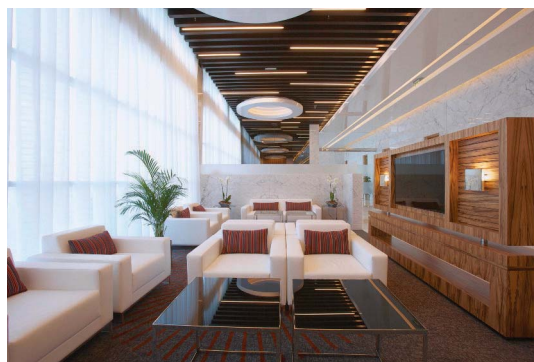
The agreement will also see

DCAF offer line maintenance services, passenger and crew transportation, as well as arranging catering, hotel accommodation, and local transport for Click Aviation customers.

Ostheimer said: "I think the crisis in India shows that we are still right in the middle of it [the pandemic], and it will be some months before we can think of exiting from it. As and when this does happen, there will be a much greater awareness of the availability of business jet aircraft travel."

"However, the price point associated with it seems to be not so palatable to some of those enquiries."

"The industry is now being asked to provide solutions, with a greater level of economics and other measures, to reduce the price tag to make it possible for more people who are interested in using bespoke travel on a business jet to be able to do so."



Safe: New regulations mean customers can be confident in the lounge environment.

PICTURE: DCAF



Holger Ostheimer: "The increase in flight movement is the result of the increased confidence in the UAE Government's vaccination programme, tourism-related initiatives, and other economic stimulus measures."

PICTURE: DCAF

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The European business aviation show (EBACE) is always a must for Middle Eastern operators but this year, due to the pandemic, the event had to take place virtually.

Alan Peaford *tuned in.*

I am confident that we will attract new people and they will stay.

ERIC MARTEL

PICTURE: BOMBARDIER

There's no business like no-snow business

Without the snow-capped Swiss mountains as a background, the annual EBACE event was already different as it bowed to the inevitable cancellation because of Covid-19.

However, organisers were keen to ensure that the business aviation messages could get out and ran an EBACE Connect virtual online event instead.

The heads of the leading OEMs all made an effort to participate and, in an open forum, held nothing back.

The industry leaders shared concerns – many of which could directly affect business aviation across the Middle East and north Africa.

Major threats

Shortages and rising prices of parts were among the major threats facing the business aircraft industry as the economy recovers from the pandemic, according to several of the speakers.

Ron Draper, CEO of Textron Aviation, summed up the problem. "We are starting to see inflation and the supply chain tightening," he said.

Suppliers are struggling to restore capacity after much of the aviation industry was grounded during the first wave of Covid-19. "They are also being hit by increasing costs of raw materials," added Draper.

However, the mood among the industry leaders was generally very positive.

James Detwiler, president of Boeing Business Jet said:

"We have seen a significant increase in interest from a very important segment of our customer population – the charter business.

"I've read reports that more than a million people travelled on private jets in the year 2020 for the first time. And they now see the value of chartering a private jet, for both work and leisure purposes."

His view was backed by Eric Martel, CEO at Bombardier. "It's happening," he said. "I am confident that we will attract new people and they will stay."

Another of the OEMs contesting the top end of the market, Gulfstream, was also seeing recovery.

"We saw a number of first-time buyers in the second-half of 2020 and that continued into 2021," said president, Mark Burns, adding: "With the cabin altitude [maintained atmospheric pressure] set as you fly a 10-hour mission, you just don't have jet-lag and fatigue the way that you may have in the past.

"The fresh air in the aeroplane being replenished constantly in that cabin altitude just physiologically makes the trip better."

Safety and security

Burns believed there may be some secular shift taking place, with business aviation becoming more of a requirement for people when thinking about safety and security. "I think people are starting to understand, more than ever, the value of business aviation," he said.

Of course, one 'threat' to the success of the business aviation sector is the negative perception of its environmental credentials. However, the industry is working on the problem, with delegates heralding sustainable aviation fuel (SAF) usage – indeed the new 10X Pearl engine from Rolls-Royce will fly on 100% SAF.

In a 'live' media event at EBACE, Rolls-Royce signed a memorandum of understanding (MoU) with operator Luxaviation Group, which has a major presence in Dubai. The companies unveiled a new product called SAFinity, with a direct investment in SAF, aiming to further support and accelerate the availability and use of SAF in the aviation industry. Luxaviation is the launch customer for the service.

But will it catch on?

Bombardier's Martel said: "I'm always amazed that there's very few people in our industry that know sustainable fuel exists. So, we can definitely promote this more and more in the existing community and, probably, with the community that has a potential to join us. After that, I think the effort is about availability of those sustainable fuels that are possible to be used on pretty much every single aeroplane."

EBACE will return to Geneva's Palexpo next year as an in-person event from May 23-25.

TOPGUN Training – The Best for the Best



ITTC TACTICAL PROGRAMS FOR AIR ARMS WORLDWIDE

The International Tactical Training Centre (ITTC) is a unique resource providing bespoke training to military and aerospace customers around the world.

A division of the International Test Pilots School (ITPS) in London, Canada, ITTC draws on over twenty years of experience providing advanced tactical training to over 25 air arms.

A FLEXIBLE APPROACH TO PROGRAM DELIVERY BY ITTC

ITTC customers are looking for international standard training for their fighter pilots, helicopter pilots, fighter controllers, terminal attack controllers and Unmanned Aircraft Systems (UAS) crews. Places at military training establishments for military students are limited, often security restricted and extremely expensive. This is where ITTC excels, providing a single entity that can rapidly provide training solutions based on the expertise of its cadre of highly experienced instructors.

Delivery of the training is also flexible, with theoretical lecture modules deliverable as Computer Based Training, live-online, in the classroom in Canada or the customer's country. Similarly, practical training or flight training can be presented in Canada at ITTC's world class training facility and Advanced Aircraft Simulation Centre (AASC) or partly or wholly in the customer's country utilising national assets.

LEVERAGING ADVANCES IN SIMULATION

The Advanced Aircraft Simulation Centre is a unique facility established by ITTC to leverage advances in simulation to enhance the learning experience whilst driving down costs. The centre takes advantage of Virtual Reality (VR) and Mixed Reality (MR) as well as conventional simulators. An early adopter of



Advanced Aircraft Simulation Centre



such tactical training simulation, ITTC invested in this world-class facility to implement modern training curricula leveraging the latest synthetic technology. The AASC comprises four F-18 domed simulators, four F-35 pilot stations, an AW139 rotary-wing simulator, a Boeing 787 full flight deck FBW simulator and an F-16 based Variability Stability System (VSS) engineering simulator used by the test pilot school.

The AASC also contains a mission briefing room and a large lecture theatre for unpacking missions in a collaborative classroom style. Simulators are networked, and within a synthetic battlespace, complex missions include real-time ACMI (Air Combat Maneuvering Instrumentation) to monitor the progress of an exercise and post-mission debriefing.

Live Virtual Constructive Training (LCVT) allows for very realistic tactical training in complex scenarios at a relatively low cost. The facility is customizable to meet training needs with optional refuelling or simulating Airborne Warning and Control Systems (AWACS) assets and up to six additional adversary simulators.

The simulator centre includes virtual reality using VR 360° headsets with a synthetic image. Thus, students learn in a photorealistic immersive environment with extraordinary realism. The variety of available technologies allows ITTC to optimize training with the most advantageous devices.



Republic of Korea Air Force student training using Virtual Reality headset and F-35 pilot station

BESPOKE TRAINING SOLUTIONS

ITTC is both responsive and innovative. Brendan Pierce is the ITTC Deputy Head of Training, a former Royal Canadian Air Force pilot and a Fighter Weapons Instructor. Pierce says, "our expert instructors develop a recommended syllabus based on thousands of hours of tactical experience. That syllabus is then optimized in consultation with the customer to maximize its training benefit in accordance with their specific needs." As air arms are looking for advanced tactical training in multiple areas of proficiency, including 5th Gen. threat, new standoff weapons and cyber threats are disciplines to be addressed.

Presented with a request for advanced training for tactical transport crews by a Southeast Asian customer, ITTC brought its expertise to bear to develop a new program for Indonesia within 30 days. This year, ITTC will deliver the bespoke Advanced Airlift Tactical Training Course (AATTC) onsite at the customer's operating base. This course commences with ground



training followed by a number of flight training sorties to increase a crews' ability to survive in real-world hostile missions. Courses fully optimize student learning with ground, simulation and flight training.

The Royal Malaysian Air Force contracted ITTC to provide a short-term solution to its fighter pilot training needs. ITTC provided at short notice a program based on its upgraded L-39 jets and its advanced simulation capabilities. Anticipating the need for the FLIT graduates to go directly to F-18 and SU-30 conversion training, ITTC downloaded advanced training such as Beyond Visual Range (BVR) training to the RMAF FLIT course. The graduates of this program are now well into the tactical phase of conversion to the fighter and are performing well.

Fighter Lead-In Training (FLIT) spans six to nine months depending on customer requirements and students' level of experience. The program introduces students to fast-jet operations and basic tactical training. Based on these disciplines, students will fly 50-100 aircraft sorties and receive 20 simulator hours in a range of tactical operations.

TRAINING TOP GUNS

ITPS has been offering the pinnacle of fighter pilot training since 2002. The ITTC Fighter Weapons Instructor Course (FWIC) is 16 weeks of intense training. This graduate level fighter pilot course arms FWIs with in-depth knowledge of fighter weapons systems and globally deployed weapons systems and tactics. High-level leadership skills develop as students become experts in tactics, and development and standards. This learning results in immediate and tangible improvements in the squadrons' capability and performance.

At the time of writing, an ITTC team of elite instructors was flying in Thailand with the Royal Thai Air Force honing the skills of the RTAF TOPGUNS in the 2021 Fighter Weapons Instructor Course (FWIC). Students had previously completed six weeks of ground school and simulator training in Canada.



5STA Hawker Hunter

NVG and Night Operations Training is another course geared towards specific customer requirements. The course's overall aim is to provide knowledge and experience in military NVG operations, associated equipment, cockpit lighting and compatibility issues. Electronic warfare learning exploits the electromagnetic spectrum to increase operational capabilities of aircraft in their battlespace. Modern technologies at ITTC keep the training up-to-date and relevant for air arms.

