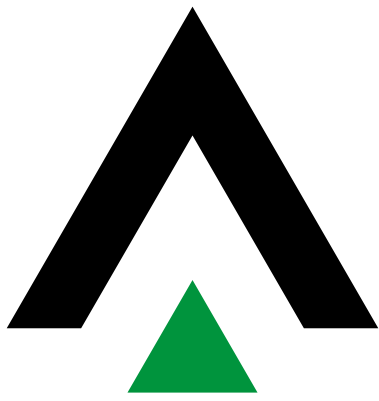


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ARABIAN AEROSPACE

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**GULF AIR CHIEF
DETAILS THE NEXT
STEPS FOR THE
BOUTIQUE AIRLINE**

SUITE DREAMS

– PAGE 11

SUSTAINABILITY

Bush set
to be a
growth
industry

PAGE 19



DEFENCE

F-16s
can still
do the
business

PAGES 32/33



SPACE

UAE's
ambitions
out of this
world

PAGE 50





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OUR BIG CHANCE TO LEAD BY EXAMPLE

The announcement that the UAE's regulator, the GCAA, has won the bid to host the third edition of the International Civil Aviation Organization (ICAO) Conference on Aviation and Alternative Fuels is a boost to the region's growing sustainability credentials.

The event is organised every seven years and coincides with the UAE's preparations to host the 28th conference of the parties to the UN framework convention on climate change (COP28), later this year.

The UAE declared 2023 as the year of sustainability to enhance the nation's efforts in leading the climate action in the aviation sector.

And it is clear in this issue that industry in the region is firmly on board.

Saif Mohammed Al Suwaidi, director-general of the GCAA, said the declared aim of carbon neutrality in the sector makes the UAE an ideal destination. "The country is today considered as one of the pioneers in the field of sustainable fuels and low-carbon fuels, especially in the aviation sector," he said.

We have seen Emirates – working with GE – operate the Middle East's first 100% sustainable aviation fuel (SAF) flight on a Boeing 777-300; Etihad has signed an agreement with Satavia to work together on a reduction of atmosphere-warming contrails; and efforts to develop feedstock for the production of plant-based SAF in the Gulf are showing positive results.

Of course, another of the drivers toward a NetZero 2050 goal is airspace efficiency. Saudi Arabia's air navigation provider, SANS, has signed a deal with the UK's provider, NATS, to collaborate and, as we see in this issue, the kingdom is also progressing with remote towers for regional airports.

Add to that the development of infrastructure for the expected introduction of electric vertical take-off and landing (eVTOL) urban air mobility systems, and there are clear indicators that our region is delivering action rather than words.

The sustainability message must be driven right through our operations. Historically, the region has been a net importer of equipment for the aerospace and defence industry. But, over recent years, there has been a steady change towards localised manufacturing.

Saudi Arabia's industrialisation policies and the UAE's 'Made in the UAE' initiative have seen a real transfer of knowledge and output away from imports, especially in the defence sector.

With companies like the Edge Group now manufacturing for export, it is more important than ever that the industrial processes are as sustainable as possible.

The clean-sheet start for so many of the businesses in the region means they are not tempered by legacy systems. This is the chance for our region to lead by example.

Alan Peaford, editor-in-chief



04 Business brief: Regional round-up

▲ AIR TRANSPORT

11 COVER STORY:

Small is beautiful: Gulf Air chief discusses boutique plans.

14 New LCC: Jazeera Airways reveals its expansion plans.

▲ BUSINESS AVIATION

17 Ramping up: Morocco opens an FBO at Dakhla Airport.

▲ GENERAL AVIATION

18 AAM breakthrough: Dubai has created the world's first advanced air mobility integration centre.

▲ SUSTAINABILITY

19 Fuelling hope: A shrub may hold the key to affordable sustainable aviation fuel.

20 On the trail: Aiming to dramatically reduce atmosphere-warming contrails.

▲ AIRPORTS

22 Making the connection: Tangier summit puts Morocco in the spotlight.

24 Seeing the big picture: A new 'virtual' air traffic control tower in Saudi Arabia.

▲ DEFENCE

26 Show of force: All the big guns turn out for IDEX/NAVDEX.

29 Leading Edge: CEO looks at progress for one of the UEA's fastest-growing companies.

30 Powering on: Turkey unveils yet more technology innovations.

32 Delivery milestone: The Royal Bahraini Air Force is the first air arm in the world to receive an F-16 Block 70 production model.

33 Falcon fights on: Why the F-16 still has a big future in the MENA region.

36 Training up: The RBAF looks set to modernise its current training system as additional F-16s are added.

▲ TRAINING

37 Hat-trick: Emirates Flight Training Academy passes three huge milestones.

▲ MANUFACTURING

41 MENA progress: Morocco and Saudi building up the components sector.

▲ MRO

42 Expansion planning: EgyptAir M&E boss looks to the future.

44 Bouncing back: MRO Middle East focuses strongly on the future.

48 Gaining converts: P2F on a roll.

▲ SPACE

50 Boldly going: UAE projects reaching out into the solar system.

▲ PEOPLE

52 All in a day: Arnd Kikker of AERQ.

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COVER: Gulf Air chief executive, Waleed Al Alawi, talks about the Bahrain carrier's 'boutique airline' plans and the changes that have seen it collect a 'world-best' award.
PICTURE: BILLYPIX.

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CFM International	5
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Dubai Airshow 2023	40
Embraer Commercial Aviation	9
Embraer Defense & Security	27
FL Technics	13
Jewellers Doors Limited	49
JORAMCO	21
L3Harris	OBC
NHIndustries	31
Raytheon Technologies	38, 39
SAEI	15
Satcom Direct	51
Tahseen Aviation Services	16
The Airport Innovation Conference – KSA	25
TP Aerospace	47
Vestergaard Company	23
VMS Aero	48
World Defense Show 2024	34, 35

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“Proud and privileged”: Second Officer Aya Saleh Alaudhli at the controls of a Boeing 787 Dreamliner. PICTURE: ETIHAD AIRWAYS.

Etihad’s cadets living the Dream

Etihad Airways has seen the first of its cadet pilots successfully complete ‘base training’ on a Boeing 787 Dreamliner as part of its multi-crew pilot licence (MPL) programme.

‘Base training’ flights are used to train cadet pilots on take-off and landings under the supervision of a qualified instructor. After this step, the cadets will further progress their training on the aircraft.

Launched in October 2020, the Boeing 787 Dreamliner MPL programme was developed in collaboration with the International Air Transport Association (IATA) and the General Civil Aviation Authority (GCAA). It is designed to meet the growing demand for highly skilled pilots in the industry.

Mohammad Al Bulooki, chief operating officer at Etihad Airways said: “This achievement is a testament to Etihad’s commitment to continuously invest and develop our UAE national talent by adopting state-of-the-art training methodologies.”

The base training flight was successfully flown by Second Officers Aya Saleh Alaudhli and Abdulla Rasheed Alsheebani, under the supervision of Captain Suraj Weerasekera.

Alaudhli said: “Thanks to our leadership and their belief in Emirati women, I am proud and privileged to be in the first batch of the Boeing 787 Dreamliner MPL programme.”

777 P2F prototype flies

The world’s first Boeing 777 passenger-to-freighter (P2F) conversion is on track to gaining its supplemental type certificate (STC) after a successful maiden test flight on March 24.

The prototype 777-300ERSF – a former Emirates passenger airliner – flew about two hours at altitudes up to 20,000ft.

Conversion specialist IAI said the freighter was expected to enter service with US-based cargo carrier, Kalitta Air, later this year.

The ‘Big Twin’ wide-body P2F will have a maximum payload of 101.6 tonnes and is powered by two GE90 engines; its fuel burn is forecast to be 21% less than that of a typical Boeing 747-400F.

■ P2F converts, page 48.

Tokyo return

Emirates has now restored its full Japanese network with the resumption of its passenger services to Tokyo-Haneda.

Satish Sethi, Emirates’ country manager in Japan, said: “The night flight from Haneda offers valuable connectivity for travellers to access Emirates’ points beyond Dubai, in Europe, Africa, and the Middle East regions.”

Traffic boost

Middle Eastern airlines saw a 75.0% traffic increase in February compared to a year ago, according to figures from the International Air Transport association (IATA). Capacity climbed 40.5% and the load factor pushed up 15.8 percentage points to 80.0%.

Disability support

More than 24,000 cabin crew and ground staff globally have completed Emirates’ introduction to autism and hidden disabilities’ training.

The online course was first launched in 2022 and covers a range of topics from the UAE national policy for people of determination, recognising autism, practical tips on how to assist passengers with hidden disabilities, responding with empathy, and information on the official support systems to help passengers in the airport.

UAE’s vertiports on the up and up thanks to RAK agreement



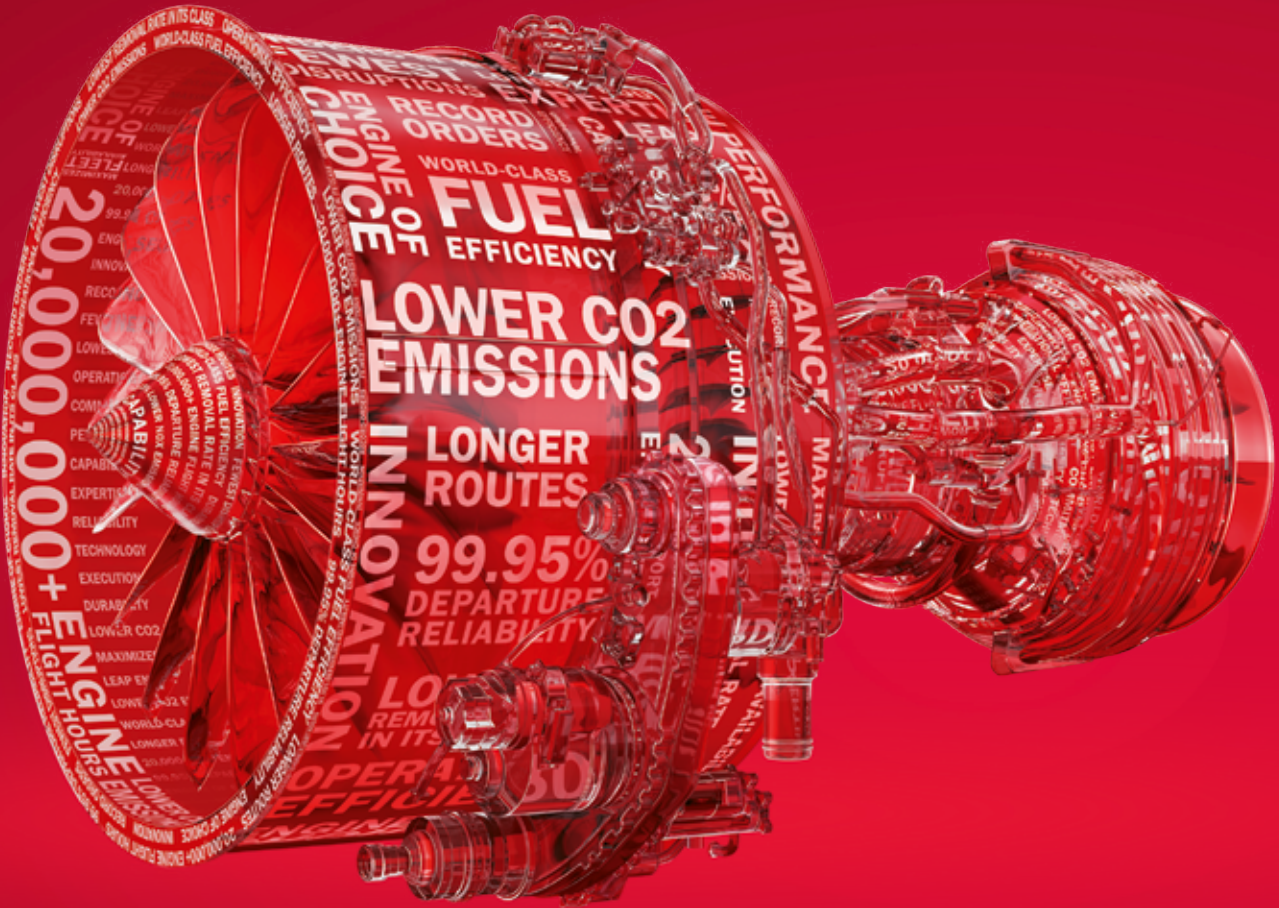
Together: Dr Fethi Chebil (left) with His Highness Engineer Salem bin Sultan Al Qasimi and Ralf Schustereder, CEO, Ras Al-Khaimah Airport. PICTURE: ACTION GROUP PR.

