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ARABIAN AEROSPACE

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A large portrait of a man, likely the Airbus CEO, occupies the left side of the cover. He is a middle-aged man with short brown hair, wearing a dark blue suit jacket over a white shirt. He is looking directly at the camera with a slight smile.

THE 'BUS ROUTE TO RECOVERY

**AIRBUS CEO TAKES
A POSITIVE LOOK
AT THE FUTURE**

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AIR TRANSPORT

Time to
unleash
the
sphinx

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UAE
welcomes
Dassault
Rafale

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EVENTS

New show
shines the
spotlight
on defence

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COVER: Airbus CEO, Guillaume Faury, was in positive mood at the Dubai Airshow when he talked about recovery, future aircraft, and relationships.
PICTURE: Billypix

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DEFENCE WORLD MUST NOW COME TOGETHER

The timing for the inaugural World Defense Show (WDS) in March in Riyadh could not be more apt, as the need for more collaboration and defence equipment has become pressing across Arabia.

An increase in the number of drone and ballistic missile attacks on Saudi Arabia and, most recently, Abu Dhabi and Dubai, from the Iranian-backed Houthi rebels in Yemen, has drawn headlines in the Gulf, while drone attacks on American forces at al Asad Air Base in Iraq heralded a new sophistication from Iranian drones in terms of capability.

Israel has already attacked Iranian bases throughout Syria on numerous occasions over the past three months, as well as hitting convoys of weapons making their way from Tehran to Syria and Lebanon through Iraq.

The collaboration between the Gulf forces and the Americans has been credited with stopping numerous attacks. New relationships between some Gulf countries and Israel is also opening the doors to new anti-drone technologies.



As well as demonstrating land, sea and air technologies and techniques, the WDS does offer huge opportunities for allied nations to meet together to take their collaboration to new heights.

We shall be at the show reporting daily with all the news and images from the showground.

The region has certainly been leading the world with its ability to run live events safely.

The Dubai Airshow in November took the crown.

The show was among the best ever, with a revitalised industry coming together for the first time in two years and shaking Covid aside; people talked the talk with recovery and sustainability on everybody's lips.

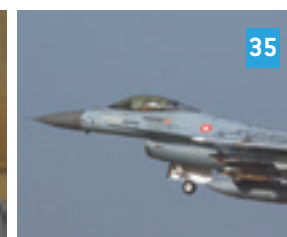
Of course, now it is time for action, rather than words. But, as our cover story shows, the industry is not just setting targets – it is confident about achieving them.

Guillaume Faury became CEO of Airbus just before lockdown began and has instilled a renewed vigour into the manufacturer. The plans for a net zero aircraft are advancing and his call for governments, regulators, and the supply chain to also play their part must not go unheeded.

Alan Peaford, editor-in-chief



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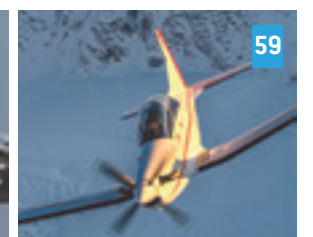
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Typhoons blow into Magic Carpet

The joint UK-Qatar No12 Typhoon Squadron ended 2021 with a series of training exercises in the Middle East as Qatar prepares to stand up its own Typhoon unit in 2022.

These exercises included the latest iteration of Exercise Magic Carpet – an annual bilateral exercise that has been hosted at Thumrait by the Royal Air Force of Oman (RAFO) since the 1980s.

Magic Carpet serves as a useful demonstration of the UK RAF's ability to deploy world-class capabilities and to deliver high-quality training opportunities. It is also a clear demonstration of the UK's enduring commitment to working with its Gulf partners – particularly Oman – to promote security and stability in the region.

The RAF Typhoons (drawn from No12 and No11 Squadrons) flew more than 100 air-to-ground and air-to-air sorties during the busy two-week flying programme, operating in an air exercise area over Oman's Dhofar Governorate. The exercise involved RAF and Omani Typhoons (flown by British, Omani and Qatari pilots), as well as Omani F-16s.

■ Typhoon's fortunes – Page 43

Together: Omani and RAF Typhoons flying during Magic Carpet 2021.

PICTURE: UK MOD @ CROWN COPYRIGHT 2021

Deal secured

Emirates Group Security (EGS) has signed an agreement with the Tucson-based University of Arizona (UA) to promote collaboration in tertiary education and research on general and security-specific subjects from certificate to postgraduate courses.

This new dimension comes in the customized degree paths programme (CDP), which is delivered online by UA with supplemental on-site services and courses provided by EGS.

Through the agreement, UA and EGS will jointly offer 60 programmes, to be delivered entirely online in English by UA-appointed qualified faculty members.

Etihad revamp plan

Etihad Airways and ADQ, one of the region's largest holding companies with direct and indirect investments in more than 90 companies, have proposed a transaction that will support the ongoing transformation of the airline and the future growth of the civil aviation sector in Abu Dhabi.

As part of the proposed transaction, a number of

Etihad's businesses providing airline support services will become part of a new ADQ aviation company.

Once the transaction is complete, the airline support services businesses will benefit from being part of ADQ's broad mobility and logistics portfolio, which includes Abu Dhabi Airports and AD Ports Group.

Rise of vegan meals

The vegan option is one of the most commonly requested special meals on board Emirates flights – particularly during January. This is because of Veganuary, a global movement to encourage a vegan diet that runs in January every year.

In 2021, Emirates served up to 10% more vegan meals on its flights in January with 2022 looking to follow that trend. Overall, Emirates served more than 113,000 vegan meals during 2021.

Going Bahamas

Emirates Group has signed an MoU with the Ministry of Foreign Affairs and Public Service of The Bahamas aimed at exploring joint initiatives to promote tourism to the island nation.



On a Roll: The all-electric 'Spirit of Innovation' aircraft is the world's fastest all-electric aircraft. PICTURE: ROLLS-ROYCE.

Spirit of speed: Rolls breaks electric aircraft record

Rolls-Royce has announced its all-electric 'Spirit of Innovation' aircraft is officially the world's fastest all-electric aircraft.

On November 16 last year, the aircraft reached a top speed of 555.9km/h (345.4mph) over three kilometres, smashing the existing record by 213.04km/h (132mph).

In further runs at the UK MoD Boscombe Down experimental testing site, the aircraft achieved 532.1km/h (330mph) over 15km – 292.8km/h (182 mph) faster than the previous record.

Both records have been officially verified by the Fédération Aéronautique Internationale (FAI), the World Air Sports Federation.

During its record-breaking runs, the aircraft, which is part of the UK Government-backed accelerating the electrification of flight (ACCEL) project, also clocked up a maximum top speed of 623km/h (387.4mph), making it the world's fastest all-electric vehicle.

Iraqi approval

EgyptAir Training Academy, which trains Iraqi pilots, cabin crew, engineers and dispatchers, has had its mandate renewed by the Iraqi Airways Authority.

The academy recently received a high-level delegation from the Iraqi Civil Aviation Authority, who were briefed on the latest training programmes and simulators. These include: Airbus A320-A320neo, A220/300, A330/A340, and Boeing B737/800-B777 types, as well as cabin crew training on emergency evacuation trainer (CEET) and the cabin service trainer (CST).

Carbon target

Turkish low-cost carrier, Pegasus Airlines, has set its interim target for 2030 to reinforce its commitment to achieve net zero carbon emissions by 2050.

Managing its operations and activities under a 'sustainable environment' approach, Pegasus aims to reduce flight-related CO2 emissions per unit passenger kilometre (RPK) by 20% by 2030 compared to 2019 levels.









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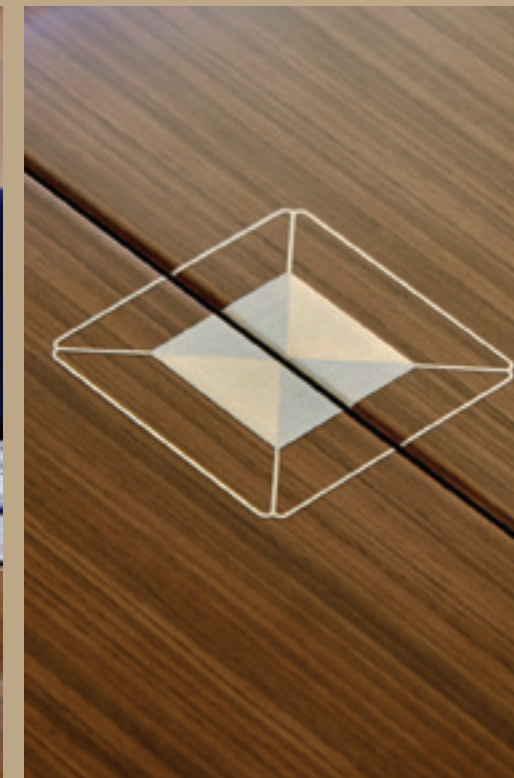
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Jazeera boost

Kuwait-based Jazeera Airways has taken delivery of its ninth Airbus A320neo aircraft from Airbus in Toulouse, bringing the airline’s total fleet to 17 aircraft.

Jazeera Airways chief executive officer, Rohit Ramachandran, said: “As we take delivery of our final A320neo aircraft in the orderbook, we look forward to continue expanding our network and offering our customers more destinations.

“The expansion will also be supported by our recently announced order with Airbus for 20 A320neos, eight A321neos and five further options.”

RAM award

Royal Air Maroc (RAM) has been voted the best airline in Africa at the *Global Traveler* magazine’s 18th annual GT tested reader survey awards.

Royal Air Maroc was also ranked fourth best airline in the MENA region, outperformed only by Etihad Airways, Emirates and Qatar Airways.

Tourism boost

Etihad Airways and ITA Airways, the national carrier of Italy, have signed a codeshare agreement.

The new commercial partnership is designed to boost business travel and tourism between Italy and



PICTURE: TEXEL AIR.

Texel Air unveils first B737-800BCF

Texel Air, an established airline and MRO based in Bahrain, has celebrated the launch of the latest addition to its fleet – a 737-800 Boeing converted freighter.

The 737-800BCF is the first of its kind in the Middle East. A second similar type is due to arrive in September 2022.

These new aircraft will enable Texel Air to carry larger cargo volumes and fly greater distances to new destinations across the Middle East, India, Turkey, east Africa, and other global markets.

the UAE, and will offer travellers more options and better connectivity when transiting through Rome Fiumicino, Milan Malpensa and Abu Dhabi.

Double approval

EgyptAir Training Academy has successfully renewed its European Aviation Safety Agency (EASA) approval for the use of its A320neo, B777-200ER, and B737-800 NG flight simulators.

The academy also obtained approval for adding the upset prevention and

recovery training (UPRT) feature to the Boeing B737-800 NG simulator to comply with the latest local and international legislation related to simulators and flight-training.

China ties

Etihad Airways and Henan Province Airport Group aim to establish a strategic partnership to strengthen aviation ties between the UAE and China.

The memorandum of understanding (MoU) contains plans for Etihad’s

potential operation of regular cargo services between Abu Dhabi International Airport and Zhengzhou Xinzheng International Airport to create the ‘Air Silk Road’ between Henan Province and the emirate.

Munich connection

Qatar Airways is now operating regular flights to and from Munich on behalf of the international logistics provider, DB Schenker, using a cargo version of its Boeing 777.

Animal magic

Qatar Airways Cargo has been accredited with the International Air Transport Association (IATA) centre of excellence for independent validators (CEIV) live animals certification.

Guillaume Halleux, chief officer cargo at Qatar Airways, said: “We are the fourth airline worldwide to become CEIV live animals certified, and the first in the Middle East. This certification is testament to the dedication and detail that we put into transporting the many different live animals that are placed in our custody.”

Pakistan connection

Flydubai and Pakistan International Airlines have signed a new interline agreement, which will provide passengers with greater options for travel between Pakistan and the UAE.

Ghaith Al Ghaith, chief executive officer at Flydubai, said: “Over the years, our two countries have laid strong foundations of mutually beneficial trade relations, friendship and successful cooperation.

“The new arrangement will allow more passengers to benefit from easier connections on our established network, while adding more options to travel to Pakistan.”



PICTURE: ABU DHABI AIRPORTS COMPANY.

Abu Dhabi Airports 40th anniversary

Abu Dhabi Airports marked the 40th anniversary of the official opening of Abu Dhabi International Airport on January 2.

Sheikh Mohammed bin Hamad bin Tahnoon Al Nahyan, chairman of Abu Dhabi Airports said: “Abu Dhabi International Airport has connected the world to Abu Dhabi for 40 years and fuelled the emirate’s emergence as a leading destination for tourism, trade and commerce.

“It was the late Sheikh Zayed bin Sultan Al Nahyan who had the foresight to build the airport and, thanks to his vision, Abu Dhabi Airports has built a legacy forged by collaboration, innovation and service. It is a legacy that will continue to grow over the next 40 years as it supports the ongoing social and economic development of Abu Dhabi and the UAE.”

The airport was first conceived in 1974, in response to the government’s plans to modernise the newly formed UAE.

RJ celebrates

Royal Jordanian (RJ) celebrated its 58th anniversary in December. The national carrier was launched by His Majesty King Hussein in 1963

RJ vice chairman and CEO, Samer Majali, said: “RJ is currently studying pillars of great importance to the airline business including the operating plan and the need for new aircraft, network connectivity, and improving the public’s impression of the company, its services and the product it offers.

“The airline management

greatly appreciates its manpower and strives to maintain their efficiency and qualification.”

■ Samer Majali interview, page 24.

Strategic MoU

Saudi Arabian Airlines (Saudia) and Saudi Aramco’s King Abdulaziz Center for World Culture (Ithra) have signed a preliminary MoU for a strategic cooperation.

The deal reinforces Saudi Aramco’s initiatives to engage Ithra as a consultant in developing an interactive centre that highlights Saudia’s

corporate history and the history of aviation in the kingdom.

The agreement was signed at Prince Sultan Aviation Academy in Jeddah by Khaled Tash, the group chief marketing officer of Saudia, and Talal Al-Marri, the head of public affairs at Aramco.

Trainers in tandem

Spatial, a provider of flight crew simulators, has entered a new partnership with Kuwait Airways.

The company, based in Ras Al Khaimah, will manufacture and deliver three door trainers, a wide-

body cabin emergency evacuation trainer (CEET) and a cockpit trainer, as well as upgrading Kuwait Airways’ existing A320 CEET.

New A380 delivery

Emirates took delivery of its 123rd Airbus A380 superjumbo jet in late December.

Sir Tim Clark, president Emirates Airline said: “The A380 is a truly special aircraft in so many ways. For Emirates, it gave us the opportunity to redefine the travel experience, efficiently serve demand at slot-constrained airports,

and bolster our network growth.

“The A380 will remain Emirates’ flagship product for the coming years, and a vital pillar of our network plans.”

Almaty bound

Kuwait-based Jazeera Airways took off with its first flight to Almaty, Kazakhstan, on December 1. This marks the first ever route to be operated between Kuwait and Kazakhstan, supporting high demand for new tourist destinations, as well as trade opportunities between the two countries.



New horizons: The airline’s four new state-of-the-art Airbus A321neo aircraft will add three new destinations. PICTURE: WIZZ AIR ABU DHABI.

Wizzing ahead... one year on

Wizz Air Abu Dhabi marked its one-year anniversary on January 15 and is looking forward to future growth.

The carrier is “optimistic for a positive post-pandemic year of growth” and is ready to accelerate and expand operations this year.

Wizz Air Abu Dhabi will now fly to 37 destinations with three new destinations announced.

The airline’s four new state-of-the-art Airbus A321neo aircraft were scheduled to serve Nur-Sultan (Kazakhstan), Yerevan (Armenia), and Krasnodar (Russia) from this month.



PICTURE: MENA CARGO AIRLINES



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Airbus brightened up the whole aerospace sector at November's Dubai Airshow but there are clouds over its relationship with key customer, Qatar Airways.