CONTINUOUS TECHNOLOGY INNOVATION

A significant challenge facing air forces is training pilots for 5th and 6th Gen. fighters. Operating costs of these new aircraft are extraordinarily high and asset numbers limited, making simulation an essential tool in preparing tactical and flight test crews. ITPS has developed the 5th Gen. Surrogate Training Aircraft (5STA) to provide a cost-effective solution for providing high-level tactical training on these advanced platforms. The key concept is that if one cannot afford to train in a 5th Gen. fighter, the next best thing is to put 5th Gen. concepts, avionics and simulated systems in an affordable and maintainable platform.



Hunter 5STA HOTAS and LAD

The resulting 5STA is a novel learning tool: a Hawker Hunter T-75 with a Genesys Systems-based cockpit upgrade. The 5STA features an L3 Panther™ Large Area Display (LAD), Embedded Tactical Simulation System for both Air to Air and Air to Ground missions, Hands-on Throttle and Stick (HOTAS) controls and Thales Scorpion Head Mounted Display (HMD). This asset is entering ground testing and ITTC anticipates commencing training operations in early 2022.



UAS TRAINING

ITTC has responded to customer demands for Unmanned Aerial Systems training by establishing unique training capability in Canada. Assets used for training include at least four different UAS, including Small Remotely Piloted Aircraft Systems (RPAS) up to the Medium Altitude Long Endurance (MALE) equivalent Manned Remotely Piloted Aircraft (MRPA). The one-of-a-kind MRPA is able to fly complete Medium Altitude Long Endurance (MALE) missions beyond the visual line of sight (BVLOS) in civil airspace.

A mobile Ground Control System (GCS) trailer is fully representative of systems in service. Simulation mode allows students greater operational flexibility and functionality, such as

weapons delivery and Large Force Employment (LFE) networked into our Advanced Aircraft Simulation Center (AASC).



Ground Control System (GCS)

A DIVERSE FLEET OF AIRCRAFT

The fleet in London, Ontario continues to grow, and technology is applied to provide state-of-the-art avionics in reliable, supportable aircraft and helicopters whilst maintaining the responsiveness, flexibility and quality of training. The eleven strong fleet of jet trainers is undergoing continuous improvements and upgrades, currently focused on an Embedded Tactical Simulation System and networking the fleet with the Advanced Aircraft Simulation Center for a full Live Virtual Constructive Training capability.

LOOKING AHEAD

Response from customers around the world has confirmed the need for ITTC with 2023 already set to be very busy providing Fighter Weapons Instructor Courses to multiple customers as well as bespoke courses for UAS, Advanced Tactical Airlift and others. Customer feedback on courses delivered to date is excellent and spurs ITTC forward to more innovation, course development and new technology to train the experts of tomorrow.



Impressive fleet at ITPS



An estimated \$4.5 billion order for a further batch of 30 Dassault Rafale multi-role fighters means the ongoing modernisation and expansion of the Egyptian Air Force is continuing apace.

Jon Lake reports.

Rafale just the ticket for Egypt

The 30 new Rafales will augment 24 of the type that were ordered in February 2015 and are already in service with the Egyptian Air Force (EAF).

When they arrive, a fleet of 54 Rafales will make the EAF the second largest operator of the type in the world, after France itself.

They will also make Egypt's new-generation fighter force one of the most powerful in the region.

The EAF will soon include a front-line element consisting of 11 tactical fighter wings with 13 Squadrons of F-16s, two squadrons of Su-35s, two of MiG-29Ms, two of Rafales, two of Alpha Jets and two of Mirages. There are also seven helicopter wings or brigades, two intelligence, surveillance, and reconnaissance (ISR) units, and two transport wings/brigades.

Air-to-air role

Egypt's existing Rafales (which are to F3-R standards) have already been seen operating in both the air-to-air role, armed with various types of Mica missile, and in the air-to-ground role, carrying the AASM Hammer stand-off precision-guided missile (PGM).

The Rafale entered service with the French Navy in 2004, and with the French Air and Space Force in 2006, but export orders proved elusive until February 2015, when Egypt signed for 24 aircraft, and a DCNS multi-mission frigate in a deal valued at €5.3 billion (\$5.9 billion).

Egypt also took options for a further 12 aircraft.

The Egyptian order allowed the French Government to cut delivery of the Rafale to its air force and navy from 2016, while maintaining or exceeding the minimum economic annual output of 11 aircraft.

An option for 12 additional Rafales was reportedly not exercised due to fears about

New deal: The EAF has also signed a five-year performance-based integrated support and services contract with Airbus for its 24 C295 aircraft.

PICTURE: AIRBUS



Cairo's ability to repay state-backed guaranteed loans, and negotiations for more Rafales and warships initially failed to bear fruit.

The failure to exercise its option for 12 further aircraft may also have reflected an Egyptian aspiration to acquire the stealthy Lockheed Martin F-35A. However, the US rejected Egypt's request to acquire 20 F-35As in 2019, after which Cairo seems to have returned to pursuing a follow-on Rafale buy.

Whatever the reason, the flow of Egyptian defence orders has picked up again more recently. Thales has supplied four Ground Master 400 (GM400) 3D digital air defence radars, for example.

On April 15 this year, it was announced that the EAF, the largest C295 fleet operator worldwide, had signed a five-year performance-based integrated support and services contract with Airbus for its 24 aircraft, aiming to maximize fleet availability, and to ensure mission

readiness, all while saving maintenance costs.

Then, on May 3, Egypt announced that it had signed a contract with Dassault Aviation to purchase 30 more Rafales. Dassault confirmed the order the following day.

The contract is worth an estimated \$4.5 billion (€3.75bn) and will be financed through a 10-year loan, 85% guaranteed by the French state, with BNP Paribas SA, Credit Agricole, Societe Generale and CIC.

Dassault Aviation chairman and CEO, Eric Trappier, heralded the announcement saying: "This new order is proof of the unfailing bond that unites Egypt, the first foreign user of the Rafale, as it was for the Mirage 2000, with Dassault Aviation."

The new batch of Egyptian Rafales will be to F3-R standard, with active electronically scanned array (AESA) radar and the ability to integrate advanced sensors and weapons, including Thales' Talios new-generation laser designator



Pyramid overview: The new Rafales will augment 24 of the type already in service with the EAF. PICTURE: VIA DASSAULT.

pod, and the laser homing version of Safran's modular AASM air-to-ground weapon, as well as MBDA's Meteor long-range air-to-air missile.

Dassault Aviation is expected to integrate a data link that will allow the Rafale to communicate with US and NATO allies, and with Egypt's non-western fighter types.

Negotiations for Egypt to arm its Rafales with the MBDA SCALP cruise missile began when the first 24 aircraft were ordered, but stalled as a result of the US international traffic in arms regulations (ITAR), as the missile contains US-manufactured components.

This log jam was finally broken in February 2021 when the EAF was finally able to arm its Rafales with the long-range stand-off missile. The SCALP difficulties apparently delayed Egypt's follow-on order for the Rafale.

The deal followed a controversial state visit to Paris in early December 2020 by Egyptian President, Abdel Fattah el-Sisi. French President Emmanuel Macron decorated el-Sisi with France's highest honour, the Grand Cross of the Legion of Honour, during the visit.

This provoked outrage among human rights activists, but Macron defended his actions and said that he would not make the sale of French weapons to Egypt conditional on human rights. This was, he averred, because he did not want to weaken Cairo's ability to counter terrorism in the region.

France and Egypt are forging a closer relationship, sharing many common interests in the Middle East, including a growing antipathy

towards Turkey under Islamist President Recep Tayyip Erdogan.

The additional Rafales to Egypt follows a contract, signed with Greece, for the sale of 18 Rafales. This includes six new-build aircraft to be delivered in the spring of 2022 and 12 second-hand units, which will be taken from the French Air Force inventory.

The first six ex Armée de l'Air aircraft were due to be delivered from July 2021 at a rate of one a month, with the last six second-hand aircraft delivered in early 2023.

The Indian Air Force is also in the process of taking delivery of 36 Rafales, while Qatar has received 23 of the 36 it has on order.

Strategic partner

The French Minister of the Armed Forces, Florence Parly, welcomed the new Rafale to Egypt, as France's strategic partner. "This export success is crucial for our sovereignty and the maintenance of 7,000 industrial jobs in France for three years," she said.

The delivery of the new Rafales should allow the retirement of Egypt's remaining Mirage 5s, and probably the Mirage 2000s as well.

There have already been suggestions that Egypt could eventually purchase the new Rafale F4, increasing the (overall) Rafale fleet to 72 or even 100 aircraft "depending on Egypt's financial capacity".

The new F4 version will feature enhanced radar capabilities, and new weapon systems, including heavier versions of the AASM

Hammer precision-guided munitions and updated variants of the MICA air-to-air missile.

The acquisition of the Rafales is just one element in a wider modernisation, which has also seen the procurement of 46 MiG-29M2s and 24 Su-35s.

French newspaper, *La Tribune*, has also reported that Airbus is supplying a reconnaissance satellite and two A330MRTT tankers to Egypt, reportedly taking the value of the overall deal to €5.4 billion.

The expanded programme will reportedly include one or two FalconEye observation satellites, similar to that operated by the UAE armed forces.

Egypt will also finally acquire two Airbus A330 multi-role tanker transport (MRTT) aircraft. Though the EAF does practise 'buddy refuelling' with both the Rafale and the MiG-29M2, it does not have a dedicated air-to-air refuelling tanker, and has been interested in acquiring the A330 MRTT since 2014.

The aircraft can carry 111 tonnes of fuel and can transfer up to 3.6 tonnes per minute. It can remain on station for four hours, 1,000 nautical miles from base, and offload 50 tonnes of fuel during the mission, or it can support the deployment of four fast jets, carrying 12 tonnes of equipment and all the required groundcrew, over a distance of 2,800 nautical miles.

There have been suggestions that Egypt could order as many as four A330 MRTTs.

There is also considerable potential for further naval business, including fast missile boats, corvettes, light frigates and submarines. ■

TURKISH THINK-TANK IN AIR FORCE OBSOLESCENCE WARNING

A Turkish think-tank report has warned that Washington's ban on the country's acquisition of the Lockheed Martin F-35A could lead to the Turkish Air Force becoming obsolete.