The UAE is continuing its ambitions to make the country a vertiport hub as Ras Al-Khaimah Airport (RAK) will welcome its first vertiport. VPorts, which designs, constructs and operates advanced air mobility (AAM) infrastructure, has announced a memorandum of understanding (MoU) with the airport to build and operate a first vertiport in RAK.

His Highness, Engineer Salem bin Sultan Al Qasimi, chairman, Department of Civil Aviation, Ras Al-Khaimah, said: “This project is aligned with RAK’s energy efficiency and renewable energy strategy 2040 to achieve at least a 30% savings in electricity consumption and a 20% contribution from renewable energy by 2040.

“We are committed to supporting the VPorts project and to enable AAM-related innovation, technology and know-how capacity building in the UAE and in RAK.”

■ AAM starts to come of age, page 18.



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Emirates signs Turkish maintenance deal

Turkish Technic has signed a base maintenance agreement with Emirates Airlines. Under the terms of the agreement, Turkish Technic will perform base maintenance services on five Boeing 777 aircraft from the Emirates fleet. The base maintenance operation of the first Boeing 777 has already begun at Turkish Technic’s Istanbul Ataturk Airport facilities.

The other aircraft within the scope of the agreement will undergo base maintenance operations there in the coming months.

Turkish Technic CEO, Mikail Akbulut, said: “As a leading maintenance, repair and overhaul provider of comprehensive aircraft and component services, we are committed to delivering the best-in-class MRO services for our customers. We believe this agreement marks the beginning of a long-standing partnership with Emirates.”

Oman Air celebrates 30th birthday

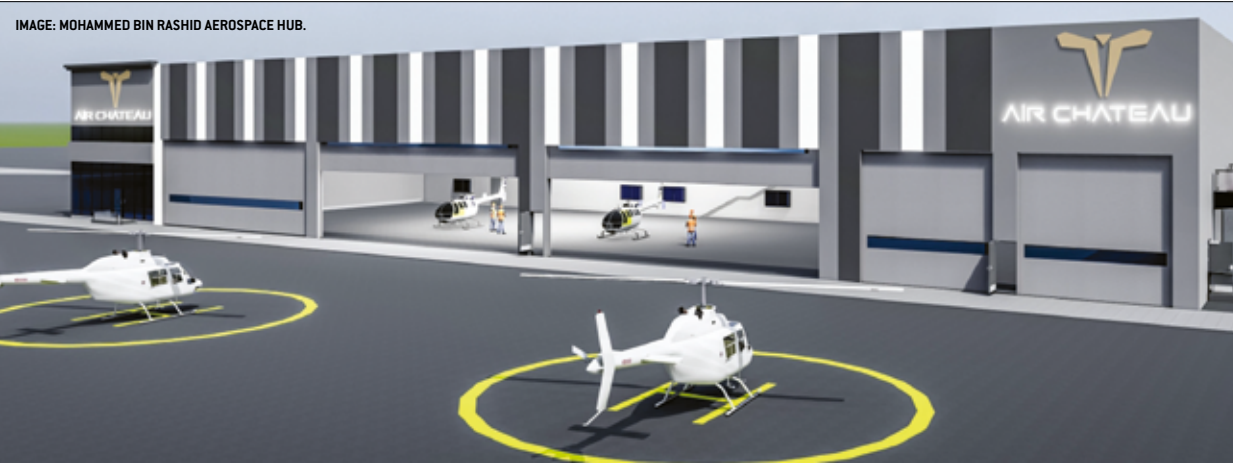
Oman Air celebrated its 30th anniversary in March. The airline began operations in March 1993 with a single flight between Muscat and Salalah.

The route, operated by a Boeing 737-300, marked the launch of the airline’s domestic network, which was followed shortly after with its first international flight between Muscat and Dubai.

“Thirty years as Oman’s national airline is a milestone to be proud of,” said Abdulaziz Al Raisi, the carrier’s chief executive officer.

“In that time, Oman Air has grown from a small regional carrier connecting Omanis across the country to an award-winning

IMAGE: MOHAMMED BIN RASHID AEROSPACE HUB.



Dubai Helipark second phase begins

The Mohammed Bin Rashid Aerospace Hub (MBRAH) has started construction of the second phase of Dubai Helipark, its helicopter centre, in partnership with Air Chateau International. Helicopter ecosystem provider, Air Chateau International, was certified by the General Civil Aviation Authority to begin helicopter operations at the Dubai Helipark in 2022, providing an opportunity for the multitude of private helicopter owners – individuals and corporates – to lease a parking spot within the premises and guarantee easy access to other heliports. Dubai Helipark, spanning more than 42,800sqm, is adjacent to the private jets terminal. The new development phase will incorporate a commercially

owned and operated landside helicopter hangar. It will also feature an extension of the existing apron to accommodate 12 helicopter parkings, and offer world-class helicopter MRO services. Tahnoon Saif, CEO of Mohammed Bin Rashid Aerospace Hub, said: “At MBRAH, we are deeply committed to aligning ourselves with the government’s vision of solidifying Dubai’s position on the world aviation map, and we are proud to play our part in contributing to Dubai’s economy through our innovative offerings and tailored solutions. “We are dedicated to providing exceptional services that exceed our clients’ expectations and contribute to the continued growth of Dubai’s aviation industry.”



PICTURE: DNATA

Bags of work at DXB for Dnata

Dnata reports that it handled more than 82 million bags through all three terminals at Dubai International Airport (DXB) in 2022. The company handles luggage for more than 100 airlines and millions of passengers travelling to 253 destinations from DXB. Merging and processing the flow of passenger

baggage and cargo between three terminals, and ensuring the right items are loaded onto the right aircraft at the correct time requires meticulous planning and significant people power. During peak times, more than 1,300 Dnata staff work in close synchrony to deliver every piece of baggage in a timely manner.

airline connecting visitors from around the world to Oman’s diverse natural beauty and rich culture. “Despite the challenges of the last few years, our goal continues to be to serve our country by enabling Oman’s ‘vision 2040’ ambitions, whether

through job creation, supporting the tourism and logistics industries, or increasing inward investment. “With three decades of experience and expertise to build on, we’re looking to the future with renewed optimism.”

Nane steps up

Mehmet Nane, managing director of Turkish low-cost carrier, Pegasus Airlines, has been appointed chairperson of the board. He succeeds Ali Sabanci, who had served for 17 years. Nane had previously been Sabanci’s board deputy.

Sustainability talks

Sharjah Airport welcomed a delegation from the Arab Civil Aviation Organisation (ACAO) that examined various airport initiatives to achieve sustainability. The delegation featured various sustainability experts from the UAE and other Arab countries, including Saudi Arabia, Jordan, Morocco, Sudan, and Libya, who gave insights into how vital sustainability is to the future of any business.

Sharjah Airport has embarked on a plethora of green initiatives intended to promote sustainability. ■ Planting for the future – page 19.

Cargo drop

Middle Eastern carriers experienced an 8.1% year-on-year decrease in cargo volumes in February 2023 – a slight improvement on the previous month (-11.8%). Capacity increased 9.3% compared to February 2022.

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ARC C150 is a Fixed wing eVTOL aircraft with long range (up to 400km) and high payload (up to 30kg). Using BVLOS (Beyond Visual Line Of Sight) technology, ARC C150 can be piloted remotely and eventually will be autonomous. The product successfully finished full transition testing in August 2022 and is now ready to enter the market.

Payload capacity: 30 kg
Speed: 100 km/h
Range: 400 km
Development stage (TRL): 6
Propulsion: Electric/Hybrid



ARC C-600 is the lost piece of the air cargo delivery operations and can revolutionize the industry once it enters the market. With 150kg payload and VTOL capability, it can be operated almost every where without the need of a runway which makes it much more desirable. Using BVLOS technology, ARC C-600 can cover a range of up to 800 km and tap into any market.

Crew: 1 remote (optional)
Payload capacity: 150 kg
Speed: 150 km/h
Range: 400 km
Development stage (TRL): 6
Propulsion: Electric/Hybrid

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Morocco to host African forum

The Moroccan Aerospace Industries Association (GIMAS) has organised the first Aerospace African Forum in Casablanca.

The event aims to be an ongoing continental platform for reflection and exchange between the main commercial aviation decision-makers in Africa.

Morocco’s Minister of Transport and Logistics, Mohammed Abdeljalil, explained that his country will continue to pursue an ambitious policy of liberalisation within the aeronautical sector, made possible by the positive development of international air transport.

In 2022, Morocco’s airports recorded commercial air traffic of 20.5 million passengers, representing a recovery rate of 82% when compared with 2019. It is anticipated that traffic should fully recover in 2024.

Shakespeare’s new act

Amman based MRO, Joramco, has appointed Shakespeare Nyamande as its new vice president of planning.

Nyamande, an aviation professional with more than 16 years of experience in production control, technical and resource planning, recently served

Well handled: Turkish Airlines has signed a new deal with Aviator Airport Alliance.
PICTURE: AVIATOR AIRPORT ALLIANCE/TURKISH AIRLINES.



Turkish Airlines extends Nordic partnership

Aviator Airport Alliance, a full-range provider of aviation services at 15 airports across the Nordic countries, has signed a new contract with Turkish Airlines.

Under the agreement, Aviator will provide ground handling, including passenger and ramp handling, and de-/anti-icing services to Turkish Airlines at Helsinki Airport.

Casper Dons, chief commercial officer at Aviator Airport Alliance, said: “We are thrilled to further strengthen our long-

standing partnership with Turkish Airlines and sign a new contract.

“Our continued collaboration with the airline over the years has allowed us to establish ourselves as dependable and professional partners, and this expansion of our partnership is a testament to our successful track record.

Malta milestone

Emirates has celebrated 25 years of its services to Malta, which started on March 30 1998.

The airline has so far carried close to 1.1 million passengers on more than

as the director of engineering finance & vendor management at Air Astana, the national carrier of Kazakhstan.

More aircraft for Saudi carrier

At Joramco, he will be leading the planning department to meet the company’s growth ambitions.

12,700 flights, with Dubai being the furthest east-bound route from Malta, as well as one of the few destinations for travel outside of Europe.

Dubai-bound

Indian low-cost carrier, IndiGo, is set to start international operations to Dubai out of Bhubaneswar, the capital city of Odisha State.