Alan Peaford caught up with CEO, Guillaume Faury, to talk about recovery, future aircraft and relationships.

Faury tale with a happy ending

The world's tallest building stands at almost 830 metres but, on the eve of the Dubai Airshow, it became the world's tallest advertising hoarding as the name of Airbus shone out over the emirate.

It was, perhaps, an indication of the positivity that surrounds the European manufacturer as it climbs above the turbulence of another variant of the Covid virus and the gathering clouds of court action from Qatar Airways.

For the relaxed Guillaume Faury, chief executive of the Airbus group, just being back at a trade show, with the sun shining, allowed him to exude positivity. "We are at the beginning of the recovery. We are not yet there when it comes to being back to 2019 traffic, but it's good to be in Dubai again and at the show after two years," he said. "It's great to see a very dynamic ecosystem, a lot of companies here and contracts being signed. So it smells like we are back on track."

Airbus signed deals for more than 400 aircraft at the show, getting a boost for its A321 and A321XLR in particular – and formally launched the A350F, the freighter variant of its latest fuel-efficient wide-body jet. The success almost surprised Faury.

"When we were looking at the beginning of 2021 and still being in the very difficult situation of managing low production rates, we were more expecting 2022 to be the year of recovery of large orders," he said.

"Some players have been faster than others, and they start to see the horizon and the need to prepare.

And that's what happened, mainly with the A321, but as well on the A220, the A330neo and on the A350 – including the freighter.

"I think 2022 will see more of this. But we

**Continued
on Page 13**

▼ I remain very
optimistic about the
region and I am also
very happy to engage
with customers to
resolve any situations
one by one. ▲

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CONTINUED FROM PAGE 11

are very happy to have large orders, with 2021 giving a strong sign of the recovery.”

Faury acknowledged that Airbus had lagged behind on freighters but said the company had recognised the value of the A350 economically and environmentally.

“We came to the conclusion that it is the right time to launch the product, because of the demand from the market,” he said. “There is a big wave of replacements that’s going to come for the wide-body freighters in service because of the growing importance of carbon. Those older fighters are very carbon intensive.

“We come with new solutions that are much better from that perspective. The International Civil Aviation Organization (ICAO) has published a regulation that makes the current products obsolete from 2027 onward. So it’s the right product at the right point in time and we really want to address that market segment. It is important for us moving forward.”

The Airbus improvements to the A320 family – which includes the current star of the fleet, the A321neo – are pushing the narrow-body to willing airlines as quickly as they come off the production line.

“We’re currently completely focusing on two main things. One is ramping up the production again – a good problem to have – and the second is the development of the XLR. That is a fantastic product that fits with market expectations even more after Covid. And we want to bring that product to the market in 2023,” Faury said.

□□□□□

With the public – now legal – spat with Qatar Airways over the A350; the end of production of the A380, the mainstay of the Emirates fleet; and the hub system hurting as a result of the Covid pandemic; just how does Faury view the region and its prospects?

“This region has grown on many businesses, but also a lot based on connectivity,” he said. “It has been hit by Covid-19 probably more than others from that perspective. But it is showing a lot of resilience. That’s quite impressive, and I am very happy to see that aircraft are flying again.

“So I remain very optimistic about the region and I am also very happy to engage with customers to resolve any situations one by one.”

Faury took over as CEO of Airbus just before the pandemic struck. As well as presiding over a survival, and then recovery, strategy, he has also seen a mood change from the world when it comes to sustainability.

He is passionate about it. Airbus had been focused on reduction of emissions long before it became a number one public issue. But is it just words?

“We truly believe in the need to connect people around the world. That’s absolutely essential to many regions that rely on tourism and trade. Trade is a very important part of human society now, but also connecting people and making sure they can



Company name in lights: The Burj Khalifa emblazoned with the Airbus logo.
PICTURE: AIRBUS.

live in peace together on the planet is vitally important,” he said

“We really believe in the role of aviation and we think it would not make sense to go backwards when it comes to connecting people. But, at the same time, we fully recognise that global warming is probably the biggest worldwide challenge to humanity. We want to be part of the solution.

“We recognise that each and every tonne of carbon put in the air today will contribute to global warming. So there is urgency, but we also see solutions. And the more we work, the more solutions we see.

“There’s a lot of work to be done. It’s about the aircraft; it’s about the fuels – and the energy sector has to back us; but it’s also about the level playing field in terms of regulations that need to be created.

“We really believe we have solutions to put into service, based on existing aircraft, that are very competitive when it comes to carbon emissions. But only 13% of the fleet is composed of modern aircraft with low fuel burn. Plus, there is the fact that we can grow the use of sustainable aviation fuels (SAFs), which are in very limited use today. Some 50% of SAF in the mix on all the aircraft we are delivering every day is possible.”

□□□□□

However, Faury sees beyond this. “We want to go to hydrogen. It’s feasible and it’s possible. It will require a lot of engineering work but that’s what we’re doing now.

“Hydrogen is the only way to have a fuel on board that doesn’t put carbon in the air. We are trying to be as fast as we can. And we are very happy to see the momentum growing.”

The CEOs of manufacturers are rarely comfortable putting dates on their visions. Not so Faury. “We want to have a first hydrogen aircraft hitting the market in 2035,” he said.

“Why 2035? Because we started the development of the technologies two years ago. We think we need roughly five years to mature those technologies as they are based on existing things and we don’t need to reinvent the rules of physics.


“Then we need two years to prepare the launch of the programme, finding the partners, the location for the plants, preparing the industrial system and the contracts and funding for these big investments. So 2027-2028, we’ll be ready to launch the programme.

“It will take to 2035 to be certified, so the credibility of this timeframe is very strong.” 

AIRBUS’ BRUSH WITH QATAR OVER PEELING PAINT

Qatar Airways began court proceedings in December over an issue of paint degradation on its new fleet of Airbus A350s and has withdrawn some 20 aircraft from service.

Speaking at London’s Aviation Club in December, Qatar CEO, Akbar Al Baker, said the Doha airline had halted outstanding orders for 23 of the type.

“The issue is a serious matter. We don’t know if it is an airworthiness issue or not,” he said. “There is an accelerated degradation of the skin of the aircraft but the real cause of it has not been established by Airbus.” Airbus said several airlines have experienced occurrences but not to the extent of the Qatar fleet. The OEM said it has proposed a wide range of solutions, which are being implemented by the other affected customers. It has also offered repainting services to Qatar but this has not been taken up by the Doha carrier. 

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AIRBUS

Cost reductions, a new strategic partnership and the intention to enter one of the airline industry's major alliances will determine Oman Air's course over the coming years. **Alan Dron** reports.

OMAN ON A MISSION

Oman Air's transformation plan has significantly reduced the carrier's costs as it prepares for the return of business post-pandemic.

The airline revealed it was embarking on the plan in September 2019. It said the project would look at issues such as fleet harmonisation and organisational restructuring, and sought suggestions from staff as to how it could improve its performance. However, until now, few details have been available.

Speaking at the Arab Air Carriers Organization annual meeting in Doha, CEO, Abdulaziz Al Raisi, revealed some of the measures that the airline has undertaken over the past two years.

"We were struggling because our costs were so high," he said. "We could not really get back to breakeven, or close to breakeven."

Part of the reason, said the CEO, was that 99% of the airline's workforce was Omani and were being paid at typical Omani salary levels. The airline was proud to be employing local citizens but this affected its costs. "For example, we will pay a ramp driver around \$1,500. In neighbouring countries, Asian drivers get \$200," explained Al Raisi.

Subsidies from the Omani Government have also reduced over the past few years, he noted. Oman Air received some government aid through the pandemic, but also began to tap the financial markets for support.

To improve the financial situation, internally the company made better use of staff by introducing multi-



"We managed to renegotiate some of our big contracts with major vendors and suppliers. That really helped quite a lot in reducing our costs."

Abdulaziz Al Raisi

PICTURE: OMAN AIR

tasking for personnel, redrafting contracts if necessary.

"Externally, we managed to renegotiate some of our big contracts with major vendors and suppliers. That really helped quite a lot in reducing our costs," said the CEO.

Overall, the transformation plan succeeded in reducing costs by 29%.



Al Raisi believes that the market will not return until the latter half of this year and that the airline's network will not go back to the 2019 model. A major factor in shaping its future will be the strategic partnership with Qatar Airways, announced last summer.

"There will be a lot of code-sharing, particularly to the US market and to South America. There's a lot of synergy in terms of networks, etc," he said.

At the moment, the company is flying around 40% of its 2019 network.

A huge amount of work at a strategic level is being put into the codeshare, with maintenance and IT being two other areas where cooperation was being enhanced, he added.

Oman Air does not foresee any new aircraft orders in the near future, with the remaining examples of its Boeing 787-9s and 737 MAX 8s still being delivered. These will replace, respectively, the company's Airbus A330-300s and Boeing 737-800s. The new aircraft will maintain the fleet's size, rather than increase it.



Lure for tourists: The agreement could lead to many more European visitors enjoying the lush greenery that results from the Indian Ocean khareef, or monsoon, that irrigates the south-west of Oman around Salalah.

PICTURE: OMAN TOURISM.

OMAN REACHES EU OPEN SKIES MILESTONE

The first milestone that could lead to a far-reaching agreement liberalising air connections between Oman and the European Union (EU) has been reached.

The two sides have initialled a comprehensive air transport agreement (CATA), beginning a five-year implementation process leading to a full-scale 'open skies' agreement.

The process will allow full access for any EU airline to Oman, while Omani flag-carrier, Oman Air, and low-cost carrier, SalamAir, will be able to fly to any destination within the EU.

The agreement "signifies a tremendous achievement and defining moment for aviation and tourism in Oman, as well as in the EU", said Oman Air CEO, Abdulaziz Al Raisi. "For Oman Air it means more choice of destinations and travel options across an enhanced route network. The agreement would open up Oman's tourism attractions to a much wider potential clientele."

The agreement is also likely to bring particular benefits to SalamAir. "As we have taken delivery of our new Airbus A321neo long-range aircraft, it is a timely opportunity for its operation on European routes," said CEO, Captain Mohammed Ahmed.

A similar agreement between the EU and Qatar came into full effect in late 2021. This sparked discontent among some European airlines that felt that Qatar Airways was getting a far better deal, with access to any EU airport, whereas EU airlines would gain limited benefits in being able to increase flights to Doha, the sole destination in Qatar. However, no such complaints have so far been heard against the Oman deal.



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PICTURE: BILLYPIX



▼ Our main target was simply to keep surviving. ▲
CAPTAIN AMR ABU ELENIN

EgyptAir Sphinx ahead

New aircraft and a new low-cost subsidiary are waiting in the wings for EgyptAir in 2022, but it will have to pay back large government loans and is negotiating its way through a technical problem with some new arrivals. Alan Dron reports.

As it starts its fightback from the effects of the global pandemic, a bullish EgyptAir plans to set up a new low-cost-carrier (LCC) subsidiary, Air Sphinx, in April 2022.

The new airline will be based at the recently opened Sphinx Airport, Giza, just west of Cairo. It will start services with two of the 29 Boeing 737-800s in EgyptAir's fleet. Two more 737-800s will follow within months, with further expansion dependent on initial progress.

Like many airlines, EgyptAir concluded 2019 well satisfied. The company's financial year runs from July 1 to June 30 and 2019 "was the best year ever", according to Captain Amr Abu Elenin, chairman of EgyptAir Holding Company.

Then, of course, everything came to a grinding halt, as the pandemic grew from being a local problem in a little-known province of China to the greatest economic dislocation the world has seen for almost a century.

From March 19 2020, Egypt shut down its airspace to international services except for

repatriation and medical flights (domestic flights continued until June 1).

Almost all airlines worldwide stopped operating, cut salaries and reduced the number of employees.

As the national flag-carrier, EgyptAir felt it had a responsibility to its staff during the pandemic, said Elenin. "We didn't fire any employees. There were no salary reductions, except for executives."

May 2022 is the 90th anniversary of EgyptAir's first flight and Elenin was determined that the airline should reach that anniversary: "Our main target was simply to keep surviving."

Support came from the Egyptian Government, but in the form of loans, as opposed to cash handouts or financial guarantees that many other airlines received from their national politicians.

The loans, totalling E£5 billion (around \$320 million) undoubtedly helped, said Elenin. But loans have to be repaid and he is in no doubt that the impact of the pandemic will be felt by the company for several years.

Continued
on Page 19 

New beginnings: Air Sphinx will start services with two of the 29 Boeing 737-800s in EgyptAir's fleet. Two more 737-800s will follow within months, with further expansion dependent on initial progress.

PICTURE: EGYPTAIR.



CONTINUED FROM PAGE 17

EgyptAir was, however, able to tap into the demand for dedicated cargo flights.

Normally, around 50% of all air cargo is carried in the holds of passenger aircraft. With scheduled passenger flights drastically cut for much of 2020, EgyptAir operated passenger airliners in freighter mode to help move urgent freight, which led to an increase of around 50% in cargo traffic, partly through the addition of new routes.

There was a particular increase in demand for the export of Egyptian medical equipment.

Now, however, assuming Covid-19 is slowly brought under control, 2022 is looking promising.

The past decade has seen the low-cost carrier (LCC) phenomenon spread to the Middle East with EgyptAir now planning to get involved via Air Sphinx.

Wherever they are introduced, LCCs tend to increase the size of the market, by encouraging new passengers to take to the air, or by allowing existing travellers to fly more frequently.

Egypt's domestic market has grown recently through the opening of several new airports. As well as Sphinx, airports at El Alamein and the new Egyptian capital, east of Cairo, are now in operation.

Internationally, one of EgyptAir's aims in recent years has been to expand its African network and this initiative is continuing: several new destinations are under study and Kinshasa, Democratic Republic of the Congo, will be added to the network in summer 2022.

Further afield, Düsseldorf has recently been added to the route map and Dublin is on the way.

With the recent return of Russian tourists to Egypt, EgyptAir has started to operate direct flights from Moscow to the resorts of Hurgada

New A220s hit by engine problems

There has been a growing increase in Egyptian domestic passenger flows in recent years and EgyptAir has been replacing its old Embraer 170s with new A220-300 aircraft.

The carrier's regional division, EgyptAir Express, took delivery of the first new aircraft in December 2019 and the last of the 12 arrived late in 2020.

Replacing the Embraers with the Airbuses doubles the available capacity – 140 seats compared to 70.

However, further upgrades are now having to be made after the fleet experienced a significant problem with the combustion chamber of the Pratt & Whitney PW1500G engines – the only powerplant offered with the aircraft.

Arabian Aerospace understands that this has been sufficiently serious to require the replacement of 15 of the 24 engines on the wing, with the remainder scheduled to be changed in the coming months.

A Pratt & Whitney spokeswoman confirmed: "A limited population of PW1500G engines have recently been removed from service, due to early generation hardware, with upgrades identified to bring them to the latest design standard that will increase durability and time on wing."

"We are working closely with the affected airlines to minimise disruption and return aircraft to service."

She did not give technical details of the problem, or say which other airlines were affected.

Airbus also issued a statement saying it was: "working closely with Pratt & Whitney to provide the best level of support to those of our customers impacted to ensure that disruption to their operations is minimised".

and Sharm El-Sheikh, popular beach holiday destinations for Russians seeking respite from their long, cold winters.

Tourism is a crucial revenue stream for the country and Egypt's popularity among Russians can be seen from the fact that, in the recent past, EgyptAir was offering as many as 30 weekly flights to the two Red Sea destinations.

EgyptAir's fleet is also scheduled to be updated in the next few years. At present, the airline operates 65 passenger aircraft and three freighters.

At the lower end of the size range, the remaining nine Embraer 170s (of an original 12) operated by regional division, EgyptAir Express, were offered for sale in late November 2021, with 12 replacement Airbus A220-300s now all delivered.