Report author, Can Kasapoglu, director of the security and defence programme at the independent Istanbul-based Centre for Economics and Foreign Policy Studies (EDAM), said: "If an intermediate solution is not found, Turkish air power will fall behind world trends."

Many of Turkey's regional rivals, including Greece and Israel, and possibly the UAE, are receiving, or will soon receive, F-35s.

Others are getting the most advanced fourth-generation fighters, like the French Dassault Rafale, or the Eurofighter Typhoon.

Turkey, by contrast, was thrown out of the F-35 programme after refusing to cancel its intended procurement of the Russian S-400 surface-to-air missile system, and its plans to acquire some 100 F-35s have had to be abandoned.

The US believed that Turkish use of the S-400 could lead to sensitive F-35A data being compromised.

Training of the first Turkish F-35 pilots was already under way in the US when the programme was terminated, and the first Turkish F-35As (then in use for pilot training) were diverted to the US Air Force.

The cancellation of the F-35A programme will leave the Turkish Air Force without a low observable fighter in the medium term, relying on the fourth-generation F-16 until the

indigenous TAI TF-X is available – notionally sometime after 2029.

Turkey's ejection from the F-35 programme will also scupper Turkish Navy plans for a light aircraft carrier, which it had been hoped would be equipped with short-take-off and vertical landing F-35Bs.

Kasapoglu points out that armed drones are no substitute for manned aircraft, and especially not for stealth aircraft like the F-35.

He believes that Turkey should return to the F-35 programme for its combat capabilities and for the technological and economic benefits that would accrue to the Turkish aerospace industry.

He also believes that the S-400 should be cancelled, since Turkey is ill-suited for a SAM-intensive force structure, and lacks the required network-centric architecture. ■

First firing for heat-seeking air-to-air missile

Turkey's new Bozdogan (Merlin) within visual range air-to-air missile (WVRAAM) has been live fired from a Turkish Air Force Block 40 F-16C.

The launch aircraft was operated by 401 Test Filo Komutanlığı (TFK), a dedicated test and evaluation unit based at Eskişehir as part of 1nci AİÜ (the 1st Jet Base/Wing).

The Bozdogan was one of two indigenous air-to-air missiles developed under the Gökkuş program by TÜBİTAK-SAGE, alongside the Gökdoğan (Peregrine) beyond-visual-range active radar homing missile, which should provide Turkey with an improved alternative to the US AIM-120 AMRAAM missile.

The smaller Bozdogan is a short-range infrared homing missile, broadly equivalent to the latest AIM-9X Sidewinder and similar in appearance and performance, with a reported ability to hit targets at ranges out to as far as 15 miles.

Weighing in at around 300lbs, and just under 11 ft long, the Bozdogan is fitted with a high-resolution dual-colour imaging infrared (IIR) seeker with all aspect and high off-boresight engagement capabilities, and enough discrimination to avoid being decoyed by countermeasures.

The high-thrust solid propellant rocket motor incorporates reduced smoke technology and thrust vectoring to provide the highest possible agility.

A datalink is likely to be added in the future, to provide a full lock-on after launch capability. This



Homing in: The new Bozdogan missile is a success. PICTURE: THK

will allow the weapon to be used by stealthy aircraft that carry their weapons in internal bays.

The missile, which is free of international traffic in arms regulations (ITAR), will initially be integrated on Turkish F-16s, but will later also be used on the indigenously developed Turkish Aerospace Industries Hürjet and, eventually, the new TF-X fifth-generation fighter, as well as on the Bayraktar Akinci unmanned combat aerial vehicle (UCAV).

Development of the Bozdogan and the Gökdoğan began in 2013 and the missiles were unveiled at the International Defense Industry Fair (IDEF) in Istanbul in 2017. Test launches from the ground were conducted in 2018 and 2019. Captive carry flight-testing began in 2020.

The recent live firing was undertaken at a missile test range in Turkey's Sinop province, on the Black Sea coast. The missile successfully destroyed a TAI Simsek target drone with a direct hit.

The Bozdogan reportedly reached a speed of greater than Mach 4, and the missile's infrared seeker head locked on to the target drone at around nine miles before the weapon was launched at a distance of about four miles from the target.

The missile launch and engagement sequence were closely monitored from the ground and by F-16 chase aircraft, at least one of which carried a Sniper targeting pod.

The first Bozdogan flight-test used one of Turkey's older F-16Cs, which had not undergone an avionics upgrade. Turkey has full access to the source codes used by the mission computers on these older aircraft, but does not yet have similar access to the source code for the upgraded aircraft, or the newest and most advanced Block 52 and 52+ aircraft, which could make integration problematic. ■



Controversial: Turkey was thrown out of the F-35 programme. PICTURE: LOCKHEED MARTIN.

Lebanon selling aircraft to fund modernisation

Lebanon's Air Force is selling off three Sikorsky S-61N helicopters and five Hawker Hunter fighter-bombers.

The Lebanese Ministry of National Defense is calling for interested parties to bid on the aircraft.

Both types have been non-operational for many years (the Hunters since 2010), and have been replaced in their original roles.

The Sikorsky S-61Ns were purchased for firefighting and were originally delivered in 2009, and have already been replaced by Lebanon's UH-1 Huey fleet.

Force commander, Brigadier General Ziad Haikal, said the air force is considering the purchase of an aircraft in the same broad class as the Air Tractor AT-802, and that the proceeds from the sale of the S-61Ns would be put towards the cost of these new firefighting aircraft.

□□□□□

SIGN OF THE TIMES FOR BAHRAIN'S FIRST VIPER

Bell Helicopter recently hosted a delegation from the Kingdom of Bahrain to mark the start of production of AH-1Z Viper attack helicopters that are being built for the Royal Bahrain Air Force as part of the ongoing foreign military sales (FMS) programme. The deal, for 12 AH-1Z helicopters, was first approved in April 2018 and signed in February 2019.

The Bahraini delegation toured Bell's Amarillo production facility in Texas before Shaikh Abdulla Al Khalifa, the country's ambassador to the United States, ceremonially signed the first airframe.

The AH-1Z is a twin-engined attack helicopter based on the AH-1W Super Cobra. It has a four-bladed main rotor system, with an uprated transmission, and a new targeting and sighting system, allowing it to find targets at long ranges and attack them with precision weapons.



Ceremonial signing: Shaikh Abdulla Al Khalifa, Bahrain's ambassador to the United States, makes his mark on the first airframe.

PICTURE: BELL HELICOPTER

Proceeds from the sale of the Hunters will go towards a new initial training aircraft, with the Cessna 172 or Cirrus the most likely candidate aircraft following the reported failure of Pakistan to respond to a Lebanese request for information (RFI) on the Pakistani Super Mushshak trainer.

The Hunter's ground-attack role will continue to be undertaken by the six Embraer/SNC A-29 Super Tucano aircraft delivered as part of a US military aid package. Lebanon hopes to acquire six more to allow a 12-aircraft squadron to be fielded.

Lebanon also hopes to deploy a squadron of 12 MD530F helicopters, six of which are expected to be received by the end of this year.

It has been reported that three companies have expressed an interest in the Hawker Hunters, including British company Hawker Hunter Aviation and the US-based Airborne Tactical Advantage Company (a subsidiary of Textron Systems) and Lortie Aviation. All would use the Hunters for adversary training missions.

The Lebanese Air Force is retaining two Hunters to be preserved locally.

AIRBUS CARACALS ENTER SERVICE FOR THE KUWAIT NATIONAL GUARD

The Kuwait National Guard (KNG) has received the first of six French-made Airbus H225M Caracal helicopters, which have entered service forming the core of the guard's air fleet.

The Kuwait Ministry of Defence signed a \$1 billion contract for 30 H225Ms with Airbus Helicopters in August 2016. Some 24 of the aircraft were destined for the Kuwait Air Force (KAF) and six for the Kuwait National Guard.

The latter will use the aircraft for troop transportation, search-and-rescue, and medical evacuation.

The first KAF H225Ms were delivered in February 2020 but unspecified engine problems led to a halt in further acceptances.

At the ready: The first Kuwait National Guard Caracal helicopter enters service.

PICTURE: KNG





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Leading the way: Delegates enjoy the show's global airport leaders' forum.

PICTURE: NADD AL SHIBA PR & EVENT MANAGEMENT, ON BEHALF OF THE AIRPORT SHOW.



Show-goers back in touch... but touchless is the future

The 20th edition of the Airport Show in Dubai was a determinedly upbeat event, perhaps surprising everyone with the quality and quantity of visitors and exhibitors.

Jill Stockbridge
was there.

Over three days, from May 24-26, the world's largest B2B airport industry exhibition presented more than 95 exhibitors from 21 countries and 100-plus hosted buyers from over 20 countries.

Once again, running alongside the exhibition, were the Airport Security ME and ATC Forum, as well as the Global Airport Leaders' Forum, with a variety of remote and in-person speakers.

The first day also saw the return of the Women in Aviation general assembly.

Italy boasted the largest single foreign presence at the show, but there were also significant country pavilions from Switzerland, Germany, France and the UK.

To allow participation from speakers and delegates who were unable to travel, the show was a hybrid format.

Digital meetings with key exhibitors unable to attend were possible through a telepresence in the remote connect hub in the halls, while remote visitors could access the Airport Show Hybrid+ platform to engage with exhibitors.

His Highness Sheikh Ahmed bin Saeed al Maktoum, president of the Dubai Civil Aviation Authority, chairman of Dubai Airports, chairman and chief executive of Emirates Airline and Group, opened the exhibition.

"The aviation industry has a history of successfully bouncing back from crises and the Covid-19 pandemic is no different," he said. "The setback is temporary and it will again be on the tracks of transformation."

Strong confidence

"The overwhelming response to the Airport Show is an indication of the aviation world's strong confidence in Dubai and its global efforts. As in the past, Dubai will, in the future, continue to lead in the industry's resurgence through collaborations and cooperation."

The show had a strong focus on contactless technologies – artificial intelligence (AI), biometrics, scanning, electronic bag tags, and offsite processing. The pandemic has brought a different emphasis, with existing technologies being developed for new roles.

Raghu Seelamonthula, Honeywell Airports Business director – strategic growth connected airports & ATM systems, said: "We have been leveraging existing technology and adapting it to the new needs of airport operators."