State chief minister Naveen Patnaik said: “Direct connectivity with Dubai, which is one of the biggest aviation hubs, will open up a gateway to the world.”

Sirius move

Sirius Aviation Capital, a global aircraft asset manager headquartered in Abu Dhabi, has acquired two single-aisle, mid-life aircraft. This brings the total fleet under management to 19 aircraft on lease globally across 11 airline customers.



Top line-up: The agreement was signed at the inaugural CANSO Airspace World event in Geneva. PICTURE: NATS.

SANS alliance set to boost capacity

Saudi Air Navigation Services (SANS) and NATS, the UK’s leading provider of air traffic control services, have signed a memorandum of understanding (MoU) to collaborate on initiatives that will help safely manage and deliver increased flight capacity.

SANS is responsible for providing air navigation services in the Kingdom of Saudi Arabia, where it plays a role in delivering safe air traffic management within Saudi airspace and across the country’s airport network.

The agreement will enable the two

organisations to further develop a working relationship that has already been established.

Martin Rolfe, NATS chief executive officer, said: “The Kingdom of Saudi Arabia has hugely exciting and ambitious plans for its aviation sector. Over the next decade it plans to create new airports, airspace, airlines and infrastructure to increase passenger numbers to at least 300 million a year. We look forward to working with SANS to help bring that vision to life.”

■ Virtual tower seeing the big picture, page 24.

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KEEP UP WITH THE CLICKS

Gulf Air's strategic plan to become a 'boutique airline' is firmly under way.

Alan Peaford talks to the carrier's chief executive, Waleed Al Alawi, about the changes that have seen it collect a 'world-best' award.

How the 'grand old lady' found love in the boutique

Bahrain's national carrier, Gulf Air, has been described as the "grand old lady" of the Arabian skies. Once the consolidated carrier for the UAE, Oman, Bahrain, and Qatar, and recognised globally as the forerunner of the airlines bringing comfort and class to the modern era, it has faced challenges since the break-up of the partners to create their own competitive airlines, building on the experience they had shared since the days when Freddie Bosworth began what became the Gulf Aviation Company with an air taxi service to Doha and Dhahran from Bahrain in the 1940s.

Time, is the great healer. While still celebrating its heritage, today's Gulf Air is not looking back in anger at lost opportunities, nor looking forward with unrealistic ambitions.

The carrier has, instead, taken stock and became the first to pitch itself as a 'boutique airline'.

Captain Waleed Al Alawi started his career with Gulf Air in the 1980s heyday, when it was *THE* airline to fly. He subsequently spent 18 years with the kingdom's Royal Flight, until returning to the national carrier in 2017 as deputy CEO and then acting CEO for two years.

He formally took the top job in October 2022 and was well aware of the challenges faced as he did so.

"Gulf Air has been around for 73 years. Any business that has continued for such a long period will, no doubt, have different

Continued
on Page 12 ►

▼ We have changed from an airline that was not very busy to an airline that is the choice of passengers. ▲
CAPTAIN WALEED AL ALAWI



CONTINUED FROM PAGE 11

challenges,” he said. “It’s up to the management, at certain times on the path of such an organisation, to do the needful to survive; and, in fact, to do really well with all the challenges.

“Every airline has its own strategy, trying to capture a certain market share. We have done really well by introducing the boutique strategy. Our load factors are now in the 80s.

“I remember, six years ago when I rejoined Gulf Air, that the aircraft were not very busy. Today, I get phone calls from people who ask me if it is possible to get them a seat.

“So, we have changed from an airline that was not very busy to an airline that is the choice of passengers.”

Al Alawi continued: “We love the challenging area we live in because it pushes all the airlines to the highest standard possible. And I think, at the end of the day, the customers are the beneficiaries.

“I think we’ll continue with our market share. We’ll continue doing what we do best. And we wish all our partners all the best as well.”

The results are there to be seen with Gulf Air winning the coveted award from Skytrax as the ‘world’s most improved airline 2022’.

Gulf Air is now in partnership with other airlines, such as Emirates and Etihad, who are seeing benefits of linking with the boutique carrier. But is there a risk they could copy the approach?

“If you go to Paris and you stay in a boutique hotel that has 20 rooms, they know you by name, they know what you like, they put out the magazines that you like to read in the morning and so on,” said Al Alawi. “So, the concept started literally talking to boutique hotels.

“We carry five to seven million passengers where, with other airlines, it could be more than 50 million passengers. It’s very difficult for huge airlines to have that same relationship.”

Al Alawi knows that Bahrain Airport’s new terminal is also enhancing that changing reputation. “The airport caters for 14 million passengers, compared to some where they handle something like 80 million, so you don’t have that fatigue. It’s a unique relationship between the provider and the customer, and that’s what we mean by boutique.”

Key to the successful turnaround has been bringing both the Bahraini public and the airline’s staff on the journey.

“It takes a lot of hard work, where all the employees have to buy into the strategy,” Al Alawi said.

“The employees are clearly on the right path to

move the airline into where we want it to be,” he added. “We lost a big market share for a period of time. Now, with the new aeroplanes coming – the [Boeing] 787 Dreamliner and the [Airbus] neos are very comfortable – and with the new destinations announced, we have built off connectivity through Bahrain as a hub.

“This supports the strategy of the Kingdom of Bahrain, under the leadership of His Majesty King Hamad Al Khalifa and his prime minister, Sheikh Salman bin Khalifa, to get Bahrain to be a destination for tourism.”

The airline is supporting both inward and outward tourism, having recently announced a



Sitting pretty: The inside of Gulf Air's A321-LR neo gives a taste of why the Bahrain flag-carrier is rated as the world's most improved airline.

is data and data protection,” Al Alawi explained.

“When people purchase their tickets through travel agents, it’s difficult for the airlines to communicate because you don’t have their phone numbers, you don’t have their e-mail addresses, and so on. If people purchase directly with us, then obviously we have e-mail addresses and phone numbers and the beauty of that is the communication line.

“If we’ve got delays, reschedules, or any issues that could change paperwork requirements etc, the airline is able to communicate with the passengers. And, let’s face it, without having strong electronic platforms, you won’t be able to do that.

“Airlines and passengers have to work hand-in-hand to understand that this relationship has to get stronger and stronger.”

Al Alawi praised the progress airports are making across the network with initiatives such as facial recognition and electronic passports. But he warned that there needs to be much more joined-up thinking if it is going to work for the airlines and their passengers. That will hinge around the bandwidth and data speeds.

However he is optimistic: “In the past, we used to buy one gigabyte of memory and now we’re talking about 10 or 20 terabytes. Electronically we have moved huge leaps

forward. And I think the data protection is there, the regulations are there, and the capacity is there.

“I think this is how we will be able to move to the next stage, where the passenger journey will be much smoother.”

A bigger concern – at least in the short-term – is the lack of human capital.

“Recently, we have seen passengers in Europe have to queue for hours to clear customs and immigration because of lack of trained staff,” he said.

“As an industry, we lost people in the pandemic and it takes time for others to be trained, to be security checked, and to be rolled into the job. It could take until 2025 for the markets to go back to where they were before Covid.

“I think, then, things will start running smoothly because we will have enough staff, hopefully around the globe, to support the aviation industry.”

But, in the meantime, one relatively small, boutique carrier will continue punching above its weight with a service offer and style that is born out of experience. ▲


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Nose-to-nose: Two new A320neos were delivered “with some goodwill on the part of Airbus” ahead of schedule in 2022. PICTURES: JAZEERA AIRWAYS.

Welcome to the Jaz era

Record profits and passenger numbers – not to mention a new Saudi sister-company – are focusing attention on Kuwaiti low-cost carrier Jazeera Airways. **Alan Dron** reports.

Last year saw some of the highest fuel prices on record. Together with supply chain problems throttling new aircraft deliveries, many airlines struggled to recover from the pandemic.

Jazeera Airways has avoided those pitfalls and is planning for steady growth over the next few years – indeed, within the next few months.

“We have some significant expansion plans,” said Jazeera CEO, Rohit Ramachandran, just before the airline announced it is planning a new low-cost carrier (LCC) with Saudi partners, to be based at Dammam’s King Fahd International Airport.

Jazeera is attempting to tap into Saudi Arabia’s ‘vision 2030’ strategy, which calls for a huge expansion of the kingdom’s aerospace sector. The aviation market there is booming, exemplified by the announcement of a new flag-carrier, Riyadh Air.

Jazeera is also benefitting from what the CEO described as the “very vibrant” Kuwaiti marketplace. “Kuwaitis are inveterate travellers and have been adventurous in moving towards vacation spots that Gulf Cooperation Council tourists don’t usually go to,” he explained.

This has led to the airline pushing into central Asian destinations such as Namargan and Bishkek that many people would find difficult to locate without the aid of a map.

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Gulf residents are increasingly keen to visit these nations, while the populations of those states have an equal appetite to travel to the Gulf. Part of that is in the form of religious tourism, with pilgrims heading to Saudi Arabia via Kuwait.

“One of our most profitable routes is to Osh, a little city in Kyrgyzstan, which is the Moslem enclave in that country,” said Ramachandran. “By our reckoning, Jazeera is the largest foreign operator of Umrah flights.

“Out of the Gulf carriers, we probably have the biggest share of the market from central Asia.”

Jazeera emerged strongly from the pandemic. In 2022, it flew 3.6 million passengers, a striking increase on 2.4 million in 2019, the last pre-pandemic year. Net profit for 2022 was more than KD20 million (\$65 million), a record, despite perhaps the most expensive fuel prices in history.

And prospects seem good: “We have a clear business



▼ Getting aircraft is not a huge challenge; if you have money, you can get aircraft. The challenge is making a profit and getting return on investment. ▲

ROHIT RAMACHANDRAN

plan that takes us up to 85 destinations in the next three years. Currently, it’s 56,” said Ramachandran.

Areas for expansion include the Indian subcontinent, Iran, Saudi Arabia and eastern Europe. “Last year, we launched Prague and Vienna. This year, we’re looking at Munich.”

Serving that expanding network will require more aircraft. At present, Jazeera has 11 A320neos and eight older Airbus A320ceo. At the 2021 Dubai International Airshow, it ordered 20 A320neos plus eight A321neos, with the jets now steadily replacing the legacy aircraft.

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With many airlines complaining of late deliveries from manufacturers, it is notable that Jazeera was able to pull forward deliveries of two A320neos last year “far sooner” than anyone anticipated.

“For me, getting aircraft is not a huge challenge; if you have money, you can get aircraft. The challenge is making a profit and getting return on investment,” said Ramachandran.

“By the end of 2023 we’ll have 30 aircraft. Our order for the A321s will be for the standard version, not [long-range] A321LRs or XLRs, so we’re looking at deploying them on high-capacity routes where we have consistently high load factors.

“We have 13-14 daily flights into the Western Province of Saudi Arabia; we’ll deploy them there. In fact, we’re considering leasing some A321s this year to cater for some of the demand.

“Having said that, we may have to increase the aircraft order. We also have options that were not really shared at the time of the order.”

Jazeera has its own terminal, T5, at Kuwait International Airport. Original design capacity was three million passengers annually. Efficiency measures increased that to 3.6 million, but that has just kept pace with the company’s growth.

Two new airbridges (taking the total to five) and two new ground gates for remote stands, plus 14 new check-in desks, have recently been installed, increasing capacity to 4.6 million.



And an extension to the existing building is being built this year: “That should give us at least another 1.5 million capacity,” concluded Ramachandran. ▲




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Morocco's business and private aviation sector has taken another step forward with the opening of a fixed-base operation (FBO) at Dakhla Airport in Western Sahara. **Anuradha Deenapanray Chappard** reports.