Additionally, said Elenin, EgyptAir needs to replace 10 wide-bodies and negotiations on replacements were ongoing. He declined to say what their replacements might be.

The company also operates six 787-9s and a further two are scheduled to be delivered by February 2023.

Recently, EgyptAir Holding Company has streamlined its organisation by merging nine of its subsidiaries into a holding company and only three subsidiaries. This move is designed to cut costs and reduce inter-company transactions. As with the measures to combat Covid, EgyptAir aims to do this without imposing redundancies.

Services are returning to pre-Covid frequencies. Comparing October 2021 to October 2019, operations have returned to 92% of the pre-pandemic figure.

The company typically offers 60 to 70 flights a day (80 to 90 on weekends) and these are expected to increase in 2022 as the world slowly returns to normality.

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Our job is connecting people and stimulating markets where we see the potential. ▲
ADEL ALI
PICTURE: AIR ARABIA

Sharjah-based Air Arabia is lining up its latest joint venture (JV) airlines in Armenia and Pakistan. **Mark Pilling** reports.

Air Arabia on course for start-up JVs

Air Arabia is hoping that new joint venture airlines being planned to start-up this year in Armenia and Pakistan will boost its recovery prospects and add new, vibrant, markets to its diverse and sprawling network. The carrier, which in Q3 2021 announced its fourth consecutive quarter of profit since the pandemic began, has throughout its 18-year history taken the joint venture route. Its hit rate of success versus failure is good overall. While Air Arabia saw its JV operations in Nepal and Jordan fizzle out in 2008 and 2018 respectively, Air Arabia Maroc, which started up in 2009, Air Arabia Egypt, launched a year later, and its latest start-up, Air Arabia Abu Dhabi (with partner Etihad Airways), which began flying in 2020, are all contributing nicely to the cause. The carrier now has bases in Sharjah, Ras Al Khaimah, Abu Dhabi, Alexandria, and Casablanca.

The carrier's Adel Ali, the former Gulf Air and British Airways executive who had led the airline since its founding in 2003, confirmed at the Arab Air Carriers' Organisation annual meeting in November that both new JV airlines will be operating in the second quarter of 2022. He is confident his business has the ingredients necessary to make them successful. "Until the end of 2019, our business model has worked for 18 years in the UAE, 12 years in Morocco, and 10 years in Egypt," said Ali. "Our job is connecting people and

stimulating markets where we see the potential. And, while Air Arabia works extremely well in the Arab world, it doesn't have to be Arabia, as long as the business model remains intact. "So, we looked at the opportunity in Armenia. We felt that, from a geographical location and from a business potential, the country is moving in a positive direction, particularly with tourism." In July, Air Arabia announced a partnership with The Armenian National Interests Fund (the country's sovereign wealth fund) to launch a low-cost national carrier, called Fly Arna, based at Yerevan's Zvartnots International Airport. The airline will operate between two and four narrow-bodies, mostly likely Airbus A320s, in its first year. Finding the right partner is critical for any JV and especially in the politicised world of airlines. Air Arabia's second JV opportunity emerged in September in Pakistan. There it is working with the Lakson Group, one of Pakistan's leading business conglomerates. "We were approached by a very long-standing, good business family in a company in Pakistan," explained Ali. "When we looked at it, we saw more than 200 million people live in the country with a lot of domestic and international opportunities."

Pakistan's airline history is littered with optimistic start-ups followed by failure, so "we started the case very carefully", explained Ali. "Pakistan has got a few airlines, but they wanted one with a track record of low-cost technical support." The carrier, called Fly Jinnah, will initially be based in Karachi, serving a range of domestic routes before branching out into international services. Whether via its joint ventures or through organic growth of the core Air Arabia brand, the business is set to take advantage of the expected traffic rebound, travel restrictions depending. During the first nine months of 2021 Air Arabia opened 43 new routes as it took opportunities to launch operations and trim back on underperforming stations. From January to September 2021, it carried 4.2 million passengers, a 34% rise compared to 2020, when the impact from the pandemic was at its most severe. At the end of Q3 2021 it had 58 aircraft in service, with 52 Airbus A320neos and six A321LRs on lease. Ali hopes that its entire fleet will be back flying by the end of March. From 2024, the carrier will begin taking delivery of the first of 120 A320-family jets ordered at the 2019 Dubai Airshow, including 27 A321LRs and 20 of the longer-range A321XLRs, which can open new route possibilities. ▲



▼ The MROs are pretty much on max capacity at the moment. I can't offer anyone a slot for the foreseeable future. ▲
FRASER CURRIE

CURRIE'S HOT PROSPECTS

As the region's maintenance and engineering businesses gather in Dubai for MRO Middle East, Joramco, the leading independent MRO business, will be there – but with no slots available through the high season, the focus is on building capacity for the long term.

Alan Peaford reports.

Joramco's reputation as an independent MRO provider has been growing rapidly over the last four years and now there are plans to expand the footprint. Having started 60 years ago as the in-house maintenance business for Royal Jordanian, Jordan's national carrier, Joramco became a private business – with RJ holding a stake – in 2000 and sailed its own course until it was bought by Dubai Aerospace Enterprise (DAE) in 2016. There has been no looking back. With significant investment and a highly skilled Jordanian workforce, Joramco has continued to grow, and CEO, Fraser Currie, is confident that the trajectory will continue. "Our focus is very much on growing the business footprint in Jordan. We've secured a land deal at Queen Alia International Airport. And we are currently looking at optimising that land with additional hangars. The new hangars will cater for additional wide body and narrow body maintenance as well as specialised paint. The aim will be to increase space – especially for Boeing 777 aircraft – to expand capacity for the region's best-selling wide-body.

"Our model will continue to evolve with and increased capability on the new-generation types like the 787, neos and the 737 Max," said Currie. "Our design of hangars, which are very flexible spaces capable of accommodating multiple types, as opposed to being built specifically for one type, works very well for us as we can position the wide-body in the hangar with narrow-bodies surrounding it. "We'll also be looking at adding new types both narrow and wide body based on analysis of the market and specific customer demands. "So it's ever-evolving, but we see triple sevens as a key part of our future." Joramco kept working throughout the pandemic, providing parking, ongoing maintenance and return-to-service checks. "We fared very well through the pandemic and 2021 results were strong, due to our large and diverse capability portfolio," Currie said. "Going forward, we need to make sure that the pillars we have within our business will give us the protection against any future aviation cyclic downturns. "Fortunately, we already have a broad span of

approvals from the new generation aircraft such as 787, neo's and 737 Max through to B777 and older legacy A340s, 737 and 320s." That wide range of type approvals, including those from the European Aviation Safety Agency (EASA), the General Civil Aviation Authority (GCAA), Jordan, Bahrain, and India, has stood the company in good stead. Now, as more and more airlines need to get back in the air, the hangars are full. **A**s well as the national carrier, Joramco counts a number of big-hitter airlines among its customer base, including Emirates, Flydubai, Ryanair and Indigo. "For us, as an independent, we have airlines offering us significant amounts of work," Currie said. "But we have to maintain the balance; we need to service all our customers and achieve the optimum mix of aircraft types, check types to gain maximum efficiencies and productivity. "Independent MRO's can't cater for the entire fleet size of an Indigo or Ryanair, it's about providing the best service. These airlines expect strong commercial terms as well as industry leading turnaround times, with quality and SMS a given." The new hangars – and a proposed paint shop – cannot come soon enough for Currie and his team. "The MROs are pretty much on max capacity at the moment. I can't offer anyone a slot for the

foreseeable future; we're just absolutely full on. In terms of the business volume, it's never been busier," he explained. With the growth in facilities in Jordan, Currie sees Joramco's location as a major strategic advantage. "We're 3.5 hours flight time from central Europe and about a five-hour flight from India and that's well within the normal range for narrow bodies to position for maintenance," he said. "I would anticipate further building in India as the airlines are going from strength to strength," he said. "Many of our customers have some capability for in-sourcing some of their maintenance, I don't see that model changing. But it's the independents, right now, that are doing extremely well. And I just don't see that dynamic shifting anytime soon.. "That's why we're expanding in the way that we are, however, demand will continue to be cyclic for some MROs and it will come down to the level of service delivery. But, honestly, there's a place for independents and a place for in-house with the airlines." Currie is looking forward to this month's AIME-MRO Middle East event in Dubai, which will be showcasing the latest technologies. It will also allow organisations like the independents to meet up with their airline customers and the airframers to share ideas about future practices and technologies. "I think digitalization for us, as a heavy

airframe business, doesn't necessarily mean artificial intelligence (AI) and drone inspections of fuselages," Currie said. "For us it means following the OEMs for predictive maintenance with the airlines. When that really takes off it is going to change the MRO model, because that, in itself, will drive an MRO to follow the predictive maintenance model and be more efficient. "The other side of digitalisation is the actual planning of the activity and the production of the task cards that we work with to perform the checks." Joramco has been a strong advocate of EmpowerMX which is the one of first software suite of applications in the aviation maintenance domain to have a fully cloud-based solution). "We were an early adopter FleetCycle the bespoke MRO software solution provided by EmpowerMX, which is becoming very popular with many others including OEM's and airlines with in-house MRO capability," said Currie. "The next stage of the process with fleet cycle, will be full digitalization. Our goal is to be paperless. That's really what digitalisation means

VIDEO DATE
Joramco will be the sponsor of a daily video Show Business programme coming out of the AIME-MRO Middle East show on February 22-23. This can be viewed on Times Aerospace TV's YouTube channel.

for us "Nonetheless, I see it AI and VR as a major benefit in training going forward, being able to do the training in house in a much more efficient way." Training remains a key element of the Joramco business philosophy. It has its own technical academy and is reaching out to young men and women in Jordan's schools to look at an engineering career. "We have always had the ability to do what I still call ab initio training," said Currie. "We take somebody from school or college and give them the theoretical and the practical training. Many other colleges have to go out and source the practical training. "Often, unless you're very fortunate and live in an area of the world like Schiphol, for example, you're having to travel, to pick up and move away from home straight away. Some younger students prefer being at home in their early career and want to travel. "So we've got this microcosm in Jordan whereby we have great talent coming out of school. Jordanians have a very technically oriented mindset. A lot of men, but also a lot of women, go after technical degrees at university. So, that's the mindset of engineering already set with the individuals and their families before we try and attract them in. "Getting them into a four-year programme and being able to turn them out as licenced engineers is something we have to keep focusing on." ▲

■ MRO plans for a bumpy road ahead, page 51.

With more than 40 years in the airline business Samer Majali is, perhaps, the Middle East’s most experienced CEO, having led Royal Jordanian, Gulf Air and Saudi Gulf. He is now back in Amman as vice-chairman and CEO of RJ. He talked to **Alan Peaford**.

It’s a taxing time for airlines



Samer Majali always carries a calm, unflappable look, vital perhaps for an industry that can hit you with unexpected curve balls at any time. A veteran of the annual Arab Air Carriers Organisation (AACO) conferences, Majali arrived in Doha ready to add weight to the industry’s push for recovery. But, having experienced recoveries from the cyclic lows that aviation often suffers – this latest one is the biggest challenge. A double blow of rising fuel prices and inconsistent regulations are hampering the recovery of airlines in the region, Majali said. “The main worry is that governments will reimpose things with this new resurgence of cases,” Majali warned. “The other one is the increase in fuel prices, which was something that we didn’t expect to be as rapid as it has been in recent months. “I mean, the fuel prices were really low in 2020. But there was no flying anyway, so nobody could take advantage of that. However, this year, the fuel price is really a big drag on airlines’ plans to recover.” RJ has currently recovered between 65 to 70% of its original network in terms of flights and frequencies. “We’ve announced a five-to-seven-year plan to really

“Our biggest worry is that governments will try and reimpose what they imposed last year, another sort of knee jerk reaction.”
Samer Majali

PICTURE: BILLYPIX

improve the destinations within the region and beyond. Royal Jordanian has a very good brand within the Levant region, and this is what we are leveraging,” said Majali. The new plan also includes a fleet renewal. “Again, the fleet over the past difficult period in our region has not been renewed as fast as we would like,” he said. “So now we’re currently in the process of renewing the fleet, plus growing at the same time.” With the Omicron variant of coronavirus now spreading globally, Majali is concerned about how different governments will respond. “Our biggest worry is that governments will try and reimpose what they imposed last year, another sort of knee-jerk reaction,” he said. He and his AACO colleagues are also still recoiling from the worst financial blows in aviation history. “The assistance to airlines for the losses of last year is a big issue, irrespective of what’s happening now,” he said. “In the next year, somebody still has to find a way to solve what happened last year from a financial perspective.



There has been a mishmash or mosaic of different assistance given by governments to airlines. In the United States, 50% of the losses were covered by the US Government. Some of the US CEOs are saying that they’re cash rich at the moment. “In Europe, it’s been probably 15 to 20%, and Asia 20-25%. Yet some other countries have got nothing, no assistance from their governments. So it’s always a challenge, trying to convince governments that these are entities that require support. They are heavily damaged and this is all not their fault.” And, while all these things come together to vex even the most experienced of airline chiefs, perhaps the biggest challenge on the horizon is the industry’s commitment to sustainability targets. Majali is upbeat about this challenge but warned that it needs a broader approach than just focusing rhetoric on the airlines. “Sustainability is a challenge,” he said. “I think there is time enough to be able to sort yourself out. We’re talking about a 30-year period for the airline industry to get to zero emissions, which is doable, but it does require everybody to be involved, not just the airlines. “The manufacturers have to be very engaged in terms of coming up with these new products. The incentives have to be given to provide sustainable aviation fuel at affordable prices, not just load the airlines again. “It needs all stakeholders that are involved in the aviation business to actually help and, obviously, the call is always to governments not to keep on imposing taxes on top of this. “Airlines will have to make up the difference through carbon offsets. And that is, in itself, a tax in the end, but it’s our job to do so. However, we prefer not to have to pay additional taxes beyond that.”



Converted freighter: MENA Cargo’s initial equipment is this Boeing 737-300F. Three more modern 737-800F conversions are scheduled to join the fleet this year. PICTURE: MENA CARGO.



MENA means business as cargo “goes through the roof”

New operator, Bahrain-based MENA Cargo, is the latest airline to tap into the continuing surge in freight traffic in the Middle East.
Alan Dron reports.

Over the past two years, air cargo capacity has become one of the most in-demand assets in commercial aviation. Passenger flights normally carry at least 50% of air freight tonnage. However, with many of them largely grounded in early 2020, the need for cargo space rapidly became desperate, leading to many airliners being pressed into service as makeshift freighters. Two years on, cargo capacity is still in high demand, with the added need to cater for ever-growing quantities of e-commerce goods. These are frequently not particularly heavy, but bulky, meaning that cargo aircraft ‘bulk out’ before they ‘weigh out’. Freight capacity in the Gulf has expanded significantly, with existing cargo specialists increasing their fleets and building new ground infrastructure to cope with requirements. The marketplace has also seen the arrival of new entrants such as MENA Cargo, a new division of Bahrain-based MENA Aerospace Enterprises, which handles things such as business jet charters, avionics repairs, and ground facilities management. Operational since November 1 last year, MENA Cargo began operations with a single Boeing 737-300F freighter converted by US specialists PEMCO, but is rapidly ramping up capacity. A 737-800F freighter, with 22-tonne capacity compared to the 17 tonnes of the earlier -300F, is scheduled to join the fleet by March this year, followed by two further -800Fs in Q2 and Q3. All are recent conversions, one by Boeing itself (an -800BCF, or Boeing Converted Freighter) and two from other providers. The -800s also have the advantage of a longer range than the -300F. All three aircraft are being acquired on operating leases, although the company has not ruled out purchasing future aircraft outright. Additionally, MENA Cargo is getting into the long-haul cargo marketplace with a Boeing 777-200ER in ‘passenger-to-freighter’ (P2F) configuration, leased from Portuguese

company EuroAtlantic. The first flight, from Hong Kong to Almaty, Kazakhstan was operated on December 13. Ideally, the new airline would like to acquire dedicated 777 freighters, but available conversion slots across the globe for passenger 777s are full until 2023 at least. P2F versions are the next-best solution. In the longer term, MENA Cargo is aiming for a critical mass of 15 to 20 aircraft. “Cargo is going through the roof,” said MENA Aerospace Enterprises board member, Brian Hogan, at MENA Cargo’s launch. “If we had more aircraft now, we think we could fly them continuously 24 hours a day.”