"Initially, Covid-19 was seen as being passed through touch, and so we had the safe distancing protocols. We enhanced the video capabilities of security systems to help maintain social distancing compliance and adapted our facial recognition technology to show if people were wearing masks. Now we are aware that it is airborne, and we are working with airports to ensure the air quality meets their needs."

Dubai's Dnata was promoting its at-home check-in and PCR screening service, DUBZ, as well as its maharba meet-and-greet services, providing an almost 'bubble-like' experience for concerned passengers.

Safe environment

Tim Walker, Dnata's VP commercial & business development, airport operations, said: "We want people to see that we are operating in a safe environment. The products and services that we offer have been reengineered with that safety-conscious ideal, and it is not as scary as people may imagine."

There were also debut products on show. On the Danish stand, BBHS Intelligent Baggage Handling demonstrated an automated airport and ground-handling system that offers a 95% reduction in manual baggage-handling, while Intelligent Track Systems showcased an intelligent scannable trolley that allows passengers to scan all their baggage on the trolley, while they pass through the personnel scanner, speeding up the security process from a maximum of 200 passengers per line per hour, to a possible 600.

Daniyal Qureshi, group exhibition director at Reed Exhibitions Middle East, which organised the show, said: "It was challenging to organise the show at such a critical juncture, when the aviation industry has just started to show signs of recovery."

"But, several national and international companies, as well as regional buyers, showed confidence and came in significantly big numbers considering the travel restrictions around the globe."

"Everyone who came to the show was outstandingly happy to meet each-other again. There were a lot of important conversations during the face-to-face meetings. Business-wise, too, it was quite encouraging. The exhibitors got good business leads that may soon turn into agreements."

Steve Allen's promotion to executive vice president of Dnata has come at a tough time for the industry, but, as he tells Jill Stockbridge, he is unlocking opportunities and planning growth.

The Allen key to success

The Covid-19 pandemic hit Dnata hard. At the start, the company had to downsize rapidly to match reduced needs and conserve cash, putting staff on to furlough schemes, part-time contracts or unpaid leave.

For Steve Allen, new executive vice president, it was a baptism of fire. He said: "It was tough on our teams and leadership. We have never been through downsizing. We have always been growing. We had to adapt our processes, because flying had changed. We had to go through all the disinfection and cleaning, the wearing of different PPE, and needed to train our teams to do things in a different way."

However, the crisis has also brought innovation, as Allen explained. "People have come forward with brilliant ideas that we have been able to trial and test. We have introduced new processes for loading aircraft, and safer ways to carry cargo into the passenger cabins. We have introduced new technology.

"In Switzerland, we are trying a UV light

disinfection system that will effectively kill all germs and revolutionise the way we clean aircraft. In Dallas, we are trialling drones in the cargo warehouses, which help us to optimise our pallet building, and have already increased the number of boxes by 10%."

After the initial closures, Dubai has remained cautiously open, with passenger volume at 40-50% of pre-Covid figures; impressive numbers for a hub.

Cargo has been our saviour

However, it was the cargo side of the business that pulled them through. Allen explained: "Cargo has been our saviour. Cargo only dipped to a maximum of 20% below pre-Covid levels. And, right now, our cargo movements are higher than they were before Covid."

Not all ground-handling companies have fared so well, and Allen expects consolidation in the industry. "There are winners and losers in such a massive economic crisis. Most of the big

handlers will continue to operate. They are financially stable and will be able to see the pandemic through, whereas some of the smaller handlers have suffered, so there is the opportunity for consolidation."

As a company that has grown organically and by grasping emerging opportunities, does this mean that Dnata sees prospects for expansion? Allen is bullish about the potential. "We will continue to invest, even during the pandemic we continued to invest in our infrastructure.

"On the acquisition side, we will look for opportunity. We tend to be cautious and investigate thoroughly before we make our investment, but we are looking at seven or eight opportunities at the moment that could come through in the next six months to a year. We have a clear view of where the industry is going and how we would like to play our part.

"Due to Covid-19, e-commerce has become increasingly important and the cargo business has thrived through this.

IS IT DOOM AND GLOOM OR POTENTIAL BOOM...?

Conflicting predictions of the speed with which the aviation industry will return to normality show the levels of uncertainty created by the pandemic. Alan Dron reports.

According to major consultancy, Oliver Wyman, the airline industry will be 'playing catch-up for the next 10 years'.

However, by contrast, the boss of Dubai Airports believes that recovery will arrive much more quickly.

"The aviation industry is now entering a decade of uncertainty," according to the Oliver Wyman report, *Global Fleet and Maintenance, Repair and Overhaul (MRO) Forecast 2021-31*.

"The 10-year forecast period starts slowly, with growth picking up steam in the second half of 2022, after the fleet finally recovers to its pre-Covid January 2020 level. Still, none of the three segments – airlines, aerospace, and MRO – are expected to catch up with pre-Covid projections by the end of the 10 years.

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"It will take the next few years for the fleet to adjust and return to stable growth, but even after 10 years, the industry will never fully regain all that it has lost from the pandemic," the report stated.

However, Paul Griffiths, CEO of Dubai Airports, takes a more optimistic view.

"We're ready to go and all we need now is the major easing of restrictions in the main markets to come. Once that starts to happen, it won't be a trickle, it will be a flood," he told May's Arabian Travel Market conference in Dubai.

"The entire aviation industry here is like a coiled spring ready to respond to the slightest easing of restrictions, and mobilising the capacity of the airport and airlines is something we're braced to do," Griffiths added. "The recovery will be very, very rapid indeed – the problem is we don't know when the tipping point will come."

In an early sign that air traffic is starting to return from the pandemic doldrums,



The comeback trail: Dubai International Airport has brought one of its terminals back into use as traffic starts to recover.

PICTURE DUBAI AIRPORTS

Dubai International Airport announced in late June that it was re-opening its mothballed Terminal 1 and Concourse D.

The reopening allowed the return of more than 40 international carriers that were switched to Terminals 2 and 3 as the airport curtailed its operations at the start of the pandemic.



Freight the saviour: Right now, Dnata's cargo movements are higher than they were before the pandemic.

Inset – Steve Allen: “We will continue to invest, even during the pandemic we continued to invest in our infrastructure.”

PICTURES: DNATA.

“We know that e-commerce is here to stay, and we want to be a part of that.

“The situation has also tested our ability to transport pharmaceuticals around the world. Dubai has put itself forward as a huge hub for the vaccines, and we want to continue that work, transporting pharmaceuticals through Dubai as much as possible, as we have the infrastructure to do it.”

So, despite all the challenges, Allen remains optimistic. “We are looking to grow. We want to continue to invest. I hope that this will bring more opportunity in the long run, and we will end up with more staff, rather than fewer.

“The last year has been horrible for everybody concerned. We have had to take some tough decisions about our people. I am really pleased to say that we are starting to bring quite a lot of those back now, in different parts of the world, including here in Dubai, and I’d like to think that we’ll be employing a lot more people in the future than we ever did before.”

TAV AIRPORTS’ \$415M KAZAKHSTAN’S ALMATY BUY-OUT

Turkey-based TAV Airports has completed the buy-out of Almaty Airport, Kazakhstan’s main aviation gateway, writes *Anuradha Deenapanray*.

The \$415 million deal, which TAV completed with backing from the Kazakhstan Infrastructure Fund, also includes activities linked to fuel.

Almaty Airport now belongs to a consortium headed by TAV Airports, which is part of Groupe ADP.

Located in the south-east of Kazakhstan, Almaty is a strategic junction along the ‘one belt one road’ project, a global infrastructure development strategy adopted by the Chinese Government in 2013 to invest in nearly 70 countries and international organisations.

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Kazakhstan leads central Asia in economic growth and generates roughly 60% of the region’s gross domestic product (GDP).

Almaty becomes the 15th airport in TAV’s global network. The company now plans to double the airport’s capacity.

TAV Airports president and CEO, Sani Sener, believes adding Almaty to the company’s portfolio will bring access to a main transit hub between Asia and Europe.

“We believe there’s a significant potential for growth in Almaty Airport and, drawing upon our extensive know-how, we’ll work towards realising this potential to the fullest,” he said.



Strategically placed: Almaty Airport gets set for growth.

PICTURE: NIKOLAY USTINOV

“Our expertise in route development will help to increase the connectivity of Almaty to the world.”

TAV currently operates airports in eight countries – Turkey, Kazakhstan, Georgia, Tunisia, North Macedonia, Saudi Arabia, Croatia, and Latvia.

It also provides duty free, catering, ground-handling, IT, security and lounge services.

Between 2003 and 2019 the company recorded an

annual passenger growth of 13%, serving 89 million passengers in 2019. However, like everyone else, it has been hit by the Covid-19 pandemic, with passenger figures down to just 27 million in 2020.

TAV Airports has also recently signed a memorandum of understanding (MoU) to modernise Uzbek airports and build a new airport in the capital city, Tashkent.

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Glad to be back: The buoyant mood among attendees underscored this welcome return to the trade exhibition agenda. Social distancing rules were in practice in the Go Live theatre. PICTURES: TARSUS/AVIATION WEEK

NICE TO SEE YOU

It was quite a surprise for many people as they walked into Za'abeel Hall 1 at the Dubai Trade Centre and found the MRO Middle East show teeming with visitors.

Chuck Grieve *was there too.*

"Great to be back," was the phrase in everyone's head, if not on their lips, at June's two-day MRO Middle East exhibition in Dubai.

What this year's event lacked in size was more than made up for in a genuinely collegial atmosphere – perhaps a little subdued, but that could have been due to the mandatory facemasks.

The aisles were crowded and, despite nominal social distancing, it almost felt like a normal event.

"This is fantastic," said Helmut Neuper, senior vice-president of Sanad Aerotech. "Our profession is about connecting people, so not to be able to see your colleagues and customers in person has been tough."

In the absence of the co-located Aircraft Interiors Middle East (AIME) exhibition, the show, nevertheless, counted key regional players among the 27 MRO exhibitors, including Mohammed bin Rashid Aerospace Hub and Dubai South, Sanad Aerotech, Etihad Engineering, Joramco, MTU Maintenance, Turkish Technic and Liebherr-Aerospace.