Welcoming: Dakhla's modern architecture offers VIP passengers comfort and safety.
Inset: The FBO at Marrakech Menara Airport, set up in February 2020, is the second largest of Jetex's worldwide facilities and the largest of Swissport's network globally.
PICTURES: ONDA.

ONDA way to FBO modernisation

A number of major development projects are under way in Morocco – part of a new Moroccan Airports Authority (ONDA) development strategy to support the business aviation segment in the kingdom and the region.

The new terminal at Dakhla, entirely dedicated to business and private aviation, was inaugurated in late February.

This new FBO will be operated by Swissport Executive Aviation Morocco and Jetex Executive Aviation Morocco.

Its modern architecture welcomes VIP passengers in comfort and safety and a special zone for immigration formalities has been integrated into the FBO.

Business and private aviation represents a significant growth potential in Morocco, given the attractiveness of the country's economy and tourism. This segment is designed to meet the transport needs of businessmen, personalities, and air taxi companies, as well as for medical evacuations.



According to ONDA CEO, Habiba Laklalech, her organisation has deployed a new economic model to ensure the development of FBOs within the country.

Two agreements have been signed – the first with Jetex Executive Aviation Morocco for the development and operation of FBOs at Casablanca, Marrakech, Rabat, and Agadir airports. The other agreement concerns Swissport Executive Aviation Morocco for the same services at the airports of Casablanca, Marrakech, Rabat, and Tangier.

Jetex Executive Aviation Morocco, the Moroccan subsidiary of the international operator Jetex, manages 40 FBOs in 15 countries, including in Miami, London, Dubai, Paris, Rome, Barcelona, Madrid, and Muscat.

The FBO at Marrakech Menara Airport, set up in February

POINT-TO-POINT SHARPENS UP

The pandemic has undoubtedly changed travellers' behaviour.

Point-to-point travel has gained momentum, giving business aviation something of a boost.

"Prospects are very good, especially in Europe and the United States, and Asia is coming back slowly," said Eric Trappier, CEO of Dassault Aviation.

The company's Falcon product range is expanding. "We have been preparing the entry into service of the Falcon 6X in mid-2023," said Trappier. "The aircraft has an interesting range for the Middle East market."

The priority now is for the certification of the 6X and the production ramp-up, he added.

Regarding sustainability, Trappier believed that business aviation would decarbonise earlier than commercial aviation as "clients are more ready to pay for a better service". ▲

2020, is the second largest of Jetex's worldwide facilities, after Dubai, and the largest of Swissport's network globally.

Many FBO projects are in the pipeline, including modernisation at Casablanca and the construction of a new facility at Tangier.

Agadir Al Massira Airport and Rabat Salé will also have their own business aviation terminals in a near future.

Morocco benefits from its strategic position between European, African, and Middle Eastern markets, both in terms of geography and capacity.



In 2019, the country's airports handled 50% of business aircraft movements in north Africa. Each year, Morocco sees more than 10,000 private jet movements, making it one of the most important markets in the region.

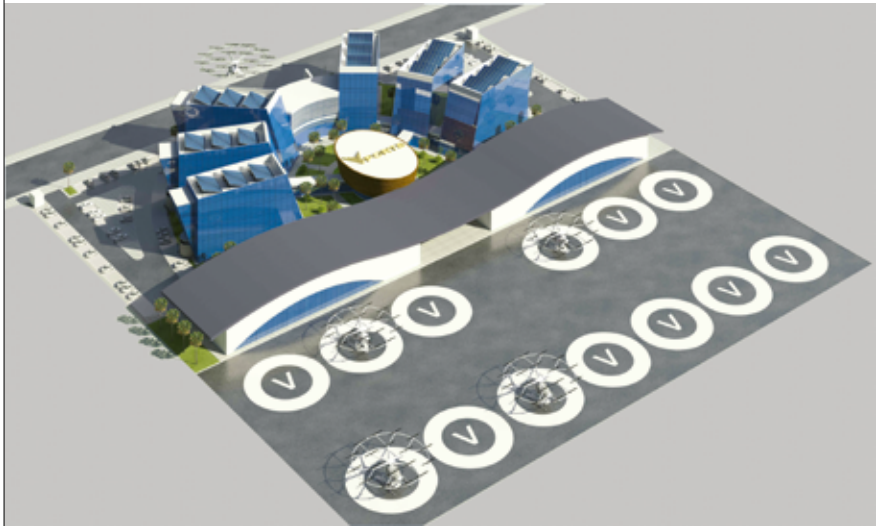
The business and private aviation sector is witnessing a gradual recovery, nearing the levels recorded in 2019. ONDA intends to sustain this growth momentum.

The ONDA board meeting in March underlined its financial recovery after two years of crisis linked to Covid-19; Laklalech presenting the 2023 roadmap as part of the strategic plan, based on budgeting for a 19% increase in traffic compared to 2022.

The organisation's new investment programme initiates construction of terminals at Tetouan, Marrakech, Tangier, and Agadir airports, the development of aeronautical infrastructure, and studies to increase the capacity of Mohammed V and Dakhla airports.

The 2023 budget also provides for the construction of new control towers, the modernisation of air navigation equipment and the implementation of several digital projects, as well as human capital development and social dialogue. ▲

Dubai has taken another step in developing its aerospace ecosystem by creating the world's first advanced air mobility integration centre. **Alan Dron** reports.



Delivering the goods: An artist's impression of an AAM hub, with landing and take-off spots suitable for eVTOL aircraft to park overnight, or for loading urgent cargoes.

IMAGE: VPORTS.

Dubai's vertical take-off with AAM

If the forecasts are correct, the next major leap in aviation will be the development of advanced air mobility (AAM).

This will see small, electrically powered vertical take-off and landing (eVTOL) aircraft carrying passengers and urgent freight on short hops, avoiding congestion on surface roads.

Dubai aims to get in on the ground floor of this new business by creating a centre that will develop new technologies, then test them in a dedicated air corridor.

To do this, the UAE aviation regulator, the GCAA, together with the Mohammed bin Rashid Aerospace Hub (MBRAH) at Dubai South, has teamed up with VPorts, a Canada-based specialist in the design, construction and operation of AAM facilities.

VPorts has signed an initial 25-year lease with MBRAH to establish the state-of-the-art AAM centre on a 37,000sqm site within Dubai South, the aviation city that includes Al Maktoum International Airport.

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The project, which represents an initial investment of \$40 million over three years, is expected to generate \$7 billion in direct revenues in Dubai and Abu Dhabi over the next 25 years and create 1,500 high-quality jobs.

Construction of the AAM integrator centre should start in 2024

The project includes dedicated flight-testing airspace and assigned blocked airspace. "This is a key element," said VPorts' founder and CEO, Dr Fethi Chebil. "If you want to do testing in the US or Europe, it's a real headache.

"We will be the link between operators and the GCAA. If you have approval [of your eVTOL vehicle] in your home country to fly, it will be easier for the GCAA to accept it.

"Our first business case is for cargo and regional flights; urban comes later."

Chebil believes that regulators will initially nudge operators towards cargo operations, away from densely populated areas.

Initial plans are for five vertiports in the UAE: Dubai South, Abu Dhabi, Sharjah, Jebel Ali, and Ras Al Khaimah.

Chebil foresees three types of vertiport.

One will be for hops in and out, with two stands – one for landing/taking-off and one for recharging, perhaps located close to an hotel or airport. Another will have 10-12 stands and act as a hub, with eVTOL craft staying overnight. The third will be an MRO-type base, for maintenance, testing and perhaps even assembly of eVTOL aircraft.

"Our mandate at MBRAH is to attract top global players in the aviation sector to establish their presence in the emirate and operate as part of our overall ecosystem," MBRAH CEO, Tahnoon Saif said.

As part of the agreement, VPorts will partner with private investors to deliver advanced infrastructure, development, and operations. US-based NEXA Capital Partners will lead the initial investment round, assembling a consortium of investors already active in the AAM sector.

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"GCAA's strategic plan is to build a sustainable and innovative cluster for the AAM ecosystem, to thrive and grow this new entrant mode of air transportation globally from a hub right here in Dubai," said GCAA director-general, Saif Mohammed Al Suwaidi.

"We are reshaping the regulatory landscape to leverage the presence of the principal project partners in Dubai to enable innovation and to foster AAM-related technology and know-how capacity building in the UAE and across the world."

VPorts will deploy its vertiport operation control centre (VOCC) hub at Dubai South. It will have the capacity to manage air traffic integration and set up communication protocols between eVTOLs, vertiports and air navigation service providers (ANSPs).

The VOCC will also have the capacity to manage non-flight-related operations, including cargo, personnel and airside management, commercial activities, security screening, cybersecurity, ground handling and aircraft charging.

By 2030, the network will extend to all major industrial areas across the UAE, providing a sustainable transportation solution via eVTOL aircraft.

Saudi Arabia is a target for VPort's expansion, particularly the huge new city being built at Neom on the Red Sea. India, north and east Africa are also on VPorts' target list.

▼ GCAA's strategic plan is to build a sustainable and innovative cluster for the AAM ecosystem. ▲
SAIF MOHAMMED AL SUWAIDI

Salt tolerant: Salicornia, also known as marsh samphire, grows on otherwise infertile land.

PICTURE: MARCO SCHMIDT, WIKIPEDIA.

Planting the seed of our sustainable future

An unremarkable shrub with the ability to grow in salt water may hold the key to plentiful and affordable sustainable aviation fuel (SAF) – and researchers in Abu Dhabi are determined to prove it. **Chuck Grieve** reports.

The humble Salicornia bush, a succulent found on beaches and salt marshes in much of the world, isn't much to look at.

But, if the work of the Seawater Energy and Agriculture System (SEAS) project at Abu Dhabi's Khalifa University ultimately proves successful – and indications are positive – it could prove to be the key to turning unproductive sabkha and deserts throughout the Middle East and around the world into vast plantations growing fuel: enough for the entire global fleet.

It's one of several pathways to producing synthetic fuels being explored in the UAE and elsewhere in the region, notably Turkey and Saudi Arabia, to hit aviation's net zero target. Annual production of SAF needs to increase to 449 billion litres, says the International Air Transport Association (IATA), if it is to account for 65% of the industry's total eliminated carbon emissions by 2050.

Speaking at MRO Middle East, Dr Alejandro Rios, director and chief research scientist at Abu Dhabi's Sustainable Bioenergy Research Consortium (SBRC), which manages SEAS, said after more than a decade's research, the project's academic and industrial partners are now studying how to scale up to commercially viable levels of production and supply.

The seeds of Salicornia yield oil, which can be processed to fuel. The SEAS project cultivates fields of Salicornia as part of an ecosystem starting with fish and shrimp. The nutrient-rich effluent from their ponds is pumped into the Salicornia fields, where it fertilizes the plants. From the fields, the water circulates into cultivated mangrove plantations, which help return it to its original state.

Although the SEAS partners produced enough fuel for a successful demonstration flight by Etihad Airways in 2019, Dr Rios said it's obvious that millions of hectares of land under

cultivation would be needed to meet the needs of aviation. But the land is there, he added.

"There are 25.5 million square kilometres of desert and arid fields around the world with access to brackish or salt water. If we take .001% of that area, we can actually reach the levels I'm talking about.

"Clearly this won't happen overnight; it's a huge challenge but one we need to address in a place such as the UAE, where we do not have plentiful fresh water or arable land."