The newcomer has plans for several distinct markets, said Hogan. Saudi Arabia is the first and closest, but the wider Middle East, south-east Asia/China and Africa are all targets in the near-term. Bahrain, with its increasing cargo infrastructure, such as the island’s global sea-air logistics hub launched last October, aims to be the fastest-growing regional multi-modal hub in the Middle East. “We’ve looked at the regional markets: where is the growth, where are the gates to the global markets,” said Dr Mohammed Juman, founder and managing director of parent company, MENA Aerospace Enterprises. “The [cargo] growth we’ve seen is mainly in the Gulf area, Africa and SE Asia, so our thought process was, let’s try to link these markets.” Hogan envisages three to four aircraft based at the carrier’s Bahrain hub, moving initially into the large Saudi Arabian market, then SE Asia. A second hub is planned for SE Asia, although a location has not yet been decided. Although several freight operators are expanding their fleets, and belly-hold capacity in passenger aircraft is growing as airlines return their aircraft to commercial service, MENA Cargo believes that there is more than sufficient traffic for it to prosper.





WHAT'S YOUR EXCUSE FOR CHOOSING COMPLEX?

WHEELS AND BRAKES IT'S THAT SIMPLE

Green for go: Etihad showed several sustainability initiatives at the Dubai Airshow. PICTURE: BILLYPIX.



THE BURNING QUESTIONS...

There are dozens of outstanding challenges at government, industry and airline level as the Middle East and Gulf deliberates a strategy for sustainable aviation fuel (SAF). Mark Pilling reports.

The public relations assault by Etihad Airways to assert its environmental credentials at the Dubai Airshow was impressive. The carrier announced at least five partnerships and collaborations with a range of players at the show, describing it modestly as the “most comprehensive, cross-organisational aviation sustainability initiative ever undertaken”. Others can judge the level of PR hyperbole, but there is no doubt that Etihad is the most vocal airline in the region when it comes to demonstrating its commitment to the 2050 target of achieving net-zero carbon emissions from its operations. Whether the actors in the Middle East and Gulf are mute or noisy, like all important aviation markets, they want to produce a roadmap for decarbonisation. And, while there is conviction to achieve net zero by 2050 – the UAE is one of the first states in the region to commit to that target – no one knows how to get there. There are a host of complex problems and questions to solve. Some will be answered in the coming year, while others will take much longer. At the crux of the issue is that the Middle East accounts for 31% of global oil production, 18% of gas production, 48% of proved oil reserves, and 40% of proved gas reserves (data for 2020 from BP’s 2021 Statistical Review of World Energy). Entire nations are built on oil and gas exploitation. However, as respected International

Energy Authority executive director, Dr Fatih Birol, said: “More than at any other point in recent history, fundamental changes to the economic model of resource-rich countries look unavoidable. “The future will look very different from the past,” he added, underscoring the need for oil and gas-producing economies to reduce their reliance on fossil fuels and rapidly shift towards cleaner alternatives. “We need to deploy traditional strengths in support of economic diversification and low-carbon transformation,” he said. “First movers – countries that take a proactive approach to this – could do especially well.” Regional leaders are acutely aware of the crucial strategic decisions to take around the energy transition. They think and work decades ahead. For example, in the UAE: “They know full well that peak oil demand will come soon, which is why they are investing very heavily in clean energy alternatives,” said Alejandro Rios, who is director of the Sustainable Bioenergy Research Consortium and a chief research scientist at the Khalifa University of Science and Technology in Abu Dhabi. The region is examining whether to establish local production of sustainable aviation fuel (SAF), what focus to place on producing low-cost, clean energy to make low-carbon fuels using various methods, and what investment to put into the production of hydrogen, explained Rios.

Continued on Page 28 



Possibilities: The oil majors in the Gulf are examining whether to manufacture SAF in the region.
PICTURE: ADNOC.

CONTINUED FROM PAGE 27

In the UAE, a committee to look at sustainable and low-carbon fuels for aviation was formed by the government in October 2020, led by the ministry of energy and infrastructure. This, in turn, created two task forces; the first led by the office of the undersecretary for electricity, water, and future energy to look at SAF, and the second, led by the Abu Dhabi National Oil Company (ADNOC) to examine low-carbon aviation fuel (LCAF).

“In the first phase, the work of these task forces is to gain an understanding of where the UAE is today with its ability to produce SAF and LCAF,” said Rios, who is an advisor to the SAF task force.

“When you start looking at the technologies, feedstocks, and pathways to produce SAF in the UAE, there are not that many options,” he explained. There is no fresh water and no arable land in the state, making the option of biofuel production as a SAF feedstock a tough proposition.

As long ago as 2011, the Masdar Institute in Abu Dhabi began studying the potential of growing halophytes, plants that can grow in the desert with salt water, that could be harvested to make biofuels. The work shows promise, said Rios. However, he added that it will take significant time to develop biomass at commercial scale.

Although the UAE is one of the highest producers of waste per capita in the world, studies have shown only a relatively small proportion of its demand for aviation fuel could be manufactured, even if all the municipal waste feedstock in the country was used, said Rios.

A study into waste-to-fuel opportunities was one of the projects announced by Etihad at the Dubai Airshow. It signed a deal with Tadweer, the Abu Dhabi Waste Management Center, to

“explore the processing of commercial, industrial, and municipal solid waste to fuel, fulfilling the airline’s stance on the development, production, and integration of a valuable biofuel supply chain in the region”. If successful, Etihad would expect to have first call on the SAF produced from this source.

The UAE task forces have plenty of work ahead to develop a SAF/LCAF roadmap, although the building blocks are there, explained Rios. And, while the potential of waste and halophyte SAF feedstocks is limited, the UAE does have non-fossil fuel energy cards to play.

“The UAE has access to plentiful and low carbon energy and is a powerhouse in the production of clean energy,” said Rios. For instance, it has large solar power fields that help it generate one of the world’s lowest tariffs for solar power.

“In addition, Abu Dhabi successfully initiated operations in April 2021 at the Barakah nuclear power plant on the Arabian Gulf Coast. This plant is expected to deliver up to a quarter of the nation’s electricity needs when fully commissioned.

“When you consider the production of e-fuel or synthetic fuel, the highest cost is for energy. So, having access to low-cost energy is a big advantage for the UAE,” said Rios. The UAE is investing strongly in a host of projects to develop hydrogen and renewable fuel industries, as well as carbon capture technology. The aim is to reduce the dollar and carbon cost of manufacturing oil products, either through extraction processes or in the downstream refinery operations in the first phase, and later to enable the production of e-fuel and synthetic fuel at scale and low-cost.

However, with the scale up of electric and hydrogen-powered aircraft years away, “we are 100% convinced that an increase in the use of

SAF is the only way ahead for aviation”, said Alfonso Berrocal, business development manager of oil products and SAF at Argus Media, a global business that produces price assessments and analysis of international energy markets.

“Oil majors are investing in SAF production as they see the market changing,” he said. “But it is a very complex issue. Their big challenge to make the transition is to keep optimising their margins on the cash cow of fossil fuel and using the profits to develop SAF.”

During 2022, the future for sustainable fuel production in the region will be hotly debated. “There is clearly a rationale for SAF production in the Gulf, which is less developed compared to the US and Europe,” said Alastair Blanshard, sustainable aviation lead at global consultancy, ICF.

“One advantage the Gulf has is a huge availability of fossil fuel infrastructure,” said Blanshard. This can be used to co-process biomass feedstock alongside conventional fuels and there will be opportunities to re-purpose former oil and gas plants to make renewable fuels.

As the wheels grind in high places to decide on strategy, the flow of airline announcements will continue.

Emirates has already said it will work with GE to conduct a test flight using 100% SAF in one of its Boeing 777-300ERs by the end of 2022, while Saudi Arabian Airlines has appointed a full time executive to head up its sustainability work.

Qatar Airways, as part of an over-arching commitment from the Oneworld alliance, is to take SAF in San Francisco from 2024 as part of a deal with producer Aemetis.

It is signals and commitments like this from major customers like these that grab the attention of the manufacturers as they make their future fuel decisions. ▲



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VOLOCOPTER SWITCHES ON THE NEOM FLIGHTS

Neom, the huge new city being built on Saudi Arabia's Red Sea coast, has created a joint venture with Germany's Volocopter to provide air transport for the conurbation. Alan Dron reports.

Neom and Volocopter have agreed an order for 10 two-seater VoloCity passenger vehicles and five VoloDrone cargo vehicles, with the aim of creating an electric vertical take-off and landing (eVTOL) ecosystem for logistics, tourism and emergency response.

Neom's transport system will be designed to move people and goods without extensive surface infrastructure, preserving the natural environment.

The eVTOL system will start operating within the next two to three years and connect Neom's main urban development, 'The Line', with the Oxagon industrial city and other regional destinations.

"The initial plan is to have fixed routes, implying there will be vertiports from which the aircraft will take off and land," said a VoloCopter spokeswoman. "It has not yet been decided whether the VoloCity fleet will be crewed, remotely piloted, or autonomous. This will likely evolve over time as the city is designed and prepared for operation in 2025."

The vehicles will fly too low to be tracked by conventional air traffic radar. To allow safe operation and to keep clear of each other, they will use the company's VoloIQ system, which will include air operation control, to avoid other aircraft and change routes when necessary. It is not yet known how large the eventual fleet will be.

"Neom's urban mobility system is centred around



humans, and the idea is to not use cars, but to have all necessary facilities within walking distance, and other shared mobility for further travel," said the spokeswoman.

"Our VoloCity and VoloDrone will transport passengers and goods within and around Neom. The joint venture will first trial the integration of vertical mobility with other types of public transportation, while testing ideal flight routes using the initial fleet. The future fleet will need to be discussed once integration and operational planning begins."

The new city will implement what it describes as the first truly sustainable and seamlessly connected transport system powered by 100% renewable energy, with zero-emission vehicles. ▲

Future move: Two-seat VoloCity electric VTOL craft will provide passenger transport around the new Neom city. It has not yet been decided whether they will have a pilot, be controlled remotely or fly completely autonomously.

IMAGE: VOLOCOPTER.

AVIONAV ACQUIRES ITALIAN STORM AIRCRAFT

Tunisia-based Avionav has signed an agreement to acquire its main historical Italian partner, Storm Aircraft.

Acquiring Storm Aircraft's rights, licences, designs, website and certifications, is a significant milestone for Avionav in the light aircraft segment market, where it is competing with well-established manufacturers.

According to its CEO, Foued El Kamel, this agreement will position Avionav as a global industry leader in all areas of light aviation, while bringing greater efficiency and significantly increasing its market share.

"It will generate benefits for our customers, partners, employees, and investors for many years to come," he said.

Based at Borjine (gouvernorate of Sousse), Avionav produces the Rally, a full carbon fibre aircraft, and the Storm, an all-metal low-wing aircraft.

There are four versions – two or four passengers, and with retractable or fixed landing systems. Both aircraft can cover 1,600km with an autonomy of eight hours.

The aircraft are involved in a wide range of missions, from pilot training, agriculture and mapping, to advertising banner towing and leisure flights.



Growing business: Avionav targets 100 aircraft a year by 2028. PICTURE: ANDREA COLOMBO VIA AVIONAV.

The company has a diversified and broad market including the US, Europe (Belgium, France, Germany, Italy, Portugal and Ukraine), Latin America (Brazil and Argentina), Asia/Middle East (Pakistan, UAE), and Africa (Djibouti).

Avionav intends to develop the Rally Observer, an aircraft dedicated to surveillance and mapping, incorporating state-of-the-art equipment, such as cameras and radars for enhanced accuracy.

El Kamel aims to build a 5-10% share in the global light aviation market, which represents \$600 million.

Avionav is projecting to expand its activities from its Borjine site by increasing its surface capacity from 1,500sqm to 3,000sqm and integrating new enterprise resource planning software.

Presently it has a production capacity of four aircraft over three months. The company targets 100 aircraft per year by 2028.

It intends raising funds at air shows scheduled in the MENA region, the US, and Europe to meet these challenges. ▲

VINCENT CHAPPARD



PICTURE: AVIONAV

"It will generate benefits for our customers, partners, employees, and investors for many years to come."

Foued El Kamel

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Turning point: The new terminal at the Abeid Amani Karume International Airport marks a milestone in Zanzibar's ambition of becoming a globally recognised island for tourism and trade.
PICTURE: DNATA

ZANZIBAR DEAL MARKS AN AFRICAN MILESTONE FOR DNATA

UAE-based Dnata has signed a concession agreement with the Government of Zanzibar to oversee the operations of Zanzibar Abeid Amani Karume International Airport's (ZNZ) new international terminal.

The company will provide a range of ground and passenger-handling, cargo, and airport hospitality services at ZNZ when the new terminal opens early this year.

Dnata expects to handle more than 4,000 flights per annum at the airport.

The agreement includes a partnership with Emirates Group companies, Emirates Leisure Retail and Maritime and Mercantile International (MMI), as master concessionaire for all food and beverage, duty free and commercial outlets at the new terminal.

The Dnata team will be working in cooperation with SEGAP, a joint venture between airport infrastructure and operations specialists, Egis, and private equity fund manager, AHM, which will support the Zanzibar Airports Authority in a management capacity.

Dnata's expansion into Tanzania will see it make a \$7 million investment in

infrastructure, equipment, technology and people, creating up to 400 direct local jobs with the company.

It will invest in a state-of-the-art cargo centre to establish freight operations at the airport. The facility will comply with the highest industry standards, ensuring efficient and safe handling of a broad range of cargo, including perishables, pharmaceuticals, dangerous goods, live animals, aircraft engines and vehicles.

□ □ □ □ □

In addition, the company will launch meet-and-greet and lounge services through its airport hospitality brand, Marhaba, to enhance the passenger experience and enjoy a smooth airport journey from check-in to boarding.

Steve Allen, executive vice president of Dnata and chairman of Emirates Leisure Retail and MMI, said: "We are confident that our investment in the local aviation industry will stimulate tourism and trade, delivering significant benefits for Zanzibar businesses and the local community."

JILL STOCKBRIDGE

TUNISIAN AIRPORTS BET ON SOLAR ENERGY

Photovoltaic energy is a key component of the sustainability policies defined by Tunisian airports to fuel their energy transition programme.

As an Airports Council International (ACI) member, Tunisia has a realistic timeline and government support to reach its carbon net zero goal by 2050.

The Tunisian Civil Aviation and Airports Authority (OACA) is finalising a project that falls within the framework of the national strategy towards energy transition. It aims at producing energy through a photovoltaic plant at Tozeur Nefta Airport, a sunny region located in the south of Tunisia.

The green energy will be injected into the Tunisian Electricity and Gas Company (STEG) network to supply the airports managed by the OACA.

During the first phase, the production capacity will meet 20% of their overall needs. It will be extended during the final stage to meet OACA's annual consumption.

Three stages are planned with power variants – an initial stage of 5MWp to provide around 10,000 MWh/year; an intermediate stage of 15MWp, of around 30,000MWh/year (2025-2030); and a final phase of 25MWp, to produce around 50,000MWh/year (2030-2040).

According to Yacine Kebe, manager strategy and regional programme development at ACI Africa, Tunisian airports will benefit from moves by her organisation to help its members tackle environment and sustainable development challenges.