Notable among absentees was Boeing, but the Seattle airframer did manage a look-in through Turkish Technic (TKT), which used the show to announce a three-year renewal of its tailored parts package agreement. The MRO's president and chief executive, Mikail Akbulut, said the cooperation between TKT and Boeing "is another milestone in meeting the demands of the market".

The usual pre-exhibition conference was replaced by a new feature, the Go Live theatre, with its programme of panel discussions and presentations in the exhibition hall. Organisers are undecided if it will return in that format for next year's edition, scheduled for the regular February 22-23 slot. What is certain is their determination to welcome back AIME.

This year's show logged a first, with the participation of

Continued
on Page 38

CONTINUED FROM PAGE 37

Israel's IAI Group. Well-known in global aerospace for its exceptional range of capabilities, the company was in Dubai promoting passenger-to-freight (P2F) conversions on a range of airframes.

Alex Marom, deputy managing director for engines, said IAI currently had eight P2F conversions under way at facilities in Israel, Asia and South America, and expected to have double that number running simultaneously by this time next year.

A major theme that emerged in the Go Live theatre, and on the floor of the exhibition, was cooperation and collaboration across the entire aftermarket. The framework agreement inked at the show by Amman-based Joramco and VD Gulf of Sharjah encapsulated the sense of an industry pulling together to overcome the common threat.

Capitalise on synergies

Under the agreement, the two independent MROs are seeking to capitalise on synergies to give customers an "upscaled" one-stop-shop experience, which Joramco chief executive, Jeff Wilkinson, said points the way to "the future of the MRO industry in the region".

Mikhail Khoroshaev, head of VD Gulf, echoed the sentiment: "It is prudent that MROs across the globe endeavour to work jointly, as witnessed in other industries," he said.

Joramco also signed a memorandum of understanding (MoU) with Lufthansa Technik Middle East (LTME) covering technical support and spares positioning. LTME is Joramco's preferred supplier for nacelles.

In a Go Live panel focusing on cooperation among competitors, Joramco's Fraser Currie, chief commercial officer, said all businesses "hit speed bumps occasionally" which they have to deal with themselves. "What was unique at the height of the pandemic was the realisation that we were all in this together, as an industry. We were all talking about the same challenge. The amount of cooperation we had from our customers was absolutely phenomenal.

"Initially, it was that spirit of 'How do we get through this?' Then the reality that aircraft were going to be parked kicked in. Then it was the business adaptation: we're not a parking business, but that's what our customers wanted." The Joramco site quickly filled with about 60 parked aircraft.

Fellow panellist, Tayeb Bouhassis, regional sales director of Standard Aero, said the crisis proved that aviation, like any other industry, is a chain of actors. If one is suffering, the whole chain is affected, underlining that "together we have to take care of each member of the chain".

During the crisis, he said, four-way communications between the MRO, original equipment manufacturer (OEM), operator and financiers helped facilitate customisation of payment plans, adjusting terms of payment to take into account an operator's situation.



Michael Wette:
A 'clear indication'
that government
support helped
retain talent.

PICTURE:
TARSUS/AVIATION WEEK

SLOWER GROWTH EXPECTED AS INDUSTRY RECOVERS

Keynote speaker, Michael Wette, Dubai-based partner in consultancy, Oliver Wyman, reminded his Go Live theatre audience that the last time many – including himself – had been together was February 2020 at the previous MRO Middle East; 2019, he said, "was the last normal year we had".

Reviewing figures in Oliver Wyman's annual report, Wette said the Middle East in-service airline fleet is expected to grow by about 4%, to more than 2,260 aircraft in 2030, after starting 2020 about 26% smaller than in 2019.

Regional MRO, a \$9 billion industry in 2019, is predicted to reach \$11.5 billion in 2030.

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The market will recover quickly through 2025 as fleet utilisation is restored, reaching levels consistent with pre-Covid expectations "but will settle into a slower growth rate in the second half [of the forecast period] and ultimately be lower in 2030 than was expected," he said.

Airframe and engine MRO will recover the quickest, the consultants predict. Engines will increase their market share to almost half of MRO spending by 2030.

There's a "clear indication" that government support programmes in the Middle East largely allowed companies to keep critical MRO staff, Wette said. It was an "investment" in human resources that will make the industry better prepared for the coming recovery.

However, he warned that reduced payrolls may turn into labour challenges in the medium term, but added that, so far, airlines and MROs had been "remarkably resourceful" in their own survival.

Standard Aero, itself, benefited from OEMs' waiving of penalties on expedited delivery of parts.

Frederic Dupont, vice-president of technical sales and customer service for Etihad Engineering, observed that collaboration is key to survival. "We like to call it [the industry] a family because we're all both customers and suppliers. This was even more important during this time."

The pandemic forced companies to look closer at "things we assumed to be normal" in supply chains and logistics – even access to raw materials if it affected a supplier's ability to make parts.

Dupont said: "Throughout, I'm happy say, the resilience of the people across the ecosystem has been such that we were able to find solutions. Everyone had to meet halfway to come up with win-win solutions, then focus on rebuilding."

Etihad Engineering's third-party work is almost back to 75% of volume, where it was in 2019.

Nicole Noack, managing director of the Independent Aircraft Modifier Alliance (IAMA), suggested digitalisation was behind the trend toward 'cooperation' in the form of partnerships and alliances. "Big data only makes sense if everyone pays it in, otherwise you can't get enough out of it," she said, adding that it is "satisfying" to see erstwhile competitors around a table solving problems together.

Long-term relationships

Speaking remotely in the Go Live theatre, Amir Ali, chief technical officer of PIA, said the pandemic has shown the MRO industry the "importance of long-term relationships", a sentiment reinforced by David Doherty, head of MRO sales at Etihad Engineering. "Everyone has had to rethink how they do business and define what they're good at," he said.

For the two days of the exhibition, however, the focus was simply on being present.

"It's great to see so many customers and businesses here," said Damon Seksaoui, general manager at Liebherr-Aerospace Middle East. "We hope this is the start of many events of this type."

He commended Dubai for providing an "excellent" infrastructure for testing, plus clear travel rules and procedures, adding: "The UAE Government deserves to be praised for enabling business and safe travel."

Ziad Al Hazmi, chief executive of Lufthansa Technik Middle East, saw "good opportunities" in the show. "We've met new customers and new partners," he said.

Joramco's Currie said it's "nice to be back at a live event. It's our home show, so we're happy to be here."

After last year, which was, in effect, a year off, Joramco was "back on track with budgets as they should have been for 2020. We're moving forward," he added. "We're getting on with business."

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Inspection is a key part of the MRO community's contribution to aviation safety.

Chuck Grieve reviews developments in inspection tools and methods where communication is king.

INSPECTOR GADGETS...

Safety is the watchword for aviation authorities; compliance is non-negotiable but regulators are showing themselves to be open-minded about how MRO operators achieve it.

The Federal Aviation Administration (FAA) reportedly has no bars on which tools MROs can use, provided they can demonstrate compliance. The American regulator goes a step further by encouraging repair stations to share lessons learned on the technologies they're using.

The FAA, itself, has embraced what it calls video communication technology (VCT) to validate and perform its safety-critical activities, and is cataloguing best practices.

Others are more cautious. The International Air Transport Association (IATA), for example, apparently sees VCT as an enhancement, rather than replacement, for monitoring repairs – it can't replace smell or touch.

Etihad Engineering thinks along the same lines. It has clients based around the world and, before the pandemic, welcomed them to its hangars in Abu Dhabi to observe work on their aircraft. In recent months, to maintain this level of customer service, the MRO embraced off-the-shelf technology, including GoPro cameras and iPad tablets, to communicate seamlessly with customers in their own locations.

Pandemic advanced communications

Frederic Dupont, vice-president of technical sales and customer service, said the pandemic advanced some of what Etihad Engineering was already doing in communications. "We had to adapt... [beyond] the typical Teams and Zoom meetings, to going through inspections with videos and sharing files live with our customers."

"Some of the way we do business and how we support our customers definitely will change."

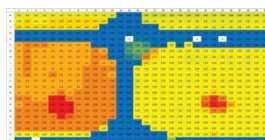
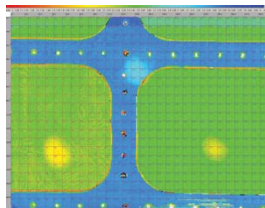
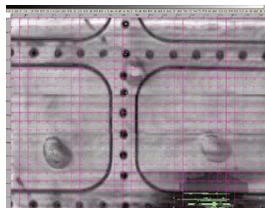
Communication is built into tools such as 8tree's dentCHECK, a hand-held 3D optical surface inspection tool, designed for the aerospace industry, that maps surface defects such as dents, bumps, lightning strikes, blend-outs and other deformations. It is approved by all major airframers and counts a major Middle East-based carrier among long-term users.

A new feature called panoLite creates a stitched panorama view of large area damage. It is designed to ease the burden on mechanics dealing with multi-dent scenarios, such as hail damage, by seamlessly measuring dents on areas up to 2m wide. The company said users report significant improvements in efficiency.

Chief executive, Arun Chhabra, said the tools are "specifically designed for aviation industry workflows"

Fast and accurate:
The hand-held dentCHECK tool provides an accurate map of surface defects and deformations.

PICTURE: 8TREE.



The thick of it: Testia developed ultra-high-resolution grid mapping and user-friendly views to help users identify hidden airframe features.

PICTURE: TESTIA.



with an intuitive user experience that makes precision 3D results as easy as taking a photo. Additionally, the tools provide "instant actionable answers, and not mountains of complex 3D data".

Lufthansa Technik (LHT) responded to pandemic travel restrictions by developing virtual table inspection and virtual borescope inspection. Both take advantage of the latest 5G technology in LHT's own private wireless network, which gives high-resolution, low-latency live-streaming and communication.

With virtual table inspection, customers can take part in the workshop examination of individual engine modules from their desks, coordinating actions and approving workscope changes, as they would in person.

LHT said the use of the tool is "growing strongly" across its global engine network, which includes its base at Dubai South.

LHT said an "interplay of technologies" makes it possible for customers to follow the borescope inspection of their engines live from home, discussing the findings and asking questions as necessary. The company plans to add interactive digital documentation to this service.

Airbus subsidiary, Testia, says its SmartUE1 tool – a "Swiss army knife" of non-destructive testing (NDT) – has been well accepted by MROs and top airlines in the Middle East, including Gulf Air and Joramco.