He was "optimistic" about taking the project forward, scaling up toward viable commercialisation, but cautioned: "We won't see fuel produced by this technology for 10-13 years."

Scientists in Turkey are moving in a similar direction, with industry support.

Turkish Airlines recently won an award for airline sustainability innovation of the year for its part in the microalgae-based sustainable bio-jet fuel project (MICRO-JET).

The airline worked closely with researchers at Istanbul's prestigious Bogazici University to develop, what is described as, the world's first carbon-negative SAF using hydro-processed fatty acids and hydrothermal liquefaction methods.

Continued on Page 20

CONTINUED FROM PAGE 19

In Saudi Arabia, plans to produce and distribute SAF – a key part of the kingdom’s ‘vision 2030’ – received a boost with the recent memorandum of understanding (MoU) between fledgling lessor AviLease, a wholly owned subsidiary of the Saudi Public Investment Fund (PIF), and the Saudi Investment Recycling Company (SIRC), which confirmed the partners’ intentions to launch, support and promote SAF.

Edward O’Byrne, AviLease chief executive, said the partnership should “trigger large-scale production of SAF in a country that has the natural competitive advantages to become a low-cost producer.”

Currently, certified SAF is subject to a maximum blending ratio of 50% with fossil-based jet fuel depending on the feedstock-production pathway. Industry and fuel standard committees are looking into the use of 100% SAF by 2030.

World Fuel Services, an exhibitor at the recent Middle East and North Africa Business Aviation Association (MEBAA) event, has seen growing interest in SAF, but little evidence of a supply chain developing. Managing director, Riyan Qirbi, told reporters: “There’s definitely an interest from multiple parties. If it were available and at the right price, I think there would be a market for it.”

He suggested promoting sustainability through incentives, as in North America, or by mandate, as in Europe, would be helpful.

It’s a view shared by IATA. Willie Walsh, the organisation’s director-general, told the annual meeting in Doha in 2022 that “we could see 30 billion litres available by 2030” – a tipping point for its production and utilisation – if governments extended clean energy incentives to SAF. ▲

EMIRATES’ SAF DEMO FLIGHT A FIRST FOR THE MIDDLE EAST

In late January, Emirates successfully completed the Middle East’s first demonstration flight using 100% SAF with a Boeing 777-300ER powered by GE90 engines.

One of the twinjet’s engines burned SAF exclusively during the flight to demonstrate the capacity of unmodified GE90 engines to run on a 100% SAF blend without affecting performance – the so-called ‘drop-in’ approach.

Dr Gurhan Andac, GE Aerospace’s engineering technical leader for aviation fuels and fuel additives, told *Arabian Aerospace* the testing “adds to the body of data around SAF blends in high proportions”.

“For the manufacturers and for us at GE, it’s extremely important to help ensure that the new fuel technologies introduced are safe,” said Andac.

“Apart from the flight itself, there is much to learn for the region’s aviation industry regarding logistics in bringing in SAF and using it in flight operations. Certainly, there’s more [testing] work to be done.”

As important, he said, was the flight’s “public demonstration to the world that we can bring sustainable fuels to aviation”.

For the flight-test, a blend of two SAF types was used: synthetic paraffinic kerosene (HEFA-SPK) produced by Neste of Finland, and synthetic aromatic kerosene (HDO-SAK) from Virent Inc of Wisconsin, USA.

The blend results in a fully synthetic fuel that is equivalent to Jet A/A-1.

Andac, who also chairs the international committee of ASTM International (formerly known as the American Society for Testing and Materials), which maintains the global standard specification for synthetic aviation turbine fuels, said GE is proud of its involvement with numerous airlines in



Dr Gurhan Andac: “It’s extremely important to ensure that the new fuel technologies introduced are safe.”

PICTURE: GE AEROSPACE.

advancing SAF use as part of the decarbonisation of aviation toward the industry goal of carbon neutrality by 2050.

GE’s advances in new, more fuel-efficient flight technologies, such as hybrid electric aircraft engines and advanced engine core and combustion designs, “will not replace the need for SAF”, said Andac, “and they will not be in service until the mid-2030s.”

“SAF, on the other hand, is a fleet-wide and infrastructure-wide applicable solution that is available now, at least from a technology perspective.” ▲

ON THE TRAIL OF GREENER OPERATIONS

Etihad Airways and UK aerospace company, Satavia, have signed a contract that aims to dramatically reduce atmosphere-warming contrails.

The partnership follows a successful proof-of-concept trial to expand the scope for contrail management within flight operations.

The contract was signed by Etihad’s head of sustainability and excellence, Mariam Al Qubaisi, and Satavia CEO, Dr Adam Durant, at the World Future Energy Summit in Abu Dhabi.

The new agreement will see Etihad scaling up Satavia’s contrail prevention system across daily flight schedules, accelerating progress towards climate-neutral operations.

Although CO2 emissions from aircraft grab the headlines, it is actually aircraft-generated condensation trails, or contrails, that cause surface warming responsible for up to two-thirds of aviation’s climate impact.

Satavia says that its contrail management system, DecisionX:Netzero, optimises commercial flight plans for greener operations, implementing small routing changes to avoid the formation of persistent warming contrails.



Small percentages: Just 5% of scheduled commercial flights can be responsible for 80%-90% of warming by contrails.

PICTURE: TIM WINTER, SATAVIA.

The company has undertaken a considerable amount of advanced weather modelling and has simulated the formation of clouds up to 36 hours into the future.

Once it has this information, it looks at Etihad’s schedules and identifies those flights that will have

a warming impact. It can then suggest adjustments to the flights’ altitudes to avoid generating persistent contrails.

Just 5% of scheduled commercial flights can be responsible for 80%-90% of warming by contrails, Durant said. “Most flights make contrails of some description, but they may only last for a few seconds and some can actually have a cooling effect.”

Al Qubaisi added: “In 2022 alone, Satavia technology enabled us to eliminate thousands of tonnes of carbon dioxide equivalent climate impact.”

In addition to enabling contrail management in day-to-day flight operations, Satavia conducts climate impact analysis for conversion into future carbon credits to be shared with Etihad.

“By implementing minimal changes to a small percentage of flights, eco-conscious operators like Etihad can eliminate most of their non-CO2 climate footprint with little to no impact on day-to-day operations,” said Durant. “We’re trying to get the industry to adopt a target to reduce perhaps 50% of those by 2030.” ▲

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Connecting the world:
Tangier proved to be the
perfect backdrop.
PICTURES: THE AIRPORT AGENCY.

CONNECT FORUM...

Morocco hosted the 19th edition of the Connect route development forum, which brought together nearly 650 experts and professionals from the aviation ecosystem in Tangier.

Anuradha Deenapanray Chappard reports.

Connect Tangier provided the perfect backdrop for decision-makers and aviation's leading companies to interact and find synergies in the 'kingdom of light' as Morocco bills itself.

The one-to-one meetings in a pressure-free atmosphere and a productive environment were conducive to nurturing relationships, with 98 % of participants saying the event had helped generate new business.

According to Karin Butot, CEO of The Airport Agency, which organised the event, Connect Tangier was a record edition. Tailored to maximise networking opportunities, the event provided crucial industry analysis, updates, and forecasts. Airline and airport CEOs gave full insight into company policy.

Habiba Laklalech, CEO of the National Moroccan Airports Authority (ONDA), said: "Participation in this event was part of the implementation our strategic plan to enhance airport connectivity in Morocco. This forum represented a good opportunity to promote our airports."

The Moroccan airport network currently offers capacity for 39 million passengers yearly and is set to develop even more with the modernisation of the "north African gateways to the world".

As Adel El Fakir, CEO of the Moroccan National Tourism Office (ONMT) pointed out: "It's important to increase and diversify air services. Air connectivity remains one of the main levers for tourism development."

Panelists addressed trends, opportunities and challenges like prices, taxes, and flight rights, infrastructure, sustainability, digitalisation, economic impacts of geopolitical conflicts, open skies agreements and the single African air transport market (SAATM).

Ray Kelliher, director of route development at Ryanair, highlighted Morocco's importance for his airline.

The Irish low-cost carrier has an ambitious expansion strategy in Morocco. The airline started its first flights to the country 20 years ago and 2022 saw more than 4 million

passengers carried during the summer alone – the outlook for 2023 and 2024 is just as good.

Kelliher said the partnership with Morocco was an ambitious one in terms of what the airline wanted to achieve over the next five or ten years.

"It's a long-term partnership where we've been able to develop traffic consistently each year. We want to just keep managing that and trialling new destinations and new airports," he said.

"We build together. We're going to have more than 600 aircraft. We're interested in building our fleet and our product with people; this isn't just flying aircraft, we want to sketch ourselves into the fabric of Moroccan life. That's what we're trying to do."

Connect Tangier heard that the Saudi Government plans to build new airports, enhance airspace efficiency and air traffic management, attract new airlines, embrace new technologies and increasing passenger traffic to more than 300 million people per year.

Like many airlines, the Hungarian low-cost carrier, Wizz Air, believes that Saudi Arabia is a mature and a rapidly growing market.

Evelin Jeckel, acting network officer at Wizz Air, said: "We have built a very strong base in Abu Dhabi and we are now expanding to Saudi. It's a place where penetration of low-cost [airlines] is very low but the demand is very high."

Wizz Air has well-established bases in the UK, and central and eastern Europe.

"In total we have 23 different destinations," said Jeckel. "We have launched some of them and others will start in the coming months."

Wizz Air already connects Egypt and Morocco but not in a very substantial way. The airline wants to strengthen its presence in the north African market.

"It's something we will be looking at in the future. So far, it's mostly leisure traffic from Europe," explained Jeckel.

Italy's Turin and Cuneo airports will host Connect 2024. ▲

PICTURE: ONDA.



▼ This forum represented a good opportunity to promote our airports. ▲
HABIBA LAKLALECH

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A ‘virtual’ air traffic control tower in Saudi Arabia may be the first of many in the region. **Alan Dron** reports.

Taking the long view: Remote, or virtual, air traffic control towers have take-offs and landings monitored from a distant location via high-definition cameras. PICTURE: INDRA.



Saudi switches on the remote control

Saudi Arabia’s Al Ula International Airport is about to become the first in the Middle East to operate with a virtual air traffic control tower.

Controllers for the new tower will not be at Al Ula, but around 600km away, in Jeddah.

Virtual, or remote, air traffic control towers are already common in Scandinavia. Initially positioned at small regional airports, the technology behind them is now spreading to larger airports, such as Budapest and London City.

Essentially, they use radar and high-definition cameras to scan the area surrounding an airport, with the information they gather being transmitted to controllers at a distant location, allowing them to manage landings and take-offs.

The system brings cost-efficiency benefits, with fewer controllers being required for the safe operation of an airport.

The Saudi site is scheduled to be ready for certification in the third quarter of this year, with full operational status in early 2024.

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Installation at Al Ula, in the north of Saudi Arabia, is being provided by Spanish company Indra, one of the main developers of remote air traffic management (ATM) technology. Indra signed a memorandum of agreement (MoA) with Saudi Air Navigation Services (SANS) in June 2022 to develop and operate the Al Ula site. The two organisations will lead the introduction of the technology into a region with a large number of medium-sized airports that could benefit from its use.

The project will position the Saudi aviation sector in the

vanguard of remote tower development and contribute to the goals set out in ‘vision 2030’, under which the country is diversifying its economy away from hydrocarbons.