Workshops on sustainability, planned during the regional conference and exhibition scheduled in Mombasa, Kenya, in mid-March, will help airports to share experiences, identify solutions, build expertise to tailor guidelines on the issues.

ANURADHA DEENAPANRAY CHAPPARD




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Hit by Covid: Deliveries of the new RBAF F-16 Block 70s are facing delays, while upgrade plans of the existing F-16C/D fleet remain on the table.

PICTURE: ALAN WARNES.



Pandemic blamed for Bahrain's F-16 blockage

The Royal Bahrain Air Force is facing delivery delays for its 16 Lockheed Martin F-16 Block 70 aircraft.
Alan Warnes reports.

According to the RBAF commander, Major General Hamad bin Abdullah al Khalifah, Covid-19 has been cited as the reason for the delay, which could be as much as two years.

“We have been told that the aircraft will not now be delivered until the first quarter of 2024,” he said.

The \$1.2 billion deal for 12 single-seat F-16Cs and four F-16Ds was announced in July 2018, when *Arabian Aerospace* was told by a Lockheed Martin spokesman: “They will be handed over to the US Air Force in the last quarter of 2021, with the first jets delivered to Bahrain in the first quarter of 2022 and all completed by the end of 2023.”

It means that deliveries of the first F-16s could be two years later than originally envisaged, even if RBAF pilots are currently training at Tucson ANGB, Arizona on F-16 Block 40s.

At the Dubai Airshow in November, Lockheed Martin’s JR McDonald, vice president, combat air portfolio said: “Covid-19 has affected us all and the aerospace industry is no different.

“As you know, we shut the F-16 production line at Fort Worth in 2017, and we are setting up the new production line at Greenville, North Carolina.

“Bahrain is the [Block 70/72] launch customer, with the aircraft coming off a new production line, and Covid has impacted into it.

“I would say Lockheed Martin and the US Government did a very good job at stepping in early and providing advance progress payments at a significant level. That was very effective in keeping a number of the small suppliers viable while they were dealing with Covid.

“The US Government has advised the countries that have been affected by the delays that there has been a slip of some kind. Being the launch customer, Bahrain is the most affected, because whatever we do to try and move that schedule to the left, there is not much time left for Bahrain. There are already 12 aircraft on the line at Greenville being worked on.”

The RBAF commander also said that the enhancement of the existing F-16s is still on the table, but added: “We are pleased with their current capabilities, having fitted new equipment like the Sniper [targeting pod] to the aircraft.”

In 2018, Lockheed Martin offered to upgrade the current 20 F-16C/Ds to F-16V for \$1 billion. However, the RBAF declined and, instead, spent the money on 12 AH-1Z Vipers. The RBAF commander confirmed that the first four Vipers, acquired in a \$912 million deal announced in November 2018, are expected to be delivered in April, with the second four due in July/August and the final four by the end of this year.

Unlike Lockheed Martin, Bell is delivering the aircraft as per the original timetable.

These new Vipers will augment the 18 older AH-1Fs that have been upgraded by Turkish Aerospace in a deal, brokered in June 2015, and reputedly worth around \$25 million. This led to the first example flying from the company’s Ankara facility in September 2017.

News of the work, which included integration of the AselFLIR 400 turret into the attack helicopter’s nose, an enhanced weapons delivery set-up (that includes the Roketsan 2.75inch Cirit laser-guided missile system) and night vision goggles (NVG), has been kept under wraps because of the poor relationship between Saudi Arabia (Bahrain’s neighbour and closest ally) and Turkey.

Major General Hamad did confirm the last upgraded AH-1 was delivered in February last year and the Cobra fleet would be used for the maritime surveillance of Bahrain’s coastal waters.

He also said there were no plans to relaunch a basic flying training programme, having retired the Slingsby Fireflies due to the lack of air space to train in. “We will, instead, continue to send students to both the UAE (Sheik Khalifa bin Zayed Air College Flying Training School at Al Ain) and Saudi Arabia (King Faisal Air Academy at Riyadh-King Khaled Air Base).” ▲



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Cruising: An Armée de l'Air Rafale gave a polished display at the Dubai Airshow. A couple of weeks later, the UAE announced its order for 80 of the type.

PICTURE: BILLYPIX.

Inset: The UAE has suspended F-35 discussions.

PICTURE: US AIR FORCE.



Rafale just the ticket – but F-35 set to lose out

As the UAE welcomes the Dassault Rafale, it appears to have shut the door on the Lockheed Martin F-35A.

Jon Lake reports.

The UAE's recent order for 80 Rafales was a very long time coming and, when it did arrive, it was something of a surprise to most observers, who had been watching an Emirati order for the F-35 order emerge and firm up.

Following the Rafale order, announced on December 3 2021, the planned F-35A procurement initially remained on track.

However, less than a fortnight later, on December 14, the UAE informed the US Government that it would suspend F-35 discussions as a result of a reassessment of what were described by a UAE official as "Technical requirements, sovereign operational restrictions and a cost/benefit analysis".

It was stressed that the USA remained the UAE's preferred provider for advanced defence requirements and it was said that "discussions for the F-35 may be reopened in the future". Some analysts suspect that the suspension of negotiations is simply a tactic by the UAE, which is believed to be irked by some of the conditions that the US is trying to impose on the F-35 deal.

It is important to remember that the UAE's planned F-35 procurement was always supposed to be separate from, and additional to, the wider Emirati fighter requirement, and was intended to provide a new capability for the UAE Air Force and Air Defence (UAEAF&AD).

That wider fighter requirement was, itself, divided into two, with a near-term requirement

for an aircraft to replace the UAE's surviving fleet of around 53 Dassault Mirage 2000-9s (of 68 Mirages originally delivered) and a longer-term requirement for a replacement for the survivors of 80 F-16E/F Desert Falcons.

The Rafales are being procured to replace the Mirages, and their acquisition did not affect the UAE's need or desire for the F-35. In fact, many believe that the UAE still wants and needs the F-35, and still has a requirement for a further fighter to replace the F-16s.

The day after the Rafale order was publicly announced, Major General Ibrahim Nasser Al Alawi, commander of the UAEAF&AD, explained: "This deal is not considered as an alternative for the forthcoming F-35 deal, it is rather a complementary deal... as we develop our air force capabilities."

Dassault originally began marketing the Rafale to the UAE in the mid-1990s, and the aircraft was originally shortlisted (with the F-16) in September 1996. Efforts to sell the Rafale to the UAE continued even after the selection of the F-16 in 1998, resuming in earnest in 2008.

In mid-December 2010, Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and commander of the UAE armed forces, asked France to renew its Rafale offer during a visit to Paris.

By 2011, an order for about 60 Dassault Rafales seemed to be on the verge of being placed, and many

**Continued
on Page 38**

CONTINUED FROM PAGE 37

industry insiders were predicting that contracts could be signed during that year’s Dubai Airshow. There was, therefore, some shock when Dassault’s new offer was very publicly rebuffed by the UAE.

At the time, the crown prince praised French President Nicolas Sarkozy, saying that his “personal intervention in this process has sustained Dassault at the forefront of our considerations”, and acknowledging that France “could not have done more diplomatically or politically to secure the Rafale deal”. But he went on to blast Dassault, which, he said, seemed “unaware that all the diplomatic and political will in the world cannot overcome uncompetitive and unworkable commercial terms”.

Behind the scenes, it is understood that the Emiratis wanted an aircraft that was significantly more advanced than the then-current Rafale versions in service with the Armée de l’Air – or than any planned upgraded standard. The UAE reportedly expected the French side to pay the cost of developing the upgrades that would be required (variously estimated at between \$2.29 and \$5.72 billion).

But, while that deal collapsed, France knew the value of persistence, and mounted a decade-long charm offensive, which included Armée de l’Air Rafales being stationed in the UAE, as well as regular exercises.

Finally, this persistence paid off and, in December, during a visit to the UAE by President Emmanuel Macron, the historic contract for 80 Rafales was signed. Tareq Abdul Raheem Al Hosani, CEO of Tawazun Economic Council, in charge of security and defence acquisitions for the UAE, and Eric Trappier, chairman and CEO of Dassault Aviation, did the honours in the presence of Sheikh Mohammed bin Zayed Al Nayan, Crown Prince of Abu Dhabi and deputy-commander of the UAE Armed Forces, and Macron himself.

Under the newly signed contract, which the French Armed Forces Ministry said was worth €16 billion (\$18 billion), deliveries will begin in 2027. The UAE will be the first export operator of the new F4 standard, which will enter French service in 2025.

On the same day that the Rafale deal was announced, the US State Department issued a statement confirming that the Biden administration “remains committed to the proposed sales of F-35 aircraft and munitions even as we continue consultations to ensure that we have a clear, mutual understanding of Emirati obligations and actions before, during, and after delivery”.

The Emirati F-35 deal has never been simple, and has never been something that would go through ‘on the nod’. The sale was impossible until the UAE signed the Abraham Accords in August 2020, becoming the third Arab country to establish full diplomatic relations with Israel,



French pride restored

Dassault’s new Rafale contract is part of a broader geopolitical vision, which started 50 years back at a nascent stage in the history of the UAE, writes Anuradha Deenapanray Chappard.

The French company’s first contract with the UAE dates back to the 1970s with the delivery of around 30 Mirage 5s (in four versions). This partnership was consolidated with the purchase of 68 Mirage 2000s in 1998. But, in 2011, when Abu Dhabi described the offer by France to supply 60 Rafale jets as “uncompetitive and unworkable”, the relationship cooled.

After more than a decade of relentless diplomatic negotiation by successive French governments, punctuated by a few failures, confidence has finally been restored.

This contract is perceived by France as a double victory – a commercial and military as well as a diplomatic and strategic one, especially after Australia cancelled a \$90 billion contract with France just hours before the AUKUS alliance was announced.

Model performer: Though the announcement had not been made, Dassault’s Rafale was prominent at Dubai, in model form, and in the flying display.

PICTURE: JON LAKE.

and even then, was viewed as a possible threat to Israel’s “qualitative military edge” in the Middle East, which the US is legally required to maintain!

The US Defense Security Cooperation Agency’s original notification to Congress acknowledged that “the proposed sale of this equipment and support represents a significant increase in capability and will alter the regional military balance”, and the possibility of triggering a regional arms race made the proposal extremely sensitive!

The UAE has bought Russian Pantsir-S1 air defence systems and Chinese Wing Loong II armed drones, while China’s Huawei Technologies is embedded in its telecoms network and there is a real fear that the Emirates’ relations with China and Russia could compromise US technology.

It is worth recalling that Turkey, a major US ally and a full NATO member, was suspended from the F-35 programme in 2019 after it took delivery of advanced Russian S-400 air defence missile systems.

Democratic senators behind the new ‘Secure F-35 Exports Act of 2021’, expressed reservations about maintaining the security of F-35 technology in the light of the UAE’s growing ties with Moscow and Beijing.

The UAE’s ambassador to the US, Yousef al-Otaiba, pointed out that such fears are groundless: “The UAE has a long and consistent track record of protecting US military technology, both in coalitions, where we’ve served alongside the US military, and inside the UAE, where a broad range of sensitive US military assets have been deployed for many years.”

Many within the US administration are eager to overcome the obstacles and get the deal done, since they would like the UAE (an important ally and regional security partner) to be able to operate the F-35 to deter and combat mutual shared threats, including Iran. ▲



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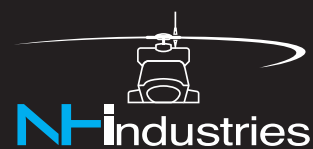
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Top left: A Turkish Air Force Bayraktar TB2 armed with a Roketsan MAM-L guided weapon. PICTURE: BAYHALUK. **Top right:** Saudi Arabia is building the Turkish Karayel MALE UAV under licence from Vestel Defence Industry. PICTURE: DAVID OLIVER. **Above, left:** The TAI Anka-S armed with a MAM-L guided weapon and Cirit 2.75in laser-guided rockets. PICTURE: DAVID OLIVER. **Above, right:** A TAI Anka MALE system used by the Turkish Armed Forces. PICTURE: TAI.

Turkish drones emerge as Middle East game-changer

Unmanned aerial vehicles (UAVs) have become a key element of many armed forces across the world, as they are being more extensively deployed in war zones and counter-terrorism operations. David Oliver looks at the growing Turkish influence in the MENA region.

To date, the United States and Israel have dominated the development, production and operations of tactical UAVs. However, Turkey has become more successful in penetrating the international market of armed drones.

In 2020, the UK Defence Secretary, Ben Wallace, stressed the “game-changing” role of Turkish UAVs in modern warfare in the Middle East and north Africa.

Turkish Baykar Makina TB2 and Turkish Aerospace Industries (TAI) Anka-S UAVs have been extensively deployed during recent conflicts in Syria, Libya, and Nagorno-Karabakh, and exported to more than a dozen countries.

The 12m wingspan medium-altitude long-endurance (MALE) TB2, powered by a Rotax four-cylinder engine, has a ceiling of 27,000ft, an endurance of 24 hours, and can carry a maximum payload of 150kg.

The TB2 first came to prominence during the civil war in Libya, when large numbers were delivered to the UN-backed Government of National Accord (GNA). Libya’s opposing Russian and UAE-backed Libyan National Army (LNA) claimed to have shot down at least 25 LNA TB2s since 2019.

In March 2018, Baykar Makina signed an agreement with Qatar for six Bayraktar TB2 armed UAVs, three ground control stations (GCS), and a simulator. This was followed by Morocco’s Royal Armed Forces (FAR) signing a \$70 million contract for 13 TB2s in 2020, which included four GCS and a reconfigurable simulation system. They were used for the first time against Polisario forces in the Western Sahara in April 2021.

Oman and Turkey were also said to have reached a preliminary understanding for the procurement of Bayraktar TB2s, but no details were released.

In December 2021, it was also reported that the Iraqi Government had earmarked \$100 million for the acquisition of an undisclosed number of TB2s, GCSs and support equipment, but this has yet to be officially confirmed.

However, the success of Turkish UAV combat operations has come at a price. Canada banned the export of L3 Wescam imaging and targeting systems fitted to TB2s following Turkish Air Force incursions into Syria against Kurdish forces in 2019 and during the 2020 Nagorno-Karabakh conflict.

Following the Canadian suspension, new production TB2s are being fitted with the domestically produced Aselsan CATS forward-looking infrared (FLIR) system.

In March 2020, Tunisia awarded a contract worth \$240 million to TAI for the supply of six TAI Anka-S MALE tactical UAVs, three GCSs and an unspecified level of technology transfer.

This was followed by an announcement that Saudi Arabia’s Intra Defense Technologies would begin producing the Karayel MALE UAV in 2021 under licence from the Turkish company Vestel Savunma. With a wingspan of 13m, the Karayel has an endurance of eight hours carrying a 120kg payload or with only a 50kg electro-optical/infrared (EO/IR) sensor suite, it can operate for 20 hours at an altitude of 18,000ft.

All the Turkish tactical UAVs are designed to be armed with Turkish Roketsan lightweight smart micro munition (MAM-L) air-to-ground precision-guided weapons.

Turkish armed UAVs have proved to be reliable and easy to maintain and, with the Turkish lira falling to a record low against the US dollar, they will be a cost-effective option to US and Israeli products. ▲

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Typhoon's fortunes blowing in the wind

Take off: Qatar's first Typhoon makes its maiden flight from Warton. PICTURE: DEREK BOWER.

Jon Lake reports on the latest defence moves in the MENA region.

The end of 2021 was a period of considerable fluctuations in fortune for the Eurofighter Typhoon programme.

The first Typhoon for the Qatar Emiri Air Force (QEAF) made a low key but welcome debut flight from Warton in the UK on November 25. However, this was quickly followed by the Emirati announcement that it was buying 80 Dassault Rafales to meet a requirement that many might have expected to be Eurofighter's for the taking.