This light, wireless device offers up to eight inspection modules in a single kit. To its basic ultrasonic and eddy current testing capabilities, users can add modules to detect delaminations, disbondings, fatigue cracks, lack of cladding, as well as measuring thickness, coatings and conductivity.

Testia has also extended the capabilities of its thickness tool to measuring remaining thickness in large blended-out areas of aluminium alloy sheet and plate, identifying features such as rivets and edges. Reporting features were enhanced.

The resulting tool prompted Gavin McGibney, senior NDT engineer with LHT, to comment: "The thickness tool is a great piece of kit, ready to use with set-up already loaded. The man-hour savings are incredible."

UAE SET TO SHOW ITS

The UAE has a presence in most aspects of the aviation industry. Now, moves are afoot to fill one of the few remaining gaps in its portfolio of services. Alan Dron reports.

It's one of the less attractive aspects of several airports in the Middle East: old aircraft, long abandoned by their owners, slowly rusting away in remote corners, subsiding gently into the sand as their tyres disintegrate.

Many of these wrecks could disappear in the next few years, with a company planning to set up an aircraft recycling facility in the Gulf.

Aircraft Solutions Middle East (ASME) is well along the road to setting up what it says will be the world's largest aircraft recycling plant, at Al Ain International Airport, Abu Dhabi.

"We have the design ready and we have a land proposal from the airport," said ASME CEO, Sven Daniel Koechler.

Finalising the finances is the remaining piece of the jigsaw. Koechler believes there is "a fair chance" that construction will start this year and hopes the plant will be operational a year later.

ASME's plans involve building what Koechler described as the largest hangar in the UAE, measuring 300 metres x 100 metres x 42 metres. This will be capable of accommodating up to three Airbus A380s side-by-side.

World's largest facility

Using modern techniques will mean the site will be able to dismantle 70 aircraft a year, making it the world's largest facility of its type. The size of the proposed hangar means that aircraft will be able to be moved straight inside: "We don't intend to have a 'boneyard'," said Koechler.

ASME's planned site is within the boundaries of Al Ain International Airport. One attraction of the site is that it is a free zone; another is that the airport handles both civil and military aircraft and ASME intends to dismantle both types.

At present, Ras Al Khaimah-based ASME is working on outdoor sites in the UAE, but the planned new facility would allow it to work on aircraft regardless of weather conditions.

"There are a lot of dead and abandoned aircraft at the end of runways," noted Koechler. "There are 22 at Ras Al Khaimah and 28 or 29 at Fujairah. Most are Russian or African." Typically, their owners have been unable to pay airport fees, or maintenance and overhaul charges, and walked away from them.

Often, said Koechler, the abandoned aircraft are auctioned off: "Some smart people think they will buy three to use the spare parts from two to make one flyable." They fail to realise that they will have to pay the aircraft's often substantial parking fees and lose interest, at which point the aircraft go for auction again.

ASME also aims to help the governments of



Going under cover: Sven Daniel Koechler and his staff plan to be operating within their own premises, rather than dismantling aircraft outside, such as this McDonnell Douglas MD-11. PICTURE ASME.

Ras Al Khaimah and Fujairah by removing the hulks at their respective airports, even if the cost of cutting them up outweighs their scrap value, as they are becoming an environmental hazard, with considerable quantities of liquids, such as air conditioning and hydraulic fluids, on board. Some elderly types also have uranium counterweights on board.

ASME describes itself as 'a provider of sustainable, end-to-end recycling solutions'. The company is applying a new business model that recognises the entire value of redundant aircraft, with high-value components such as engines, electronics, landing gear, and avionics being removed, tested and recertified by engineers and technicians to be re-sold, or otherwise repurposed in other aircraft.

Metals such as aluminium, copper, and various alloys are returned to their original state and put back into the supply chain.

Interior materials such as plastics, leather, and even single-use items, are harvested and processed, with the aim of producing new products and, ideally, creating zero waste.

For example, ASME has sold leather from seats on an ex-Lufthansa aircraft to a specialist company that customises Nike Air sports shoes, creating limited-edition versions for consumers who like the idea of having materials on their feet that previously flew around the world.

Windows can be upcycled into new wall clocks and exit doors into coffee tables: "There are a lot of aviation enthusiasts who want to have these special parts," said Koechler.

SCRAP METTLE

ASME employs 36 staff at present, but this is likely to rise to 350-400 when the new facility is fully operational. Staff will be a mix of engineers to run the site, plus blue-collar workers to handle the dismantling.

As part of its plan to offer services throughout the life of an aircraft, ASME intends to set up an MRO facility alongside the dismantling plant.

Employing the latest techniques should allow an airliner to be disposed of in 30 days, around one-third of the time taken by rivals, said Koechler, who foresees the annual number of airliners going for recycling doubling over the next decade.

At the time of writing, ASME was completing the dismantling of a McDonnell Douglas MD-11 at Dubai World Central (DWC).

New processes mean that ASME will be able to recycle almost every part of an aircraft. "We've been able to recycle 98.5% of that MD-11. That's way more than our competitors," said Koechler.

Achieving this level of recycling lies in the

company's ability to segregate materials, particularly plastic, more effectively, he added.

For example, passenger service units (PSUs) – the panels above passengers' seats containing air vents and call buttons – can contain five or six different types of plastics. Perhaps surprisingly, the aircraft manufacturers often don't know precisely what types of plastics are used, as they are sourced from component suppliers who, in turn, receive the PSUs' constituent parts from subcontractors.

DWC is being held in reserve as a back-up plan if, for some reason, the Al Ain site does not go ahead. "In a perfect world we will go to Al Ain," Koechler said. "But we all know aviation is not a perfect world."

■ The Moroccan Airports Authority (ONDA) is planning to establish an aircraft storage, dismantling and recycling site near Oujda-Angads Airport. It has launched an international call for tenders to select a partner or a group to design, build and operate the site. ■



Valuable: Materials can be extracted from aircraft, such as this MD-11 currently being dismantled and recycled.

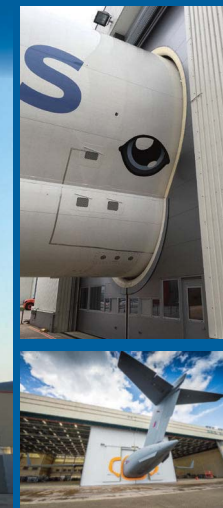
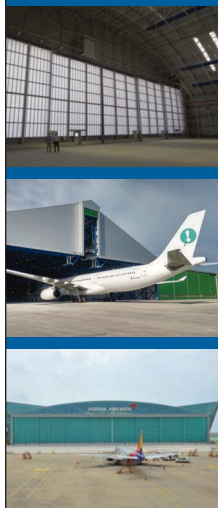
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THE CHANGING FACE OF AIRPORT SECURITY

Emirates Group Security stages its biennial AVSEC conference this October. Alan Dron looks forward to the event.

International Air Transport Association (IATA) surveys regularly pinpoint airport security checkpoints as the part of the journey most disliked by travellers.

Nobody particularly enjoys having to remove their shoes or being patted down by security personnel.

Emirates Security Group sees its role as transforming this aspect of airports and airlines from a necessary evil to an enabler of the business.

Achieving that transformation requires an arsenal of skills, and it is the development of these that is one of the main objects of the aviation security conference (AVSEC) staged by the airline every two years.

Until 2013, the conference was an internal Emirates affair. Since then, it has been broadened to the international community: "We're the only airline that

does this and we extend invitations globally," said Zack Zainal, senior vice-president for Emirates Group Security.

Those invitations cover a wide cross-section of personnel involved with the aviation security sector, from regulators to law enforcement agencies, immigration and border control personnel, ground-handlers, even aspiring students.

"We live up to the International Civil Aviation Organization (ICAO) maxim of 'No country left behind'. We invite people from developing economies, who join us on an all-expense paid trip," said Zainal.

"In 2017 we went further, by extending scholarships to aspiring aviation security professionals to pursue our signature programme, the diploma in aviation security management, with Edith Cowan University in Australia."

It is measures such as the scholarships for young aviation professionals that will, hopefully, encourage the next generation of security personnel to have open minds and think outside the box when devising solutions to security problems facing the sector, helping move away from the 'necessary evil' stance.

The last AVSEC conference attracted 650 participants. With the obvious problems affecting all international gatherings these days, attendance at this year's event, scheduled to be held between October 3-5 in Dubai, is likely to be around 400.

"We're very optimistic that the border control restrictions will be relaxed by that time with the vaccinations going on," Zainal said.

Over the years, topics discussed at the conference have changed, noted Brian Kinane, Emirates Group Security's manager, security training (aircrew and ground). "Ten years ago, we were talking about hijacks and sabotage and, while they are still relevant, now there's more inclusion of cyber-security, human trafficking, and artificial intelligence. There's a lot more on the technology side of emerging threats."

With this in mind, Emirates is one of the airlines cooperating with IATA on the Blue Skies 2040 programme, which attempts to forecast what aviation, and the security needed to keep it safe, will look like 20 years down the line.

That involves bringing in young people to brainstorm ideas and mix their input with that of older security professionals.

An important aspect of the AVSEC conference is the feedback it brings. "One example is human trafficking," said Kinane. "That wasn't part of any aviation security conversation five years ago. We were the first non-US airline to train our crews – both aircraft and ground crew – in watching for human trafficking."

Since then, there has been an upsurge in airlines and airports training their staff to watch out for behavioural indicators that someone may be being transported against their will, then passing on that information to the authorities.

"We have a dedicated team in Dubai who look at this," said Zainal. "We call them the Men In Black. This group is trained in observation skills, profiling odd or suspicious behaviours and in checking documents before someone is accepted on board a flight."

The theme of this year's event is 'Connecting minds – securing the future'. "Connecting minds is very much what we do in terms of the expertise we bring," said Kinane. "There's a big focus on workshops and interaction."

Emirates is encouraging members of its flightdeck crews and ground staff to attend this year's conference: "Twenty years ago they had no role in security," noted Kinane. "But now, it's everybody's business."



Zack Zainal: Emirates has a dedicated team in Dubai looking out for human traffickers.

PICTURE: EMIRATES GROUP SECURITY



Nobody's favourite part of a trip: the security checkpoint.