Indra, which is one of the main providers of air traffic management (ATM) services in Saudi Arabia, is now incorporating the use of artificial intelligence to support the work of controllers and enable them to detect risk situations more rapidly and effectively.

Following the signing of last year’s agreement, SANS CEO, Abdulaziz bin Salem Al Zaid, said: “This project will constitute a qualitative leap for the navigation services provided by SANS and enhance its position as one of the operators that manages

its airspace in accordance with the most demanding international safety and quality standards.”

Javier Ruano, Indra’s director of ATM operations, added: “We’re redoubling our efforts to make the Saudi service provider one of the world leaders in air traffic management and to equip the country with the most advanced infrastructure.”

The agreement also represented a first step in the two companies’ future collaboration plans in the field of virtual control towers, which would expand their current cooperation in the area of air traffic management systems, he said.

The project will include the training and skills enhancement of Saudi personnel, including the air traffic controllers, engineers, and technicians.

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Indra has previously provided technical and operational training to controllers on how to use the ATM system and make the most of its capabilities for efficiency and safety maximisation. As a result of that, the SANS technical and operation team managed to commission and operate the Riyadh centre during Covid with remote support from Indra.

“This is the first project of many more that we hope we can deliver together in the future,” an Indra spokesman said. “SANS and Indra are establishing a joint venture to commercialise and deliver digital remote towers solutions and services to a segment of countries globally.

“The idea is to combine the technological capabilities and air traffic systems knowledge of Indra with the operational knowledge of SANS so that, together, we can provide an ‘end-to-end’ solution to our customers that covers not only the technological systems but also business advisory, operational training, and even tower control services in some cases.”

Indra also supplies ATM equipment throughout the region, with deployed systems in Oman, the UAE, Kuwait, Bahrain, Qatar and Jordan. ▲



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Head - Infrastructure Operations | Technology, Dubai Airports

4th September, 2023

Venue: Radisson Blu Hotel, Riyadh, KSA

IDEX – the defence industry show launched in Abu Dhabi 30 years ago – is now the largest in the world. The Arabian Aerospace editorial team were there in force. **Amelia Clark, Alan Dron, Steve Knight, Jon Lake, Jay Menon, Ella Nethersole, Alan Peaford, Mark Pilling and Alan Warnes** report from ADNOC. Pictures from **Ian Billingham, Jeff Holmes, Jim Robbins and Sean McEwan**.

TOP OF THE WORLD

The Middle East’s profile in the defence world has changed as more business heads to the Gulf – and, as the region’s premier defence industry event proved, its influence is now global.

“Whichever way we measure the size and impact of IDEX and NAVDEX – from exhibitor, country or visitor numbers, the value of contracts signed, or the direct economic impact of the show – we can truly say it is the number one defence exhibition in the world.”

So said Humaid Matar Al Dhaheri, managing director and group CEO of event organiser ADNEC.

A key success factor for the show, which is celebrating its 30th year and is held under the patronage of His Highness Sheikh Mohamed bin Zayed Al Nahyan, president of the UAE, is the partnership between all parties, with the UAE Ministry of Defence and other strategic players at the forefront of the effort.

“We work as a team,” said Al Dhaheri. “We listen to our exhibitors, to visitor feedback, and to our partners. We have raised the bar in 2023 and we will do so again in 2025.”

▼ We listen to our exhibitors, to visitor feedback, and to our partners. We have raised the bar in 2023 and we will do so again in 2025. ▲
HUMAID MATAR AL DHAHERI

The influx of visitors delighted ADNEC as it exceeded its target of 130,000 over the duration of the show.

The success of IDEX and NAVDEX reflects the role of the UAE as a trusted ally in the region when it comes to the defence sector, said Al Dhaheri. It also demonstrates the global position of Abu Dhabi as a leader in organising and hosting large-scale events.

“The local defence and related industrial base developed in this country shows how the UAE has become an important player on the world stage,” he added. “IDEX and NAVDEX support this growth and provide a showcase for this vibrant sector.”

The expansion of NAVDEX is a significant move, said Al Dhaheri. With 10,000sqm of space, adding to the show’s overall 165,000sqm footprint, it was held in the new ADNEC Marina Hall, the largest exhibition space of its kind in the Middle East.

“This year, the event brought around AED 900 million (\$245 million) of direct and indirect economic impact to the local economy,” Al Dhaheri said. ▲



AIR-LAUNCH ‘FIRST’ FOR TURKISH UCAV

Baykar brought its Bayraktar Akinci twin-engine, high-altitude long-endurance (HALE) uncrewed combat aerial vehicle (UCAV) to IDEX.

The 5.5 tonne Akinci is comprehensively equipped, with an advanced synthetic aperture radar, collision avoidance radar, air-to-air radar, electronic support and countermeasure systems, and dual satellite

communication systems.

It carries a payload of more than 1,350kg (400kg internal and 950kg external).

The Akinci is said to be the first UAV capable of firing an air-launched cruise missile, and the example at IDEX was displayed with a Roketsan SOM cruise missile, a 600kg weapon with a 250km stand-off range. ▲

Comprehensively equipped: The 5.5 tonne Akinci is said to be the first UAV capable of firing an air-launched cruise missile.

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UAE INVESTS \$3M
IN SPEEDER VTOL

Abu Dhabi is investing in an innovative dual-use high-performance vertical take-off and landing (VTOL) aircraft produced by Mayman Aerospace – a JetPack brand.

The UAE’s Tawazun Strategic Development Fund (SDF) signed a \$3 million investment deal for Mayman’s Speeder air utility vehicle (AUV) at the show.

The SDF’s strategy is to invest in dual-use technologies serving both defence and civilian sectors. It recognises Speeder’s transformative capability as a “unique and entirely new class of high-performance VTOL aircraft”.

Speeder delivers a previously impossible combination of compact size, speed, payload, and range performance by means of vectored thrust from its gimbaled turbine engines. Such high performance is possible thanks to the energy density of jet fuel, including sustainable aviation fuel.

The funds will be used to continue the Speeder flight-test programme and progress the aircraft towards certification.

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“We recognise that Mayman Aerospace has demonstrated unique competence in this highly complex engineering and believe Speeder will deliver valuable, practical, applications for defence forces in the very near future,” said Mohamed Mussafah Al Mazrouei, SDF’s director investments and portfolio management.

“We are also assessing a partnership to set up a Speeder manufacturing centre in Abu Dhabi, including flight-test, manufacturing, sales, and distribution throughout the MENA region.”

David Mayman, CEO and founder of Mayman Aerospace, said: “Speeder’s potential to support multiple military applications is unparalleled and, with the new investment, we can transition our high-speed VTOL aircraft from flight-test to robust commercialisation.”

Speeder builds on engine thrust vectoring and control technology that was pioneered and proven on the original JetPack concept.

The multi-mission, turbine-powered VTOL platform is expected to serve various missions including demanding military, critical cargo, wildland firefighting, and disaster recovery, with preparations for flight taking just a few minutes, even in conditions that would ground a helicopter. ▲



KAMOV Ka-62 SPRINGS AN IDEX SURPRISE

One of the biggest surprises on the display line at IDEX was the Kamov Ka-62 helicopter – pictured above.

A Russian civil helicopter – albeit one based on the military Ka-60 – the Ka-62 programme was thought to be moribund last year, with development reportedly put on hold.

This is because the aircraft had been designed for western markets

and had, accordingly, used a high proportion of western parts and systems (about 60%), including its Safran Ardiden 3G engines, the supply of which were cut off by sanctions.

In November 2022, Alexander Neradko, the head of Russian Federal Air Transport Agency, said that although the aircraft had received a limited category

certification in 2021, its type certification was not going to be continued. “Currently all further work on this project is frozen due to known reasons,” he said.

But at IDEX, a Russian Helicopters spokesman said that “of course” work on the aircraft was continuing, and that the type was in production, presumably with some degree of ‘import substitution’. ▲



Fahad Al Mheiri: Said the first Emirati-assembled Coyote will be delivered in a little

RAYTHEON EMIRATES TO CO-PRODUCE
COYOTE INTERCEPTOR IN THE UAE

Raytheon Emirates announced plans at IDEX to establish a local final assembly, integration and test line for the Coyote counter-UAS interceptor within the Tawazun Industrial Park.

Fahad Al Mheiri, managing director of Raytheon Emirates, said this was not just manufacturing components, but an actual end product, providing the company with its first ‘real big product’.

Achieving this without first undertaking smaller scale component manufacturing marks a “giant step” for Raytheon Emirates.

Coyote is an agile, highly capable counter to a range of drone threats and is a relatively new programme of record, and not a legacy product.

Al Mheiri hopes that the first assembly line outside of the US will allow something that is now available only via the US foreign military sales (FMS) process to become available via direct commercial sales – “selling globally to the world”.

He said the first Emirati-assembled Coyote will be delivered in a little over two years. But, before that, Emirati-built components for the Coyote interceptor will feed into Raytheon’s US production line.

The company signed agreements with five UAE defence industry partners – EPI, Halcon, Lahab Defense Systems, Rockford Xellerix, and Milectria – for the project. ▲

TRAINING FIRST
FOR F-16 PILOTS

F-16 training capabilities have expanded with the delivery of the first deployable mission trainer (DMT) from Lockheed Martin to the Middle East.

The DMT provides on-demand training in a self-contained environment, including the ability to be networked for team training exercises.

Announcing the delivery at IDEX, Lockheed Martin’s Middle East chief executive, General John ‘Mick’ Nicholson, said: “This DMT will help enhance pilot proficiency, improve mission readiness, and create scope for further interoperability among the many nations that operate the F-16 in the Middle East region.”

The trainer can be set up in a small footprint providing its own power, lightning, environmental control, and training capability. ▲

■ Can Bahrain plug its pilots gap? – page 36.



LEADING EDGE...

Mansour AlMulla outlines his ambitions for self-sufficient advanced technology aerospace companies in the UAE.

UAE’s Edge is undeniably one of the fastest-growing businesses in the UAE, if not the world! And it certainly took centre stage at the IDEX show with an immense range of new products.

Launched in November 2019, Edge is bidding to consolidate many of the UAE’s advanced technology aerospace companies into one group as part of the country’s vision for self-sufficiency.

Driving that ambition is Mansour AlMulla, the managing director and CEO since early 2021.

“The aim of the business is to bring all the defence companies together under one brand, double down on their efforts and see where we can expand,” he said.

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It certainly seems to be working, judging from the number of new ambitious projects the company has launched.

Split into three focus areas – precision-guided munitions, autonomous systems, and electronic warfare – all with their own management teams, AlMulla is expecting big things: “Targeting the export markets is one of our priorities,” he said.

“We have come a long way since 2021, when we topped AED 1.1 billion

(\$299m) worth of sales contracts. Last year we achieved AED 5.2 billion – a 500% increase – and hope to come close to that this year.”

It’s a tremendous effort, as could be seen by the size of the Edge pavilion and the unveiling of, arguably, IDEX’s star exhibit, the stealthy-looking Juneih uncrewed air combat vehicle (UCAV) concept.

“We started its development not that long ago and hope it will be flying in three years or so,” AlMullah said, adding: “It’s very exciting – one of our newest projects that could be our flagship one day.”

Edge cut its teeth on autonomous systems at ADASI, with the Gamoosha UAV positioned at the front of its stand. “Designed to fulfil a surveillance mission, it is now a mature project and has been in operation for seven years,” explained AlMulla.