This was followed, just a week later, by the Finnish HX announcement, which revealed that not only had the Typhoon been eliminated from a competition (for 64 aircraft) that some had expected it to win, but also that the aircraft had failed to make it into the final three.

Four days later things started to look up for Eurofighter, with the first delivery of new Typhoons to Kuwait on December 14.

These aircraft, to the so-called phase three enhancement – package B (P3EB) standard, are the most advanced examples of the Typhoon delivered to date, equipped with the new ECRS.Mk 0 AESA radar. This combines an electronically scanned array with a mechanical repositioner, giving a much wider 'field of regard', which promises to revolutionise beyond-visual-range air-to-air combat.

It means that, as of today, Kuwait has the most advanced fighter aircraft in service in the entire MENA region, and it will soon be joined by Qatar, whose Typhoons are to a broadly similar standard.

In Kuwait, the air force's current fleet of F/A-18C/D 'Heritage Hornets' will soon be surplus to requirements, following the delivery of the new

Typhoons and a batch of 28 F/A-18E/F Super Hornets, all now 'delivered' to the customer, but currently awaiting delivery from the USA.

Malaysian deputy defence minister, Ikmal Hisham Abdul Aziz, has said that his country is seeking to purchase the Kuwaiti Air Force's surviving fleet of 33 first generation Hornets "lock, stock and barrel". These would be used to augment the Royal Malaysian Air Force's eight two-seat F/A-18D fighters and 18 Russian-built Sukhoi Su-30MKM 'Flankers'.

Puzzlingly, Kuwait's Army General Staff Headquarters has denied reports that the country is planning to sell its F/A-18C/D fighter jets to Malaysia, describing them as "absolutely false".

Any negotiations for the sale of equipment owned by the country's ministry of defence will take place through the committee for the disposal of assets, co-ordinated by the ministry of finance,

and after getting the necessary approval from the USA.

While Britain's plans for supporting the QEAF during the FIFA World Cup (November 21-December 18 this year) with Typhoon fighter deployments have been widely reported, it was only at the end of the year that France announced what it will be doing to help secure the event.

France said it will help Qatar to secure its airspace during the event as part of the wider defence agreement signed with Qatar when it purchased 36 Dassault Rafales.

The French armed forces will send personnel and equipment under an 'advise-and-assist' arrangement with the host nation.

A 'BASSALT' low-altitude counter-UAV system, developed by Hologarde, will also be deployed. The system, launched in 2019, has

Continued on Page 46

Air power: One of the first pair of Kuwait Air Force Eurofighter Typhoons refuelling while on its delivery flight to Kuwait.

PICTURE: ITALIAN AIR FORCE.



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CONTINUED FROM PAGE 43
been used to secure several international events in France and was briefly used to support operation Barkhane in Mali.

One of the French Air Force’s four E-3F AWACS aircraft will also be deployed to Qatar for the World Cup.

Egypt is another Middle Eastern nation strengthening its links with the west. It now seems likely that Egypt’s recent order for a new batch of 30 Rafales may be linked to a decision to abandon its planned purchase of 24-28 Su-35s. This may also have influenced reported plans to acquire M-346 trainers from Italy.

Leonardo attended the air power symposium in Cairo at the end of November, where it was reported to be close to winning a €500 million (\$573.32m) contract to supply 24 M-346 Master jet trainers to help train new Egyptian pilots destined to fly the Rafale.

US Countering America’s Adversaries Through Sanctions Act (CAATSA) sanctions have apparently devastated planned Su-35 sales in Egypt, Algeria and Indonesia, and it is thought that the 15 or 16 aircraft built to fulfil Egypt’s 24-28 aircraft order may now go to Iran as part of a 20-year \$10 billion security and defence agreement.

Moving away from fast jets, the UAE is taking steps to improve the survivability and combat effectiveness of its Airbus A330MRTT air-to-air refuelling tanker aircraft.

Elbit Systems Emirates (ESE) has secured a contract to supply directional infrared countermeasures (DIRCM) and

Public debut: Examples of Qatar’s new NH90 NFH (seen here) and TTH helicopters flew during the national day celebrations.

PICTURE: QATAR MOD.



airborne electronic warfare (EW) systems for the UAE Air Force’s Airbus A330 MRTT aircraft.

ESE’s open-architecture system delivers high performance defence against infrared-guided missiles via advanced fibre laser technology together with a high frame rate thermal camera and a small, highly dynamic mirror turret. The \$53 million contract is expected to be executed over a five-year period.

There have also been interesting developments for some of the region’s military helicopter operators. The QEAF premiered its first NH90 TTH and NFH helicopters in Qatar’s national day flypast on December 18.

Leonardo is responsible for the final assembly and delivery of the 12 NH90 NFH helicopters from its Venice Terrassa facility, while Airbus will complete the final assembly of the TTHs. Some 16 NH90 TTHs will be delivered to Qatar by 2025,

along with 12 NH90 NFH naval helicopters. The first TTH-variant was officially delivered on December 11 last year.

Meanwhile, the Royal Moroccan Air Force reportedly has plans to purchase eight H225M Caracal helicopters from France.

Exports of Turkey’s TAI T129 ATAK attack helicopter have seen mixed fortunes in recent weeks. In Pakistan, Major General Babar Iftikhar announced on January 5 that Islamabad had withdrawn from the \$1.5 billion deal for 30 Turkish T-129s, although this was subsequently denied.

This was to have been the biggest single Turkish arms export, and it has been reported that Islamabad is now considering the Chinese Z-10ME attack helicopter instead.

The Philippines order for the T129 is making slightly smoother progress, meanwhile, and the first two helicopters have now been delivered. ▲

NEW JOINT HAWK SQUADRON OFF TO A FLYING START

The Joint RAF and Qatari Emiri Air Force (QEAF) Hawk Squadron was officially established at RAF Leeming in the UK on November 24 2021, several weeks after the first two Hawk 167s had been delivered.

Known as ‘11 Squadron (Qatar)’ it will eventually become home to all nine of Qatar’s Hawk Mk167 training aircraft and will provide training for both RAF and QEAF pilots, though the initial emphasis will be on Qatari students.

It aims to build on the success of the first joint RAF and QEAF unit, No12 Squadron, the joint RAF-QEAF Typhoon squadron at RAF Coningsby.

The two units were established as the result of an agreement signed by Ben Wallace, the British Secretary of State for Defence, and His Excellency, Dr Khalid bin Mohamed Al Attiyah, Deputy Prime Minister and Minister of State for Defence Affairs in Qatar.

No12 Squadron officially reformed on July 24 2018 as a joint RAF/QEAF squadron and began to integrate personnel from both nations in early 2020. It will eventually transfer to Qatar, helping provide air cover for the 2022 FIFA World Cup and the establishment of the first QEAF Typhoon squadron, which will start to receive its own aircraft in the summer of 2022.

Air Chief Marshal Sir Mike Wigston spoke warmly about the success of the two joint squadrons: “I



The pathfinders: Dr Khalid bin Mohamed Al Attiyah poses with the first cohort of ab initio Hawk students in front of a new, and as yet unpainted, Hawk Mk 167 at Warton.

PICTURE: QATAR MOD.

think what we’ll be able to do with 11 Squadron is complement what we’ve already done with 12 Squadron. It’s another step in building that really important strategic relationship between Qatar and the United Kingdom.”

Gareth Roberts, head of aircrew training services and support at BAE Systems, confirmed that his company had been awarded a six-year contract to

provide qualified training instructors and said that there will be a focus on synthetic training. The full mission simulator has 360° visuals and this will offer an immersive training environment.

Following the stand-up of the new squadron on November 24, the first BAE Systems Typhoon destined for the Qatar Emiri Air Force made its maiden flight from Warton Aerodrome the next day. ▲

Al Ain-based Calidus, which launched the armed B-250 turboprop at the Dubai Airshow in 2017, appears finally to be making some headway with the development of the aircraft. **Alan Warnes** reports.

Calidus B-250 programme is re-ignited after review

Shortly after the prototype made its public appearance four years ago, several design issues surfaced that led to a complete review of the B-250 turboprop project.

While Calidus will not acknowledge the issues, the programme now looks to be back on track.

The company has a flight-test team, made up of ex-Brazilian Air Force personnel, comprising two pilots and two engineers, who will now prepare the aircraft for certification.

They have recently been involved in the integration and subsequent launch of the Edge P31 Thunder guided bombs, with the P32 next, while I understand that the on-board gun is another priority.

It’s not surprising that Calidus has hired a Brazilian flight-test team, given the connection the company has with the South American country. Calidus acquired Brazilian company, Novaero, in 2015. Its chief designer, Joseph Kovacs, was responsible for the Super Tucano and, ultimately, designed the carbon-fibre B250.

Powered by a 1600shp Pratt & Whitney PT6A-68 engine, with a four-blade Hartzell propeller, the aircraft is faster and more manoeuvrable than the Super Tucano. Undoubtedly, its biggest advantage is that it is made from carbon fibre, because it weighs around 1,000kg less than the Super Tucano. Weight savings can be converted into more avionics, more fuel and more armaments.

Now, according to one source, there are two more B-250s being built on the Al Ain production line that should fly this year.



Out from behind closed doors: A mock-up of the Calidus B-350 combat-ISTAR platform.

PICTURE: ALAN WARNES.

While the cockpit houses two Martin Baker Mk 16 ejection seats, the Rockwell Collins Pro Line Fusion avionics system, which is predominantly used for civilian applications and which was initially selected for the two prototypes, has been replaced by a solution from Canada’s CMC Electronics. Skhiri did not recall the system name and CMC has not responded to *Arabian Aerospace’s* enquiries.

Sitting alongside the B-250 at November’s Dubai Airshow was a full-size mock-up of the bigger and more heavily-armed B350 that Calidus has been working on behind closed doors for three years.

Skhiri said: “Its predominantly for combat intelligence, surveillance and reconnaissance (ISR) missions and has six hardpoints under each wing.

“This is still a concept at the moment, but we have included a retractable MX-25 under the forward fuselage with a Leonardo Osprey 30 [airborne electronically scanned array (AESA) radar primed for ISR missions], further back, just to give an idea of what we hope it can do.” He wouldn’t be drawn on exactly when the aircraft would fly, although 2025 would be a fairly good guess.

He continued: “The B-350 will be powered by a Pratt & Whitney Canada PW127C – the same engine as the ATR 72.”

On display around the mock-up was a plethora of weapons, predominantly from the UAE’s Edge company, which is also weaponising the B-250. They included Al Tariq Mk 81/82 bombs, smaller Halcon Desert Sting 16 bombs, as well as 500lb GBU-12 bombs and rocket pods.

Two mock-up AIM-9 Sidewinder air-to-air missiles were positioned on the outer pylons for air defence. ▲

▼ Being pressurised to fly up to 30,000ft, the B250 will be out of the range of enemy air defences. ▲ MUSTAPHA SKHIRI

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FOCUS ON

EVENTS

SHOW PREVIEW



Impressive: An artist's impression of the exhibition, with its large static display area.

IMAGE: WDS.

The desert kingdom has dominated the arms market over the past six years and, coupled with ambitious plans to localise 50% of the defence spend as part of Saudi Vision 2030, it makes a lot of financial and commercial sense to organise an event like the World Defense Show.

The event's new CEO, Andrew Percy, said: "Many people want to know how to work with the new military aerospace structure being set up in-country as Saudi continues opening up to international markets."

"That's why the General Authority for Military Industries (GAMI) and Saudi Arabian Military Industries (SAMI) are a key part of WDS. They are both essential to international companies and how to do business here."

GAMI launched the WDS on July 15, 2020, as a showcase for local defence industry and to drive it forward, while also acting as a means to help international companies to do business.

The exhibition will be hosted on a 800,000sqm site at Malham, a 40 minute drive out of Riyadh into the desert.

Percy said: "Hall 1 will house the many foreign companies, from the likes of China, Russia, the UK and the US. In fact, most of the world wants to be here."

Covering 27,000sqm, Hall 2 of the new purpose-built exhibition facility, funded by the WDS organisers, includes 60 hospitality suites that give a great view over the 2.7km runway. This will host all the Saudi companies, including start-ups and SMEs in addition to GAMI and SAMI. "All the exhibition space has been sold and now

SAUDI SHOW SET TO STUN THE WORLD OF DEFENCE

The World Defense Show (WDS) in Riyadh, Saudi Arabia, will take place for the first time from March 6-9. As Alan Warnes reports, all aspects of defence will come under the spotlight – air, land, sea and space.

the focus is on the hospitality suites going the same way," said Percy.

Due to demand, a new 14,500sqm exhibition space has been introduced on site. "It's unbelievable for an opening show," Percy added. "With the 160,000sqm of static display outside Hall 2, we will also see a variety of military aircraft on show – from the likes of the Saudi MoD, which is one of the show's partners, and the US Air Force."

This means that we are likely to see aircraft from all the Saudi air arms represented in the large static display. In addition to the Royal Saudi Air Force, expect representation from the national guard, naval forces, land forces and the

president of state security. The Saudi military will also make its presence felt in the opening ceremony flypast, which will undoubtedly be an impressive affair.

"We also have a 20,000sqm land display area, where vehicles can be tested during live demonstrations, and a fully equipped command and control centre to provide first-hand insight into the world of interoperability," said Percy.

The day before the show, the International Institute of Strategic Studies (IISS) will be hosting a one-day Riyadh defence forum conference at the Ritz Carlton, which will attract a who's who of the defence industry.

Seminars will be run daily in the conference halls looking at some of the technologies exhibited at the show, as well as delivering sessions that offer insights into Saudi Arabia's defence industry transformation.

A 'women in defence programme' will be held in honour of international woman's day, which takes place during the show, and the 'future talent programme' will be held to promote and inspire careers in the industry.

While the dark clouds of Covid-19 may hang over the event, Percy said attendees will be expected to adhere to the health and safety protocols with more information available for registrants visiting the kingdom.

The show is attracting a huge amount of interest within the defence industry and will undoubtedly become a permanent fixture on the defence events calendar.



PICTURE: WDS.

"It's unbelievable for an opening show."
Andrew Percy

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FOCUS ON

EVENTS

SHOW PREVIEW

MRO Middle East returns to its regular February slot this year with renewed vigour, more exhibitors and new features designed to boost business in this strategically important region. Companies will be looking for help in planning for uncertainty after the pandemic. **Chuck Grieve** looks forward to the event.

MRO PLANS FOR THE BUMPY ROAD AHEAD...

MRO Middle East kicks off a pivotal year for the region's aviation aftermarket as service providers, large and small, grapple with a changing dynamic in aviation.

On top of the disruption to business caused by the pandemic, which is likely to continue having an impact on MRO operations for years to come, they face planning for uncertainty, a historically high percentage of fleet retirements, a change in the make-up of the regional fleet, continuing pressure on costs, plus the implications of the heightened awareness of 'green' considerations throughout the industry.

When the two-day MRO Middle East opens at the Dubai World Trade Centre on February 22, attendees will be looking to exhibitors and speakers for solutions to these and myriad other challenges.

The joint organisers, Aviation Week Network (AWN) and Tarsus Group, have announced

increased floor space and new networking features for this year's event, which is again co-located with Aircraft Interiors Middle East (AIME).

The event will highlight the latest innovations in key areas including sustainability, digitalisation, workforce and new technologies within the aviation sector.

Among exhibitors are prominent players in the regional industry including Mohammed bin Rashid Aerospace Hub, Joramco, Etihad Airways Engineering, Sanad Aerotech, Turkish Technic, Safran, Lufthansa Technik, Satair and Boeing, back after a year's absence.