PICTURE: WIKIMEDIA COMMONS

Will aviation ever be 'green' or just differing shades of 'brown'? It's a challenging question increasingly confronting the whole industry. Chuck Grieve reports.

So just how green is green?



New scheme: Rolls-Royce's SAFinity offers business aircraft users the chance to invest directly in SAF projects.

PICTURE: ROLLS-ROYCE



Helping the planet: Electrical power from ITW GSE bridge-mounted GPUs help reduce Dubai International Airport's carbon footprint.

PICTURE: ITW GSE

Veteran aviation observer, Phil Seymour, sees sustainability 'in the round', and his view is that carbon reduction and offset are the only realistic paths to a cleaner long-term future until a feasible CO₂ extraction process is developed.

Seymour, president of award-winning aviation appraiser and analyst, IBA, said that translates, in the near term for larger aircraft, to fuel-saving strategies, air traffic control (ATC) improvements, airport congestion planning (less time taxiing) and sustainable aviation fuel (SAF).

Better battery and hydrogen fuel technology may have an impact on the longer-term picture if their issues of weight, heat, production and on-board storage can be resolved, he said.

While IBA was conducting research for its ground-breaking carbon emissions calculator (CEC), launched earlier this year, the Greenliner initiative of Etihad Airways, plus Abu Dhabi's work on developing SAF, was "obviously very interesting", said Seymour.

The Greenliner highlighted the paradox of oil as both an economic mainstay for the region and a target for environmentalists. Seymour said it puts the Middle East at the forefront of 'green' considerations, because the countries and their aviation industries "need to invest in the new technologies. They just have to look forward with enough vision."

Different feedstocks

SAF is one such area. Tim Boom, IBA senior analyst and sustainability specialist, said despite there being 27 different SAF feedstocks in the world, there's not enough to go around. "We did some modelling and, by 2030, it's only going to serve 7% of the worldwide fleet consumption."

Additionally, the production of some SAF feedstocks emits more than burning Jet A. "It's crazy when you think about that," said Boom.

SUPPLYING CARBON-FREE POWER

Middle East airports in general are looking for flexibility and sustainable efficiency from their capital investments, according to David Feuga, regional sales director for ground power unit (GPU) supplier ITW GSE.

ITW GSE was recently awarded the contract for 62 of its 2400PC bridge-mounted electrical GPUs at Dubai International Airport, to replace equipment the company supplied in 2006. "Supplying carbon-free electrical power to aircraft goes with the ongoing electrification of many airports," explained Feuga.

The company has completed delivery of nearly 50 units for the refurbishment of Terminals 3 and 4 at King Khaled International Airport in Riyadh, while another Gulf country has just signed for more than 200 GPUs and pre-conditioned air units as part of a major regional airport expansion.

In total, ITW GSE has sold more than 3,500 electrical units in the region.

The CEC, which can analyse fuel burn on individual flights and is primarily targeted at investors, has attracted surprise interest from airports and travel agencies – airports due to their responsibility for airspace below 3,000ft; agencies in response to growing demand among travellers for carbon offsetting.

Picking up on this interest in carbon-neutral air travel, Rolls-Royce has launched a global scheme called SAFinity that lets the users of business aircraft – irrespective of the make of their engines – offset their carbon footprint by investing directly in the development and use of SAF.

Launch customer

Middle East clients of ExecuJet, part of Luxaviation Group, which is the launch customer of SAFinity, are among those covered by the initiative.

Described as a first of its kind, the programme positions Rolls-Royce as a broker facilitating carbon offset payments to independently verified sustainability projects and SAF suppliers.

At the top of the supply chain, tier-1 OEMs are also adopting a full-life approach. One such is Liebherr-Aerospace, whose commitment to sustainability in many cases goes beyond compliance minima to limit waste and promote repair, re-use and recycling.

Joël Cadaux, Liebherr's Dubai-based director of business and customer services, said sustainability for Liebherr means eco-responsibility, business performance and customer satisfaction. "It means everything we apply in eco-responsibility will be linked to performance," he added.

Liebherr's logistics centre in Dubai is one of a global network of service centres that make new and used serviceable materials (USM) parts available locally, thus avoiding unnecessary transits, while shortening turnaround times.



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A UAE-based start-up company is working with Etihad Airways to harness the internet of things (IoT) and reduce waste, cost, and environmental impact. Jill Stockbridge reports.

Chips with everything...

Who would have thought that changes made to a humble aircraft food tray could help save the planet and, potentially, billions of dollars as well? The team at The Concept certainly do.

The company is introducing its NEOS Fly+, an IoT-embedded smart food tray, which it believes will reduce food waste on aircraft, a problem estimated to cost the airline industry around \$3.9 billion annually (pre Covid), and collect valuable data on passenger consumption and preferences, while providing an environmentally sound, lightweight, and economical product.

CEO and co-founder, Yadhushan Mahendran, explained: “The IoT chip embedded within the tray is constantly communicating with our proprietary receivers, which are retrofitted to a cabin trolley. The chips are able to provide data that will be relayed and stored on the receivers with regards to meal type, location, and consumption level, based on tray weight.”

The Concept focuses on creating sustainable solutions for clients using a combination of hardware and technology innovation. Since April, the team has been working closely with Etihad Airways to test and develop the in-flight product.

Mahendran said: “We are working with multiple stakeholders at Etihad Airways and the catering centre in order to ensure that our products are built to work within their environments, but also to further understanding how NEOS Fly+ can solve some other existing problems.

“Having Etihad Airways as part of our development has been amazing because it’s given us the opportunity to test our products and develop them around actual scenarios, rather than just purely on simulations.”

Not only does the tray save on food waste, but the manufacture method increases the user’s green credentials and cuts costs.

Mahendran explained: “We apply the circular economy approach of manufacturing to our production cycle. Normally, airlines have to pay in order to dump their cabin



High-tech: The tray concept that keeps on giving.

Below: The three developers (from left): Yadhushan Mahendran, Maria Sobh, co-founder and chief design and creation officer, and Muhammad Rijal, co-founder and chief executive engineer.

PICTURES: THE CONCEPT

waste post-flight into landfills. With NEOS Fly and NEOS Fly+ we take any recycled plastic (PET) cabin waste, such as water bottles or juice bottles, free of cost and use that to manufacture our trays.

“Since we use their waste to create new trays, we need fewer raw materials, and as they are providing part of the raw materials, we provide the airline with a percentage rebate for each tray’s cost. This is a great business model as it helps airlines to reduce the amount of waste they put in landfill; they pay less to dump waste; and they are able to get their trays for a cheaper price,” he added.

End of life cycle

When the trays reach the end of their life cycle, due to damage or age, they are returned to The Concept, which recycles them once again into new trays. Mahendran said: “We want to ensure none of our products end up in landfill, but always have the opportunity to be re-made into the original products or repurposed into another product.”

The smart trays are manufactured at a facility in Europe, where The Concept owns the tooling and production line. “Our production partner is more than 50 years old and manufactures for the likes of Ikea and Carrefour. Not only has this experience added credibility to our offering, but the company also supported us from the start,” said Mahendran.

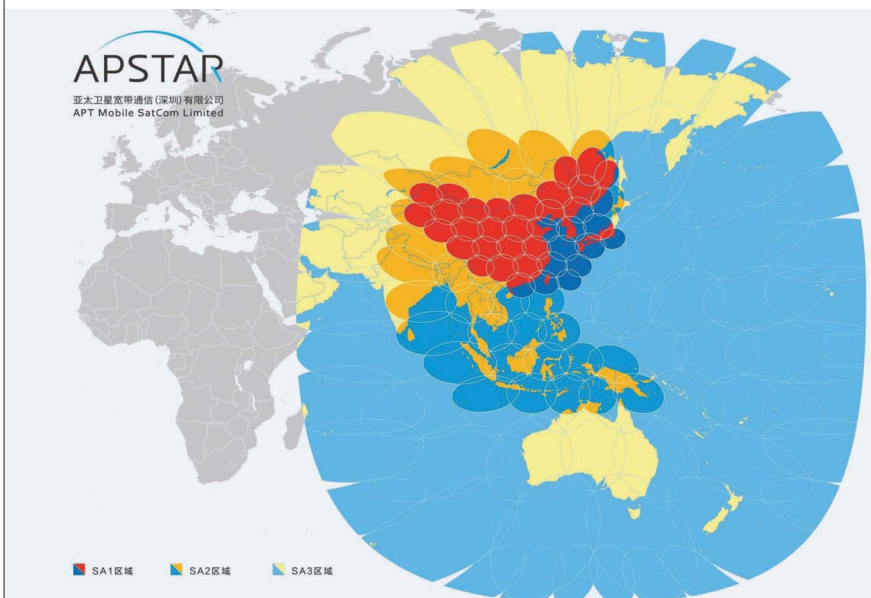
News of the NEOS Fly smart tray has generated industry interest, with a number of global airlines wanting to discuss being a developmental airline and potentially an initial launch customer. But for Mahendran and his partners, this is just the beginning.

“We want to create the ‘Google Home’ for the sky. As we finish the development of NEOS Fly+, our team will embark on redesigning existing products within the cabin using sustainable materials, and looking at how we can use IoT technology to collect valuable data that can help an airline enhance the passengers’ on-board experience, while being more environmentally friendly and saving on cost.”

He concluded: “Our goal is to have a host of IoT products within the aircraft cabin that can be connected to our receivers. We will then collect and provide this data to the airlines in a manner that is feasible and minimally priced.” ■



Ku-band tuned-up to play well in the Middle East



Increased connectivity: The third-generation Ku-band roll-out continues:

IMAGE: APSTAR-6D

Panasonic's Gen-3 in-flight connectivity is now available in Asia with the Middle East to follow. Steve Nichols reports.

Panasonic Avionics is continuing with the roll-out of its third-generation Ku-band communications network, which offers an improved airline and passenger experience. This includes faster internet, video streaming, VoIP applications, improved live TV picture quality and broader channel choice, 4G phone services, and greater bandwidth for crew applications.

In March, its first extreme high-throughput satellite (XTS) entered service over the Asia-Pacific region. There are plans for another satellite launch to cover the Middle East region next year.

The APSTAR-6D high-throughput satellite was launched last July and has a total capacity of 50 gigabits per second.