“I am particularly proud of the Reach-S surveillance/armed UAV, which only flew for the first time two weeks before the show in bad weather conditions, while there is also the jet-powered Hunter 50 and propeller-driven Hunter 25, depending upon your requirements, which are loitering munitions.”

The Hunter 25 has been flight-tested and now it is in the final stages of

development. “These are the future of the industry,” Al Mulla said proudly. “Edge is always on the look-out for businesses that will complement our existing skills.

“For example, we acquired a majority share in Milrem Robotics, a company that we believe has some exciting solutions. After meeting them at Saudi’s World Defense Show in March last year, we had taken over the company by December. It is bringing new and exciting skills to our business.”

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AlMulla was keen to stress that these projects are not just for the UAE; Edge wants to export them too.

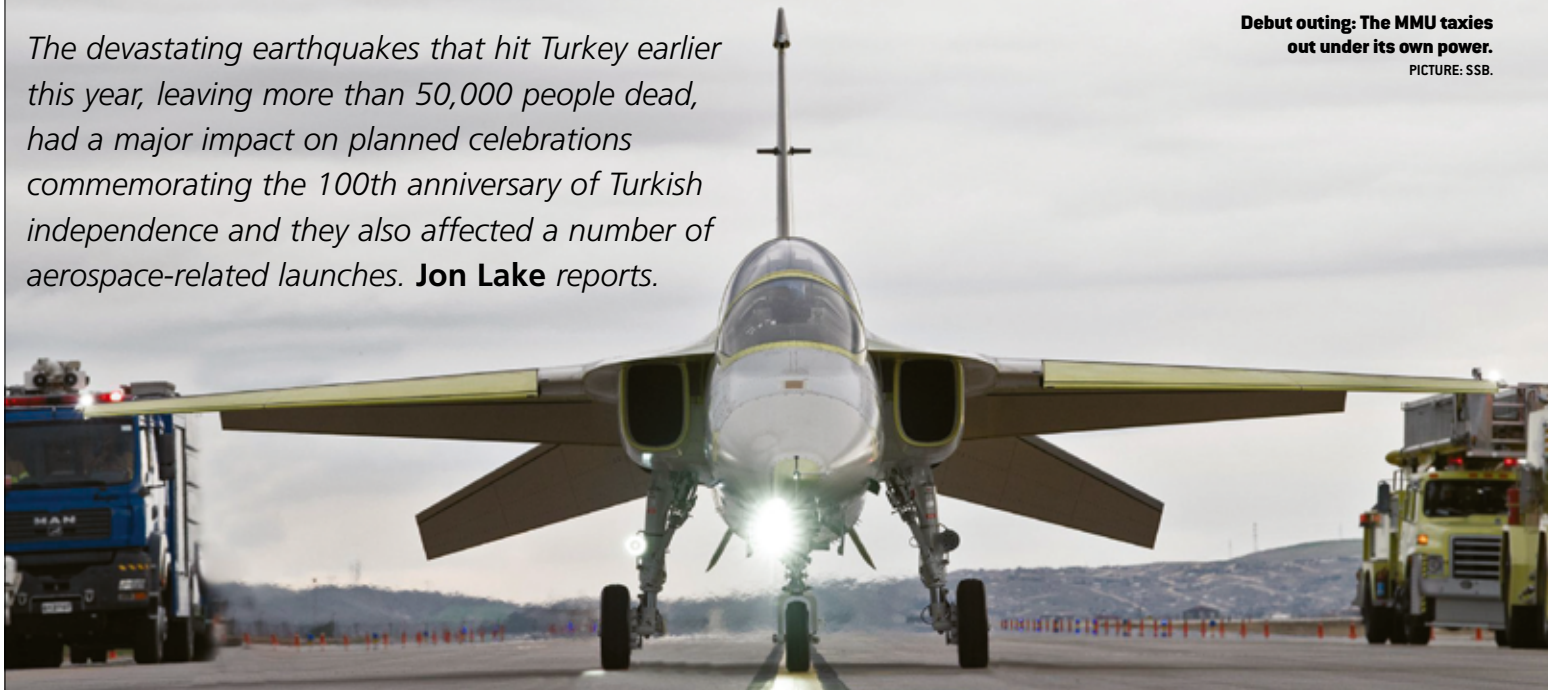
“We get a lot of support from the MoD and Tawazun to help create and realise some of these new capabilities,” he said. “Ultimately, we want to integrate all of our weapons on to operational western or eastern platforms.

“Additionally, we want to sell weapons, like the Al Tariq, Thunder, and Desert Sting PGMs, that can be integrated on to any platform.”

AlMulla is looking at all possible sales opportunities: “Our main markets are countries around us in the GCC and Africa, but south-east Asia is now receiving more attention – not only to sell, but to partner in a development capability beneficial to the country. We are making real efforts,” he concluded. ▲

Mansour AlMulla: “We have come a long way since 2021.”

The devastating earthquakes that hit Turkey earlier this year, leaving more than 50,000 people dead, had a major impact on planned celebrations commemorating the 100th anniversary of Turkish independence and they also affected a number of aerospace-related launches. **Jon Lake** reports.



Debut outing: The MMU taxis out under its own power.
PICTURE: SSB.

MUTED CELEBRATIONS BUT TURKEY POWERS ON

Before the earthquakes in early February, March 18 had been earmarked as something of a red letter day for Turkish Aerospace – it is celebrated in Turkey as Victory Day, commemorating the battle of Canakkale (also known as Gallipoli) in 1915.

It had a particular resonance this year – the 100th anniversary of Turkish independence. Victory against the Allies at Canakkale boosted Turkish morale, and provided a stimulus for the war of independence in 1919-1922, which led to the eventual formation of a modern republic in 1923 by Kemal Attaturk.

March 18 was, therefore, chosen as the date on which TAI would unveil the Milli Muharip Ucak national combat aircraft (MMU) fifth-generation jet fighter, and fly its new Hurjet advanced jet trainer, as well as the ATAK-2 attack helicopter.

Sadly, the Hurjet did not make its maiden flight that day, though it did taxi under its own power. Also, there was no sign of the ATAK-2 attack helicopter prototype.

Remarkably, though, TAI did conduct a relatively low-key ceremonial roll-out of its MMU prototype on March 18, after taxi tests two days earlier.

Professor Temel Kotil, general manager of TAI said: “The MMU will fly at the end of the year. That means we pushed everything

forward two years. Hopefully, we will deliver it to our air force in 2028.”

TAI also revealed its Anka-3 Muharip Insansiz Ucak Sistemi – or national uncrewed combat aerial vehicle system (MIUS) prototype, which is similar in configuration to the BAE Systems Taranis, Dassault’s nEUron, and Boeing’s X-45C.

The MIUS is reportedly intended to work in conjunction with the crewed MMU as part of a ‘system of systems’, operating as an adjunct or ‘loyal wingman’. It is also now expected to operate as a light attack aircraft on board the new Turkish amphibious assault landing ship *TCG Anadolu*, replacing the VTOL F-35B that had once been expected to form the backbone of the *Anadolu*’s air wing.

□□□□□

It is, however, unclear as to whether the Anka-3 is intended to augment the Bayraktar Kizilelma UCAV that is already in flight-testing, or whether the two aircraft are competing to meet a single requirement.

The MMU prototype closely resembles the mock-up seen at a number of international air shows, albeit with a more ‘humped’ profile, giving a better all-round view for the pilot, and a larger nose.

The aircraft bears some resemblance to the F-22/F-35, and is clearly intended to

incorporate low observable (LO) or ‘stealthy’ design features, including the use of internal weapons bays, leading-edge alignment, and, presumably, radar-absorbent materials and structures, though it does not seem as ‘sleek’ as the F-22, perhaps making TAI’s supercruise ambitions more challenging.

The aircraft is claimed to have an active electronically scanned array (AESA) radar with more than twice as many transmit-and-receive modules (TRMs) as the F-22 Raptor’s AN/APG-77 radar; low observable infrared search-and-track (IRST) and electro-optical (EO) sensor installations above and below the nose.

But the aircraft has conventional engine nozzles, perhaps suggesting that the primary emphasis is on frontal rather than all-aspect stealth.

The MMU (originally known as the TF-X) was once intended to be the less capable element in a high-low mix of fighter aircraft types, augmenting the ‘high end’ F-35. But, following Turkey’s ejection from the F-35 programme, it has assumed a new importance and will, itself, act as the ‘high end’ element in the future force, alongside upgraded F-16s.

We may still see the Hurjet make its maiden flight in the first half of the year. Professor Kotil said: “Hurjet will fly in the coming days with Allah’s permission.” ▲



Unveiled: The Anka-3 Muharip Insansiz Ucak Sistemi national uncrewed combat aerial vehicle system prototype.
PICTURE: SSB.

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Handover the keys to the first Block 70 F-16 to Bahrain over in Greenville, South Carolina.

PICTURES: LOCKHEED MARTIN.



Ahead of the game: The Turkish Ozgur upgrade programme was launched in 2010. PICTURE: THK.

STILL SWEET ON 16

IN THE MIDDLE EAST

The Royal Bahraini Air Force (RBAF) has become the first air arm in the world to receive a Block 70 production model of the F-16 Fighting Falcon. Jon Lake reports.

On Friday March 10, Bahraini, American and Lockheed Martin officials celebrated the handover of the first Block 70 F-16D for the RBAF at Lockheed Martin’s factory in Greenville, South Carolina.

“This is the Falcon of the future – a shining example of how a legend can be reimagined for the modern world,” Lockheed Martin’s master of ceremonies intoned. “Coming soon to an airfield in the Kingdom of Bahrain.”

The agility and sheer kinematic performance of the F-16 Fighting Falcon remains extremely impressive – even by today’s standards, and the type remains a highly capable multi-role fighter.

The Block 70 represents a modernisation that adds state-of-the-art avionics, weapons systems, defensive aids and especially sensors – including a modern active electronically scanned array (AESA) radar. This transforms the F-16 into a fighter that can meet the challenges of the 21st Century battlespace and offers many of the capabilities of the fifth-generation F-35 at a fraction of the cost.

The Block 70 is a new-build equivalent to the upgraded F-16V (for Taiwan, Singapore, South Korea, Greece, Bahrain, Morocco and Taiwan), and to the US Air Force’s upgraded F-16s.

It has an airframe cleared for a 12,000

flying hour life, and is fitted with a Northrop Grumman AN/APG-83 scalable agile beam radar (SABR), an advanced AESA radar, plus other avionics, electronic warfare system and display enhancements.

One difference between the upgraded F-16V and the new-build Block 70/72 lies in its ejection seat; the new-build aircraft using Martin-Baker’s US18E seat in place of the Collins Aerospace advanced concept ejection seat (ACES II) used by all other F-16s (except the two YF-16 prototypes).

Greg Ullmer, Lockheed Martin Aeronautics executive vice president said: “The Kingdom of Bahrain has a unique history with the F-16. It was the first F-16 operator in the region and today we mark another first in our partnership together as the launch customer for the newest, most advanced Fighting Falcon, the Block 70.”

The F-16 Block 70 handed over is the first of 16 such aircraft for Bahrain (10 single-seat F-16Cs and six two-seat F-16Ds). It is the first new-build F-16 to be completed for four years, following the move of the F-16 final assembly line from Fort Worth in Texas to Greenville in South Carolina.

The aircraft made its maiden flight on January 24 this year with Lockheed Martin test pilots Dwayne ‘Pro’ Opella and Monessa ‘Siren’ Balzhiser (Lockheed Martin’s first female F-16 and F-35 production and training pilot) at the helm.