The Seattle original equipment manufacturer (OEM) has reason for a cautious approach. Its own authoritative *Services Market Outlook* (SMO) for 2021-2030 underlines the continuing volatility in the market caused by the pandemic and the international responses to it. The situation at the time of its publication – August 2021 – led researchers to

Continued on Page 53

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FOCUS ON

EVENTS

SHOW PREVIEW

CONTINUED FROM PAGE 51

record only “signs of improvement” in air transport traffic, the leading indicator, which the MRO sector trails by some months.

However, it also notes the impact on the aftermarket of strategies adopted by owners and operators to stay afloat, such as deferred maintenance, early retirements, rotating aircraft usage, and accelerated replacement of older fleets. “All of this will have a follow-on effect as operators continue to re-evaluate the services and supply chain needs they require,” said the SMO.

“Newer fleets influence the scope of maintenance and maintenance intervals, especially for heavy checks and engine maintenance.”

Noting that recovery varies by region, Boeing’s SMO added: “After years of aftermarket growth, the demand for MRO services was impacted considerably due to reduced fleet utilisation. Today, we are seeing signs of recovery that suggest a return to pre-pandemic levels by 2023/2024.”

Lydia Janow, senior vice-president events at AWN, takes an optimistic view. The recovery in the aviation industry, she said, allows MRO Middle East “to explore new opportunities when it comes to connecting airlines with suppliers in the commercial aviation aftermarket, while providing insightful and engaging content for show attendees to help accelerate the industry’s recovery and growth”.

Tim Hawes, managing director of Tarsus Aerospace, said show organisers “are excited to offer more meaningful content and networking opportunities”.

Among new features will be an advanced matchmaking app on the Grip platform, which allows show-goers to network, plan, and book meetings before the event. A badge-scanning feature downloads contact details to a single place.

The new buyer programme – free for exhibitors – is designed to identify key purchasers from airlines and lessors among registered attendees. For buyers who qualify, 20-minute meetings will be arranged with exhibitors at their booths.

This year’s event foregoes a pre-exhibition conference; instead adopting 2021’s well-received on-site Go-Live! Theatre format, which makes expert commentary and debate available to all show attendees.

A highlight of the MRO part of the Go-Live! programme on Day 1 will be a leaders’ panel discussion featuring chief executives Fahd H Cynndy, of Saudia

Aerospace Engineering Industries (SAEI), Fraser Currie, of Joramco, and Ziad Al-Hazmi, of Lufthansa Technik Middle East (LTME).

Currie, approaching his first MRO Middle East as chief executive, said: “Joramco is accelerating out of the pandemic, our hangars are full, and we are ready to expand and develop our capabilities.” Details of plans to increase its footprint were expected imminently.

The Amman-based company had enjoyed a consistent level of business through the pandemic, with ongoing work for the likes of Ryanair, whose partnership renewal was announced at the Dubai Airshow.

Joramco expects a surge in demand, particularly for wide-body maintenance, as flight schedules return.

In another Day 1 highlight, SR Technics’ Caroline Vandedrinc and Yalcin Aydin, chief commercial officer of Turkish Technic, will be among panellists offering insights from regional MROs about their adaptations and survival strategies of the last two challenging years.

Organisers have also lined up expert speakers for sessions on sustainability, talent retention, supply chain, digitalisation, predictive maintenance tools, and passenger-to-freighter (P2F) conversions.

Conference participant, Nina Schulz, newly appointed managing director of the Independent Aircraft Modifier Alliance (IAMA), said the last two years have encouraged innovation with conversion centres and engineering providers finding sustainable business in formerly niche products, such as P2F modifications.

Nevertheless, she added, the region was “heavily affected” by consolidation and the stoppage of planned fleet renewal or retrofit programmes, leading organisations, such as IAMA, to work

FRENCH PAVILION LEADS THE PARADE OF NATIONS

The French pavilion returns under the auspices of Business France, the country’s national agency supporting and promoting French businesses abroad.

Its exhibiting partners include the independent MRO Revima, described as “one of the most experienced MROs in the world”, and the aerospace tooling specialist, Dedienne Aerospace.

□□□□□

Ireland, Israel and the Netherlands are also expected to have a national presence at the show.

Israel made its maiden appearance at MRO Middle East in 2021, following the historic Abraham Accords. Since then, Israel Aerospace Industries (IAI) and Etihad Airways Engineering have signed an agreement to set



Leaders’ perspective: Chief executives Ziad Al-Hamzi (top), Fahd Cynndy (centre) and Fraser Currie offer their views in the Go-Live! Theatre.
PICTURES: LTME, SAEI, JORAMCO.

with its members on sustainable solutions.

Elsewhere in the programme, engine prime, GE Aviation, is represented in the discussions on digitalisation and sustainability.

The company is fresh from celebrating a milestone for its 360 Foam Wash programme at the recent Dubai Airshow. The environment-friendly technology claims to bring savings in fuel and emissions.

As an alternative to washing with water to remove dust and dirt particles from inside engines, it is currently used by major Middle East operators of its GENx and GE90 engines.

Returning with a new mandate is Etihad Airways Engineering, whose transfer to the diversified Abu Dhabi holding company, ADQ, was announced in December.

It will form a key part of ADQ’s mobility and logistics portfolio in what the chief executive, Mohamed Hassan Alsuwaidi, described as “the development of Abu Dhabi’s global connectivity”.

“We see potential to capitalise on growth opportunities, attract a wider client base of airlines and drive the future expansion of Abu Dhabi’s aviation sector,” he added.

An indication of the importance attached to MRO Middle East throughout the region as the place to do business is the participation of myriad SMEs representing all parts of the industry, and a widely dispersed geography.

Among them is newcomer Uzbekistan Airways Technics.

The Tashkent-based MRO describes itself as a “workshop for the maintenance and repair of western-made components”, including wheels, carbon and steel brakes for the majority of Boeing and Airbus types. Its base maintenance capabilities are similarly extensive. ▲

up a passenger-to-freighter (P2F) conversion facility in Abu Dhabi focusing on the Boeing 777-300ER.

Business France underlines the case for participation by pointing out that aerospace makes a major contribution to the economy of the host nation, placing the UAE at the forefront of the sector regionally.

Its forecast growth is driven by more than \$135 million in public and private investments in aerospace expected by 2030, says the organisation.

With the largest civil fleet in the region – some 510 aircraft in service with four carriers, and more than 100 on order – the UAE currently has about 25% of the regional civil MRO market, whose total value is placed at more than \$11 billion. ▲

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The Middle East and North Africa Business Aviation Association (MEBAA), is the official representative of the business aviation industry in the Middle East and North Africa (MENA) region. MEBAA is a non-profit association and a member of the International Business Aviation Council (IBAC), established in 2006 with the mission to provide a platform for members of the business aviation industry in the MENA region to gather, understand and communicate the needs and benefits of the industry.

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A 'sold out' Aircraft Interiors Middle East (AIME) event proves things are picking up for the market.

Marcelle Nethersole reports.

As aircraft were grounded due to travel restrictions during the pandemic and orders and deliveries halted, the aircraft cabin interiors market also took a heavy hit. But, since the last quarter of 2021, things have slowly been picking up. Market research firm, MarketsandMarkets, now projects that annual revenues will rise from \$17.6 billion in 2020 to reach \$40.2 billion by 2025.

This is also reflected by a 'fully sold out' AIME, which will return on February 22-23 at Dubai's World Trade Centre for its 12th edition.

The free-to-attend exhibition features industry-leading solutions for commercial airlines and business jet operators – from sustainable cabin materials to the latest in-flight entertainment (IFE) and touchless technology.

"After a hugely successful edition of the Dubai Airshow in November, it is clear the aviation industry is on the rise and airlines are working hard to increase their operations and safety measures to meet travel demands," said Tim Hawes, managing director of Tarsus F&E Middle East – organiser of the event.



"The industry has dynamically changed, and airlines are now investing more money into products to enhance the safety of their cabins, services that allow them to provide tailored IFE experiences, and making sure everything they change is sustainable and contributes to their global environmental goals."

Visitors to the event can expect to see new additions, including the Go-Live! Theatre, which will feature a two-day programme highlighting the latest innovations. Key areas will include digitalisation, connectivity, 5G, sustainability, optimal safety measures, and more.

The Airline Advisory Board will have experts from Emirates Airways, Etihad Airways, Oman Air, and Gulf Air



Sustainability is key: Multi-million-pound investment in facilities, infrastructure, innovation, and skills has enabled Andrew Muirhead & Son to become a cutting-edge leader in the leather industry.

PICTURE: ANDREW MUIRHEAD & SON.

INSIDE FORWARD

'SOLD OUT' SIGNS SHOW INTERIORS ARE ON THE WAY BACK

discussing the biggest challenges and opportunities in 2022.

"There will also be a new networking app, where visitors can connect with clients, suppliers and industry colleagues through our matchmaking tool," said Hawes.

AIME 2020 brought together 4,706 attendees over the two-days, including government officials and decision-makers from 68 airlines. This year, Hawes is expecting even more visitors.

Panasonic Avionics will be exhibiting. The company was recently selected by Emirates to deliver a suite of IFE solutions for its premium economy cabin being introduced on more than 100 Airbus A380 and Boeing 777 aircraft, with the first due to enter service this summer.

Ken Sain, chief executive officer of Panasonic said: "Emirates is a long-standing and highly valued customer, and a world leader in the passenger experience it creates. We are thrilled to be partnering with them to deliver innovations that will help put their new premium economy in a class of its own."

Other companies on show include Schneller, which will be displaying its flexible film laminates, decorative thermoplastics, and non-textile flooring products for commercial aircraft.

Andrew Muirhead & Son will be showing a range of leathers. The Scottish

family run company is one of the oldest tanneries in Europe.

"We are the leading experts in data-based sustainability practices and offer the aviation sector the lowest carbon high-performance leather. We are committed to the environment," said Iby Bakos-Tonner, brand manager.

The company has been able to see through the pandemic successfully due to its 'farm-to-finish' control end-to-end ownership of its supply chain, which Bakos-Tonner described as "essential" due to the current uncertain times.

"As Covid has played havoc in supply lines, reliance on a third-party is risky, so full control, sourcing, and manufacturing (tanning and finishing) locally is a huge advantage over those wholesaling or finishing textiles," she explained.

"Multi-million-pound investment in our facilities, infrastructure, innovation and skills since 2000 has allowed the business to become a cutting-edge leader in the leather industry. Our testing and certification lab is a guarantee of quality. Thanks to our bespoke design studio, Muirhead is consistently the best on colour interpretation and pre-production request matching."

Bakos-Tonner added: "Sustainability is a key driving force in cabin interior selection. Airlines and supply chains are



"It is clear the aviation industry is on the rise."
Tim Hawes

Continued on Page 56



Busy: Sabeti Wain's production facilities in Dubai at DAFZA Industrial Park. PICTURE: SABETI WAIN.

CONTINUED FROM PAGE 55

focused on, and allocating teams to, meaningful reductions and responsible practices, not only in tailpipe emissions but also in actual life-cycle analysis of products, circular manufacturing, and carbon impact on the environment. They want a demonstrable emphasis on a product end-of-life plan by the manufacturer."

Seating companies will also have a large presence at AIME.

Thompson Aero Seating (under the ownership of AVIC) is well known for its full-flat bed Vantage range, which will be on display.

"Our seats offer comfort while maintaining cabin density," said Andres Budo, senior vice president after-sales and services, AVIC Cabin Systems.

"With the range of single-aisle aircraft increasing, comfort will be more essential than ever. Creating more space for seating and passenger areas will be paramount. Our innovations reduce the size of the galley area, giving space back to the cabin, enabling the airline to offer a higher level of service, carry more passengers, or to offer existing passengers greater space."

The company's customers in the Middle East include Emirates, Etihad Airways, Oman Air, and Qatar Airways.

Sabeti Wain Aerospace is no stranger to AIME. The designer and manufacturer of aircraft seat covers has production facilities in the UK, America, and a large one in Dubai at DAFZA Industrial Park.

Its managing director, Paymen Sabeti, said he is pleased the company has been able to keep its team members on throughout the pandemic.

"We were making PPE for a good few months and then gradually a trickle of work has kept us going," he said.

"We took the quiet time to further develop a relatively new product line – manufacturing cushion foams in house.

"We went into converting foam about two years ago, but we never had enough time to work on any innovations.

"We have been spending time honing that skill and now have a number of innovative products designed around new more comfortable combination of foams and covers, which are integrated to give more comfort and support to the passenger."

NEW DRONES CREATE A BUZZ AT EDEX2021

More than 400 exhibitors attended Egypt's showpiece defence event, EDEX, late last year. Jay Menon was there.

As conflicts in the MENA region see an increasing use of armed unmanned platforms, EDEX 2021 provided an opportunity for countries to flaunt their unmanned aerial vehicle (UAV) capabilities.

Egypt unveiled its first two locally made UAVs – the EJune-30 SW and the Nut – while Pakistan's Shahpar-II armed medium-altitude long-endurance (MALE) UAV made its international debut.

The Nut, named after the ancient Egyptian goddess of the sky, is built jointly by the Arab Organisation for Industrialisation and the Military Technical College. It is designed for reconnaissance and can carry up to a 50kg payload, operating day and night using electro-optical technology.

The EJune-30 SW has a 12 metre wingspan and claims to have a ceiling altitude of 7,000 metres with a top speed of 260kph and up to 24 hours of continuous flight time. It is produced by



Industrial Complex Engineering Robots and the Egyptian Ministry of Military Production.

Pakistan's Shahpar-II, meanwhile, is manufactured by Global Industrial & Defence Solutions (GIDS), Pakistan's only state-owned manufacturer of UAVs. The armed drone has a modular structural airframe design made up of advanced composite and metallic hybrid structures.

According to Asad Kamal, chief executive officer of GIDS, the new UAV features an improved aerodynamic design, giving it an endurance of seven hours with a flight ceiling of 18,000ft and a maximum speed of 120 knots.

Improved aerodynamic design: Pakistan's Shahpar-II has a modular structural airframe design made up of advanced composite and metallic hybrid structures.

PICTURE: JAY MENON.

"Over the last decade, our aerial systems have been top selling products and have been exported to more than 10 countries. Our recent initiatives have created new opportunities for products like smart weapons and UAVs; such vehicles have become one of our most sought-after products in the African and south Asian regions," he said.

The exhibition, which was held over four days, saw the participation of more than 400 international companies working in defence and military industries representing 42 countries, including the US, France, Saudi Arabia, the UAE and India.

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FOCUS ON

EVENTS

SHOW REPORT

Dubai's air show, despite worries over Covid, liquidity issues for airlines and a fatigued aerospace supply chain, turned out to be one of the best ever, says Arabian Aerospace editor-in-chief **Alan Peaford**.

As a true veteran of the Dubai Airshow since the early 1990s, I have witnessed the ups and downs as external events and pressures have put the show in doubt.

Gulf Wars, 9/11 terrorism, and global financial crises have all had an impact. But 2021 went way beyond that.

Many from the industry around the world had aired concerns and doubts about whether the show would go ahead. But, buoyed by the evidence from a successful IDEX in Abu Dhabi earlier in the year and an underswell of support from industry, the UAE and Dubai governments, plus efforts from show organiser, Tarsus, saw the go-ahead for a bumper edition.

"We have had more of our leadership team come to Dubai than ever before," said one defence contractor based in UAE. "It was like there is a pent-up demand to travel again."

It was not surprising then, that when the Crown Prince of Dubai, Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, carried out the formalities to open the 17th edition of the show, there were more than 1,200 exhibitors and visitors from more than 150 countries in attendance.

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And, although all the pundits had warned not to expect the usual barrage of orders to happen, an incredible \$78 billion worth of commercial and defence contracts were signed during the five days of the event.

Undoubtedly Airbus was on the front foot. A spectacular promotional coup, lighting up the Burj Khalifa on the eve of the show, showed its intentions.