It was jointly designed by APSATCOM and Panasonic Avionics, and provides airlines with multiple gigahertz of new Ku-band capacity over China and high-density routes around East Asia, including Tokyo, Seoul, Beijing, Shanghai, Hong Kong, Malaysia, Singapore and Indonesia, using narrow XTS spot beams.

In addition, APSTAR-6D provides high-throughput satellite (HTS) coverage over its full field of view, including the Pacific Ocean, Indian Ocean, Australia and the Southern Ocean down to Antarctica, which includes areas not served by any other HTS satellite.

Plans are now well under way for the launch of a second XTS satellite that will provide enhanced connectivity over Europe and the Middle East.

Built by Thales Alenia Space, Eutelsat 10B is due to launch on an Ariane 5 rocket from the Guiana Space Centre in early 2022. The satellite will be located at 10° East, an orbital position that offers a unique visibility spanning from the Americas to Asia.

Panasonic Avionics has signed a contract with Eutelsat Communications to enable it to provide multiple gigahertz of XTS Ku-band in-flight connectivity to airlines and their passengers flying over a wide area across Europe, the Mediterranean basin, Africa, the Middle East and the Indian Ocean.

The satellite's HTS payloads will be able to process more than 50 GHz of bandwidth, offering a throughput of approximately 35 Gbps in total.

All of the aircraft – more than 2,500 – flying with Panasonic's connectivity solutions have now been upgraded to its Gen-3 network.

Gen-3 is a combination of both new installed next-generation modems and new XTS and HTS that promise to boost both the speeds and bandwidth available while in flight.

In addition to in-flight internet access, Panasonic Avionics offers live television with the world's only global live sports channels delivered in partnership with IMG. It also delivers real-time advertising and other transactions that open up a huge range of in-flight retail possibilities.

The higher-speed Gen-3 network will also help enable Panasonic's ZeroTouch system, which moves content to and from an aircraft using Wi-Fi, 4G or a Ku-band satellite connection.

Virtual dashboard

ZeroTouch reduces an airline's need to physically touch the aircraft because all interactions are managed through a virtual dashboard.

It provides access to real-time passenger data, software, and media, plus content updates can be data-driven, helping to create a relevant and personalised passenger experience.

Ken Sain, chief executive officer of Panasonic Avionics Corporation, said: "Our third-generation communications network delivers the targeted, flexible use of extreme high-throughput capacity, ensuring we can meet the needs of our airline customers with cost-effective and reliable high-bandwidth services well into the future."

"Tailoring the capacity to areas of demand will provide our airline customers with better service, unprecedented coverage, and the ability to dramatically increase throughput. This opens the doors for airlines to further customise their connectivity offerings to meet the evolving expectations of their passengers."

The company currently has equipment flying on Emirates, Turkish, Etihad, Qatar, Saudia, Egypt, Kuwait, Middle East Airlines-Air Liban, Saudi Gulf and several private operators.

It has delivered more than 15,400 in-flight entertainment systems and 2,540 in-flight connectivity solutions to the world's leading airlines.

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After a six-month delay, new EU pilot mental fitness rules came into effect earlier this year. With many non-EU countries and airlines mirroring European Aviation Safety Agency (EASA) best practice, several Middle East carriers are now looking to up their levels of pilot support. Victoria Moores reports.

Stressful: Life in the cockpit brings plenty of challenges.

PICTURE: RALF ROETSCHKE, WIKIMEDIA



WHY PILOT MENTAL HEALTH HAS JUMPED UP THE AGENDA

Mental health is coming into sharper focus because of the Covid-19 pandemic, but the 2015 Germanwings pilot-suicide was already driving changes in the way companies support their employees.

The tragic events of March 24, 2015 led to EASA's new pilot mental fitness rules, which entered force in February 2021.

The new regulations include a mandatory psychological assessment before being hired, drug and alcohol testing, and mental health support for all pilots.

While these regulations only apply to EU air operator's certificate (AOC) holders, other countries and airlines are exploring similar initiatives. Qatar Airways is among the airlines that have already implemented such measures.

"Qatar Airways currently complies with all Qatar Civil Aviation Authority (QCAA) regulations relating to flight crew mental health and wellbeing which, in-line with the existing EASA regulations, match the international standards in this area," a Qatar Airways spokesperson said.

Similar to the EASA rules, all Qatar Airways pilots undergo a comprehensive psychological assessment upon joining, as well as regular substance-abuse testing.

"In addition to this, all Qatar Airways flight crew have access to day-to-day mental health support services, such as psychology consultations and 'fitness for duty' evaluations, as well as a confidential employee assistance programme (EAP), post-incident employee support and

psychoeducation workshops," said the spokesperson.

While some airlines are already moving forward, there are several major – and conflicting – cultural challenges to overcome.

The first is specific to pilot-culture. Getting pilots to actually use mental-health support services can be a challenge, because they fear that seeking help might have consequences for their careers. Furthermore, many Middle East pilots are expatriates, living in societies with very different norms, often far from home and family, which can be a catalyst for mental health problems.

The second difficulty is that Middle East cultures can be very hierarchical, making it extremely hard for companies to relinquish control and offer employees truly independent support.

One solution is to use a specialist third-party supplier, such as the UK-based Centre for Aviation Psychology, which provides peer-support programmes (PSPs) for around 70 AOC holders, including UK carrier British Airways (BA).

Under a PSP, pilot-volunteers are trained to listen to their colleagues' problems, with oversight from a mental-health professional. The idea is that talking to a co-worker, with first-hand experience of the job, is less intimidating than seeking formal medical help.

Therapeutic confidentiality

Centre for Aviation Psychology founder and business development director, Aedrian Bekker, said mental health support must be credible and bound by therapeutic confidentiality, to get pilots' buy-in.

"For many pilots based in the Middle East, and especially in the Covid-era of employment insecurity and the recent legacy of seemingly brutal redundancy processes, there will be even greater reluctance to trust their company's resources in times of distress, or mental ill health. Providing easy access to support that is confidential and visibly independent of their employer is now more important than ever," Bekker said.

Around one third of the Centre for Aviation Psychology's peer-support programme clients are outside of the EU.

"We've had quite a bit of interest from AOCs outside of the European jurisdiction. A lot of them follow EASA regulations very closely, because they see that as a good model to practice," Bekker said.

"Pre-pandemic, we had interest from a couple of large Middle East scheduled airlines and quite a few from business aviation. We would like to set up and establish a pilot peer-support service in the Middle East, if there were sufficient interested parties."

Regulating mental health turns it from a 'nice to have' into a 'must have', pushing it up the corporate agenda. However, many companies now recognise employee mental health as a potential risk factor, turning this into a corporate compliance issue. That makes the investment decision much easier.

"It's been fascinating to see how regulation has driven behaviour across an industry. And there's a vast number of pilots who now have access to services that they wouldn't have had, if the EASA regulations hadn't come into effect," Bekker said.

Providing easy access to support that is confidential and visibly independent is now more important than ever.

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Tim Hawes

Marcelle Nethersole
*speaks to the
managing director
of Tarsus Group,
Middle East.*

1

■ How is Tarsus preparing for this year's Dubai Airshow?

Dubai Airshow 2021 is set to be the first-of-its-kind live event this year, to support the recovery and growth of the aviation and aerospace industry.

We are working closely with government entities in Dubai to ensure providing all attendees with the smoothest and safest experience. We are also cooperating with Dubai Civil Aviation Authority (DCAA) and the ministry of defence to ensure civil and military delegations programmes at the highest possible level.

In addition, this year, our advisory board is playing a key role in supporting the show's aspiration to be a leading platform for driving the industry's recovery and shaping its future, by providing high-level strategic guidance. It will be focused on a range of topics, including instilling confidence in aviation post-pandemic, and development of talent and skills.

Dubai Airshow 2021 will support the UAE's 'Make it in the Emirates' initiative, showcasing the services provided by UAE entities to global experts, and encouraging collaboration between different parties.

2

■ Why should visitors attend, and what can they expect to see?

This year, Dubai Airshow will include a brand new conference stage, Tech Xplore, which will highlight how emerging technologies are helping reboot aviation and changing the entire flying experience using 5G, AI, cyber security and automation.

The Aerospace 2050 Forum will feature a series of tracks dedicated to some of the key growth areas of the industry, including advanced aerial mobility, sustainability, and space. Furthermore, cargo connect and global air traffic management conferences are returning this year.

Dubai Airshow is putting a major focus on supporting start-ups, so there will be a new east-west start-up hub, called VISTA, which will give new companies access to mentorship programmes and a chance to meet with vital decision-makers and globally ranked investors to launch, grow and scale their start-ups.

The show will also include fish tank talks, guided tours, as well as meetings on the runway.

3

■ How does interest in this year's event compare to previous shows?

The entire aerospace and defence industry is extremely excited to get back to face-to-face events. This will be the first large scale aerospace event globally since Dubai Airshow 2019 and the onset of the pandemic.

This year's Dubai Airshow will have new country pavilions from Israel, the Czech Republic, Australia, and Belgium, with others looking promising as well. It will also have new companies including: Rafael, Elbit, Kelley Aerospace, Accenture, Eurosam, NAFFCO, G42, IGG, and more.

Global key exhibitors, who have been part of our previous air shows, will also be taking part this year. These include Boeing, Airbus, Lockheed Martin, Mubadala, Raytheon, Dassault, Embraer, and others.

EDGE, the UAE's advanced technology group for defence and beyond, is the show's defence technology partner this year.

4

■ How can you assure everyone's safety?

Dubai is one of the first cities in the world to safely and effectively restart the events sector, hence event organisers are ensuring full compliance with the wide range of precautionary measures to maintain everyone's health and well-being.

For Dubai Airshow 2021, we are working very closely at the highest possible level within the UAE Government to ensure the comfort and safety of all attendees, which is our main priority.

We will strictly follow the guidance of authorities, including Dubai Health Authority, and Dubai Municipality. We are also following all of the necessary safety precautions required in line with Covid-19 policies.

5

■ Do you think the pandemic has changed the future of live events?

While there is still some trepidation and restrictions around international travel and the running of live events globally, one thing the pandemic has taught us is that there is no substitute for face-to-face human interaction.

Virtual and hybrid events have, of course, proved invaluable over the course of the past 18 months. However, almost without exception, the feedback we are receiving as an industry globally is that people can't wait to get back to live, in-person events.



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