On the opening day Airbus revealed a massive \$33 billion deal with Indigo Partners, the owner of low-cost carrier Wizz Air and Mexico's Volaris, for 255 A321neo aircraft. By the end of the week the European manufacturer had reached 408 – 269 firm and 139 commitments.

While competitor, Boeing, was fairly subdued on the order front, there were signs that the 737 MAX is on the rise. The highlight was a contract from India's newest airline, Akasa Air, worth almost \$9 billion for 72 737 MAXes including two variants – the 737-8 and the high-capacity 737-8-200.

Orders aside, Dubai crowds got the chance to see the international debut of the Boeing flagship 777X. The 777-9 test flight flew the 13 hours from Seattle to



Top left: Russian Helicopters' director general **Andrey Boginsky**. PICTURE: BILLYPIX. Top right: Pilatus used the show to unveil its new PC-7 MKX aircraft. PICTURE: BILLYPIX. Above left: Russia's new Checkmate fighter. PICTURE: SUKHOI. Above right: The Hongdu L-15 Falcon, a supersonic light-attack and jet trainer. PICTURE: BILLYPIX.

THIRST TO TRAVEL HELPS DUBAI SHOW FLOURISH

visit the event where it was launched eight years ago and drew plenty of interest from Gulf carriers. Emirates is hoping the promised 2023 delivery will happen.

There were more than 300 new companies on display and some familiar names returning. Russia was in fine form and Russian Helicopters signed deals with Ras Al Khaimah police for Ansar and Mi-17 helicopters. The company also gave an international debut to the attack helicopter, the Mi-28NE, and demonstrated a modernised Ka-226T Climber.

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Russia's new Checkmate fighter was a big draw. Unveiled at Moscow's MAKS in July, the model – in its own pavilion – impressed the crowds. There have been suggestions that this low-cost alternative to the Su-27 for export customers might also have caught the eye of the UAE defence forces.

Another debutant at the show, this time

from China, was the Hongdu L-15 Falcon, a supersonic light-attack and jet trainer.

Pilatus used the show to unveil its new PC-7 MKX aircraft, which it described as the world's best smart basic trainer. It is an upgrade of the popular PC-7 MK2.

The UAE's defence conglomerate, Edge, with by far the largest exhibit at the show, scooped up orders from the country's defence force for MRO services and guided missiles worth more than \$4 billion.

In the business aviation world it was a Dubai company that has been revealed as the launch customer for the business jet variant of the A220 (formerly the Bombardier CSeries). Now manufactured by Airbus, the first ACJ220 will be completed by Comlux for FIVE holdings.

One thing that was unavoidable at this Dubai show was the emphasis on sustainability. Throughout the showgrounds there was clear message of intent as companies highlighted their green credentials.

This was the show that had everything – except complaints. ▲



DELIVERING THE DEFINITIVE VIEWPOINT FOR REGIONAL AEROSPACE DEVELOPMENTS

Arabian Aerospace – previous winner of ‘Best International Publication’ – and **African Aerospace**, provide key market coverage for the Middle East and Africa. These two industry leading magazines – both quarterlies – are produced by award winning journalists led by aviation expert and five times Aerospace Journalist of the Year, Alan Peaford. Both publications are complemented by daily online news services.

Award winning **Arabian Aerospace** magazine – now in its fourteenth year of publication, has become the premier title for the aerospace industry across the Middle East, North Africa and Turkey.

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OneWeb has signed a joint development agreement (JDA) with GDC Advanced Technology that will see the two companies collaborate on the development of a new in-flight connectivity terminal. **Steve Nichols** reports.

THE CONNECTIVITY CONNECTION

Creation of a new in-flight connectivity terminal will enable airlines to connect their aircraft, passengers, and crew over OneWeb's low Earth orbit (LEO) satellite communication network.

The terminal, based on electronically steered antenna technology developed by Ball Aerospace, has already undergone early lab and ground testing at GDC's facilities in Fort Worth, Texas.

It is scheduled to deliver high throughput and low latency to airlines and their passengers from 2023.

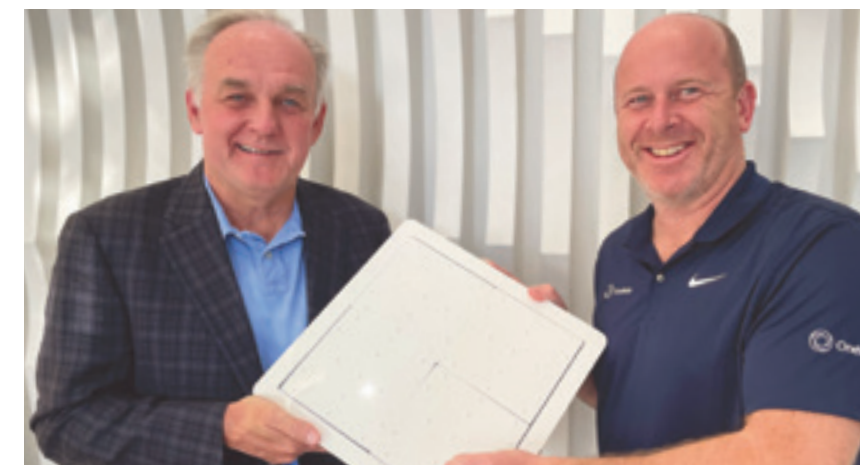
Ben Griffin, VP mobility at OneWeb, said: "This agreement with GDC Advanced Technology represents a major milestone as we accelerate our plans to bring globally consistent and game-changing in-flight connectivity to aviation users everywhere – regardless of aircraft size."

The terminal will initially be available in two sizes – a traditional ARINC 791 for larger commercial airliners, and a smaller installation suitable for regional jets, single-aisle and business aviation platforms.

OneWeb said the new terminals are significantly lighter and smaller than existing aviation antennas. The attenuated aerodynamic profile produces virtually no drag, significantly reducing fuel burn compared with current fuselage-mounted antenna types.

The antenna is sealed and contains no moving parts, making it extremely reliable with no risk of fluid ingress.

OneWeb claims the system is designed for ease of maintainability, with four simple line replacement units (LRUs), any of which can be replaced in less than 30 minutes.



Together: Tracy Trent (left), president GDC Advanced Technology, and Ben Griffin, VP mobility, OneWeb with the terminal.

PICTURE: GDC ADVANCED TECHNOLOGY.

The terminals have also been engineered to allow airlines to deploy a hybrid LEO/GEO connectivity solution. OneWeb expects this to be a key differentiator as airlines initially embrace and become confident in the benefits and performance of the new LEO technologies.

The agreement includes development of installation certification (STCs) for several aircraft types, and pursuit of line-fit offers with major airframe manufacturers (OEMs).

Initial flight-testing on a Boeing B777 is scheduled for Q1 this year, with certification expected in early 2023. ▲

STAR SHINES A LIGHT ON UAE'S SATELLITE AMBITIONS



Ali Al Hashemi: "This brings us one step closer to advancing the UAE's satellite communications manufacturing capabilities."

PICTURE: YAHSAT.

Al Yah satellite communications company (Yahsat) and the Tawazun Economic Council have announced a joint venture, under the brand name of Star Technologies.

Star Technologies will develop satcom capabilities, building upon the strong value proposition already offered to the UAE Government by Yahsat Government Solutions.

Khalid Al Awadhi, YahSat's executive vice president – space systems, said: "The first product will be a Star Technologies-branded IP satellite modem system. This will complement Yahsat's existing satcom capabilities to enable differentiated high-performance solutions and establish an integrated end-to-end commercial offering for multiple end-user segments."

Ali Al Hashemi, group chief executive officer at Yahsat, said: "This announcement is the result of significant efforts from both entities and brings us one step closer to advancing the UAE's satellite communications manufacturing capabilities."

The agreement comes as Yahsat is said to

be considering the launch of new satellites.

The UAE Government is reported to have instructed Yahsat to study market demand and to assess the need for two new satellites, which could launch in 2026.

Yahsat already operates Al Yah 1 and Al Yah 2. The proposal is to guarantee the capacity already provided to the UAE Government, but also to handle expansion from future market demand.

Al Hashemi explained: "This potential expansion would further underpin our long-term contracted backlog and reinforce our position as the UAE's primary supplier and preferred partner to the UAE Government for advanced satellite communications and critical satellite connectivity needs."

"The announcement to assess the expansion of the existing fleet presents a significant opportunity to enhance Yahsat's business value for all stakeholders, allowing us to capitalise on our future growth strategy."

Al Yah 1 was launched in 2011, while Al Yah 2 was launched in 2012. ▲

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The Dubai Airshow enabled BlackSky to demonstrate how its 'space-as-a-service' satellite imagery is revolutionising monitoring, analysis and intelligence. **Steve Nichols** was there.

LOCATION, LOCATION

THE KEY TO WINNING THE NEW SPACE RACE



BlackSky offers global monitoring services that combine artificial intelligence, cloud computing, multi-sensor data fusion, activity analysis, and autonomous satellite tasking.

Andy Stephenson, the company's vice president of international business development and sales, took part in the show's space forum to discuss the innovative concept of 'space-as-a-service'.

"At BlackSky, we are focused on real-time geospatial intelligence as a service delivered through subscription-based offerings," he explained. "Enabled by cloud technology, it's easy to do, customers understand it, and we're able to offer it at an affordable price point to make access to space a reality.

"Our on-demand constellation of satellites can image a location multiple times throughout the day from morning to dusk. We monitor for economic and pattern-of-life anomalies to produce alerts and enhance situational awareness.



"The real winners in the new space-as-a-service race are thinking well beyond access to launch vehicles. The key competitive advantage is access to real-time geospatial intelligence."

Stephenson leads BlackSky's international business for the defence, intelligence and national security markets. He highlighted how BlackSky's disruptive, integrated satellite-to-analytics model streamlines customer experience and delivers actionable insights in less than 90 minutes.

"Our global real-time awareness monitoring solution is available via access to our proprietary geospatial data and analytics platform, Spectra AI," he explained.

"Spectra AI requires basic online infrastructure with little or no set-up, through which our customers derive unique

insights and commercially valuable information and analytics that informs them and allows them to run their businesses with greater efficiency and certainty."

Stephenson demonstrated how a single user could select any location in the world, add automated aircraft and vessel identification monitoring, and task BlackSky's proprietary satellite constellation from his or her smartphone in just minutes, with no human interaction required.

Ninety minutes later they have their satellite imagery, taken at 0.8m resolution, with AI automatically highlighting new aircraft, vessels, or buildings since the satellite's last pass.

"We have lots of interest from fixed-base operators who want to optimise their movements, or keep an eye on their competitors," Stephenson said.

BlackSky is basically putting government-level intelligence imagery into the hands of the man in the street.

"Cost-effective and accurate imagery-derived analytics minimises the need for human analysis and time-consuming imagery exploitation," said Stephenson.

"Our future Gen-3 satellites are being designed to improve our imaging resolution and include short wave infrared (IR) imaging technology for a broad set of imaging conditions, including night-time, low-light and all-weather collections," he added.

"The tighter the decision loop the better. We aim to have 30 satellites by 2025 and our goal is to get satellite revisit times down to about 30 minutes."

In Dubai, BlackSky showed a series of images monitoring the build-up of the show site over the days immediately prior to the opening. Subsequent images showed arriving aircraft automatically highlighted in yellow by BlackSky's AI system.

"The AI identified the aircraft automatically and sent the image out less than 90 minutes after it was taken," said Stephenson.

"The combination of our high-revisit small satellite constellation, along with our AI analytics spectra platform and low constellation cost, is disrupting the market for geospatial imagery and space-based data and analytics services.

"BlackSky customers don't have to worry about the space segment, end-of-life or the ground stations because we do all that and deliver the data, including the analytics and AI," he concluded.

BlackSky also confirmed in mid December that it had completed three back-to-back launches, doubling its satellite constellation size to 12.



Top: BlackSky's geospatial intelligence services bring together its Spectra AI aircraft detect algorithm with image data from the company's high-revisit satellite constellation to easily identify objects of interest at more than 200 of the world's most important airports.

Above: BlackSky's high-resolution small satellite constellation has the highest revisit rate in the world, with a peak rate of 15 hourly visits per day over certain locations.

PICTURES: BLACKSKY.

▲ ALL IN A DAY

Andres Budo

Marcelle Nethersole
speaks to the senior vice president after-sales and services for AVIC Cabin Systems.

Can you tell me about Thompson Aero Seating (under the ownership of AVIC) products?

Thompson Aero Seating is known for its Vantage range. These are fully-flat bed seats offering maximum passenger comfort while maintaining cabin density. The range extends across all Airbus and Boeing single- and twin-aisle aircraft platforms.

The deluxe Vantage XL offers a generous 23-24" wide seat and direct-aisle access for each passenger. Flexible privacy options include suite doors.

The Vantage XL is also available in a 'honeymoon' configuration, offering an alternative seating arrangement for two passengers travelling together.

The VantageFIRST offers airlines the opportunity to provide a first-class product while maintaining the same density as a traditional 'all business-class' cabin.

The newest addition to the range, the VantageSOLO, has been designed and developed specifically for single-aisle aircraft. It offers a fully horizontal flat bed, with direct aisle access, from only a 33" seat pitch.

Does the company produce anything else for the interiors market?

While the focus and expertise of Thompson Aero Seating rightly remains with seat design and manufacture, AVIC Cabin Systems also includes other companies within the group that, together, provide a nose-to-tail service for all interior requirements. This includes UK-based AIM Altitude, where many of the front row monuments are produced to integrate seamlessly with Thompson's range of seats.

AVIC Cabin Systems as a whole has worked with many companies and airlines in the Middle East, including Emirates, Etihad Airways, Oman Air, and Qatar Airways.

Due to the pandemic and a focus on hygiene, have new designs been set in place?

The VantageSOLO has been designed with direct-access for every seat, which can be configured with either an open aisle end, fixed privacy screen, or a full-function suite door. With Covid in mind, we are expecting more airlines to select the suite door, which not only provides the passenger with greater privacy, but also with a more personal space and less likelihood of transmission of germs. In the past, the privacy of a suite door has normally only been the preserve of a wide-body cabin.

The innovative herringbone configuration of the VantageSOLO also locates passengers away from the aisle and, therefore, minimises accidental contact with passengers and crew who are walking up and down the aisle.

Other members of the AVIC Cabin Systems group have also produced products that help with Covid issues. For example, AIM Altitude has created a boxed meal system for greater hygiene, and FACC has developed PURE CABIN, an antimicrobial surface coating.

How do you see the future of aircraft seating since the impact of the pandemic?

Global travel is returning, albeit slowly, and we do not see Covid stopping people from taking flights. What passengers will require is a sense of security in terms of Covid and other similar viruses.

Aircraft interiors, as a whole, will need to adapt but that is what the industry is good at doing. We are at the forefront of design and engineering. Solutions are already in place and we will continue to innovate our seating designs to meet with the new requirements of passengers and airlines alike.

Can you see growth in the long-haul single-aisle market?

Thompson Aero Seating has been ahead of the game in the growth of long-range single-aisle flights. We developed the VantageSOLO for exactly this market, foreseeing its emergence some time ago.

There are two key elements in long-haul single-aisle travel: it needs to be affordable, and it needs to be comfortable. The VantageSOLO addresses both.

Designed specifically for the emerging medium-to long-range market now being serviced by single-aisle aircraft, the VantageSOLO offers a fully horizontal flat-bed from only a 33" seat pitch. This provides passengers with the comfort they would expect from a twin-aisle aircraft. The space-saving seats bring greater revenue to the airlines, which means better economics for the airline customers.

What does a typical day hold for you?

My work sees me cover three areas of our business: sales and marketing, product strategy, and after-sales and services.

A typical day for me is spent refining our overall product and sales strategy, including our marketing road map, which sets the pace for the rest of our business through policy development.

I also focus on business governance and day-to-day activities across my responsibility streams, including communications with customers and integrators.



PICTURE:AVIC

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