The aircraft handed over will now undergo additional flight tests at Edwards Air Force Base before being delivered to Bahrain in 2024.

The 16 new-build Block 70 F-16s will be augmented by a \$1 billion project to upgrade the RBAF’s 20 surviving Block 40 F-16Cs and F-16Ds to the F-16V standard.

Six countries have selected the Block 70/72 F-16, including: Bahrain, Slovakia, Morocco, Taiwan, Bulgaria and Jordan.

The two variants are identical, except that the Block 70 is powered by a General Electric F110-GE-129 turbofan, while the Block 72 uses a Pratt and Whitney F100-PW-229.

Major General Shaikh Hamad bin Abdullah Al Khalifa, the RBAF commander, said: “Under Peace Crown I and Peace Crown II, the RBAF obtained 22 F-16 Block 40 aircraft and today, under the Hamad Falcon programme, we became the first air force worldwide to obtain the first production Block 70.

“We are proud to be the first air force to own and operate the world’s first block 70 fighters – an aircraft second to none.

“The capabilities of the Block 70 Viper give us the edge against any foe, and will enhance Bahrain’s involvement in international coalition operations, playing a vital role and preserving world peace and stability.”

▼ The capabilities of the Block 70 Viper give us the edge against any foe. ▲
MAJOR GENERAL SHAIKH HAMAD BIN ABDULLAH AL KHALIFA

The Lockheed Martin F-16 Fighting Falcon currently serves in many leading MENA air forces and there is a compelling case for its story to continue for some time yet, as Jon Lake reports.

Despite the age of its design – the prototype made its maiden flight in January 1974 – the F-16 enjoys a combination of relatively low price, competitive performance, multi-role capability, and extreme agility.

Many MENA air forces, including Morocco, Egypt, Turkey, Israel, Jordan, Oman, the UAE, Iraq, and Bahrain, use the type, and some are now looking at possible upgrades.

Morocco took delivery of 16 Block 52 F-16Cs and eight two-seat F-16Ds, subsequently losing one of the single-seaters during operations in Yemen. These equip three squadrons.

Egypt took a total of 240 F-16s, including 42 Block 15 F-16A/Bs, 178 Block 32 F-16C/Ds, and 20 Block 52 F-16C/Ds. About 218 of these remain in service, equipping 14 squadrons.

Turkey’s 270 F-16C/Ds included 34 single-seat Block 30s and nine two-seaters, 102 Block 40 F-16Cs, 15 F-16Ds, 74 Block 50 F-16Cs, and 36 F-16Ds.

About 240 remain in service, equipping 10 frontline squadrons.

Israel received 362 F-16s, consisting of 75 F-16A/Bs, known locally as the Netz (Hawk), 75 Block 30 F-16C/Ds, known as the Barak (Lightning), plus 60 Block 40 F-16C/Ds (Barak II), 50 F-16A/Bs (Netz II), and 102 Block 52 F-16Ds, known as the Sufa (Storm).

The F-16A/Bs have been retired and sold, but Israel retains around 220 C/Ds, some in storage, the rest equipping eight frontline squadrons.

Iraq received 30 Block 52 F-16IQ single-

seaters and six two-seaters, and the survivors equip a single large squadron.

Jordan has received some 79 F-16A/Bs from a variety of sources, and about 50 of these remain in use, equipping three squadrons.

In the Gulf, Bahrain received 18 Block 40 F-16Cs, and four F-16D two-seaters. The 20 survivors equip two squadrons.

Oman has two F-16 Squadrons, equipped with 17 Block F-16Cs and six F-16Ds, one single-seater having been lost in service.

□□□□□

The UAE has three squadrons equipped with the survivors of 56 Block 60 F-16E, and 25 F-16F Desert Falcons. Until recently, these aircraft were the most advanced F-16s flying, with their AN/APG-70 active electronically scanned array (AESA) radar and other advanced systems.

Some of these air forces are now looking at upgrades, aiming to keep this capable workhorse viable for decades to come.

Compared to some more modern fighters, the F-16 lacks connectivity, and its mechanically scanned AN/APG-66 or AN/APG-68 radar is starting to look a little outdated.

Lockheed Martin offers the F-16V upgrade, with a Northrop Grumman AN/APG-83 SABR AESA radar, new cockpit displays, a 12,000 hour airframe life, and integration of the Lockheed Martin Sniper advanced targeting pod and Legion-ES infrared search-and-track (IRST) system, as well as a host of new weapons.

▼ Some air forces are now looking at upgrades, aiming to keep this capable workhorse viable for decades to come. ▲



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Tried and tested: BAE Systems could bolster the flying training the RBAF Hawk brings by increased synthetics and artificial intelligence.
PICTURE: ALAN WARNES.



The Royal Bahraini Air Force (RBAF) looks set to modernise its current flying training system as additional F-16s are added to its inventory.

With the first of 16 brand new F-16C/D Block 70s due to be delivered in early-2024, to augment the 20 F-16C/D Block 40s already in use, a solution needs to be found to cope with the increased need for more pilots.

In recent years, the RBAF’s six Hawk Mk 128s have been heavily used to ensure there are enough qualified F-16 pilots

With no basic flying training aircraft, student pilots are currently being trained in the UAE and Saudi Arabia, before getting to the 4 Squadron Hawks. Until recently, they used to go to Egypt too, which meant the standards of airmanship varied, which only exacerbated the flying training issues.

In late-2021, the RBAF commander, Major General Hamad al Khalifa, 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. So new options might be needed.

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BAE Systems believes that it can solve the RBAF’s issues by offering new methods of working with the Hawks, delivered between 2003-08.

At the Bahrain International Airshow (BIAS) last November, the British company was showcasing its new training concept alongside its two technology partners, Lincoln-based Inzpire and Irish company, VRAI (Virtual Reality and Artificial Training) to deliver the right impact and value for money.

BAE Systems training strategy manager,

CAN BAHRAIN PLUG ITS PILOT GAP?

Alan Warnes looks at Bahrain’s military training needs and asks whether a new approach is needed.

Tim Colebrooke, believes that the cutting-edge radar and datalinks the new F-16s bring, will highlight a gap in the current training. “We can bridge that by using technology partnerships to meet the demand and help the uplift in the number of qualified RBAF pilots,” he said.

“We feel the Hawk is still relevant in flying training because we don’t let it just fly without any necessary upgrades. As a company, we feel synthetics plays a big part – you don’t just get the assets, the air space and the ranges to grow the student into a capable front line pilot.”

Alistair Howard, business development manager of Inzpire, was keen to stress the company’s military pedigree: “80% of our employees are former military, and that brings experience across all domains, specifically spanning flying training up to the operational end. We have massive experience delivering collective training in the UK. What we are trying to do is assist BAE Systems with delivering operational-level training.”

The other technology partner, VRAI,

specialises, as its name suggests, in virtual reality and artificial intelligence. It has systems that monitor the biometrics of the pilots’ performance – how they perform alongside/versus peers – and instructors can look in to see how the general population of students are performing.

Colebrooke explained: “The day that we start the aptitude testing and down-selecting, we start to measure their attitude to flying, and we take that data and set about ensuring they can overcome their difficulties. By tailoring the training, it doesn’t mean the first person has to wait for the last – you have to develop to the standard by the end of course.”

□□□□□

Meanwhile, Italian aerospace giant, Leonardo, is taking a different approach, as the VP Middle East and North Africa, Italo Rossini, explained: “We believe we have the best solution with the M-346 integrated training system. Some of the roles that the M-346 advanced jet trainer can fulfil will reduce the training carried out on new expensive fighters.

“Air forces have the potential to buy the aircraft or send students to the International Flight Training School – a partnership between the Italian Air Force and Leonardo.

“But it is not just about the cost-savings, it is also about the aircraft’s flying characteristics, its fly-by-wire capabilities and aerodynamics that an older training system [like the Hawk] cannot fulfil.”

The M346 could be an ideal solution for the RBAF, which does not have the air space to carry out its own training. As Rossini said: “The RBAF could acquire the aircraft and base them at an overseas location or send students to the IFTS.” ▲

▼ We can bridge that (gap) by using technology partnerships to meet the demand and help the uplift in the number of qualified RBAF pilots. ▲
TIM COLEBROOKE



PICTURES: EFTA

Home schooling the key to EFTA success

The Emirates Flight Training Academy recently achieved three huge milestones. Tom Westcott talked to its vice president, Captain Abdulla Al Hammadi.

The reliably blue skies of the UAE are an ideal training environment for cadets to earn their stripes.

Making the most of the ‘visual flight rules’ is the Emirates Flight Training Academy (EFTA), based in Dubai South, which was recently named training provider of the year at the Aviation Business Middle East Awards.

While other GCC carriers are sending their cadets abroad (Etihad and Jazeera Airways have an agreement with FTE Jerez in southern Spain, for example), EFTA is growing its base close to home.

At the tail end of 2022, it celebrated three major milestones: graduating international cadets for the first time since the academy opened to non-Emiratis in late 2019; graduating the largest cohort to date in a single sitting, with more than 50 cadets completing their training; and more than 100 cadets having passed through EFTA’s doors since its first graduation in 2020.

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Captain Abdulla Al Hammadi, vice president of EFTA, said: “We have never wavered in our intent or purpose: to establish the most advanced academy to train and transform cadets into first-rate pilots and help plug the resource gaps in the global commercial aviation industry.

“EFTA is founded, funded and supported by Emirates and its visionary leadership team. Cadets have the golden opportunity to join the airline after applying and going through the airline’s rigorous recruitment process after graduation.”

The vast academy has the capacity to train around 600 cadets at any time, with a programme lasting two years allowing students to complete at least 1,100 hours of ground-based training over 53 weeks, followed by 250-plus hours of flight training (including simulator flying) using a competency-based approach.

Al Hammadi said: “Our massive facility is equal to 200 football fields, and has 36 modern ground classrooms, six full-motion flight simulators, an independent air traffic

control tower, and a dedicated 1,800 metre runway, where cadet pilots can learn, train and fly successfully without having to leave the academy’s premises. That’s unique in the region and rare in the rest of the world.”

All 36 classrooms are equipped with large touchscreens running bespoke training software created for EFTA by Boeing.

The fleet of aircraft includes 22 Cirrus SR22 G6 single-engine piston aircraft and five Embraer Phenom 100EV very light jet aircraft.

In March 2023, EFTA announced it was bolstering its current fleet with an order for three twin-engine DA42-VIs and the corresponding flight simulator from Diamond Aircraft Industries, ushering in multi-engine piston (MEP) training.

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“Our new fleet from Diamond Aircraft is part of our larger strategic intent for our cadet programme. It helps us design a bridging MEP programme for cadets to gain more flying experience, while progressing from a single-engine to a light jet aircraft. It strengthens our offering and makes it more unique, rounded and robust,” said Al Hammadi.

While Emirates supports the UAE national cadet programme, the airline also offers direct recruitment opportunities to non-Emirati EFTA cadets.

“EFTA is serving as a robust pipeline to address the shortage of skills in the industry,” the vice president said. “Our cadet numbers are healthy and absolutely in line with our expectations. Just the fact that we’ve already graduated more than 100 cadets within the past three years, despite the pandemic, speaks volumes of the interest in joining EFTA.

“More than 250 students, representing 18 nationalities from around the world, are currently studying with us.”

But, for foreign cadets, that study comes with a hefty price tag. While UAE nationals are fully sponsored by Emirates, fees for non-Emirati cadets are set at \$181,000, including accommodation, meals and the cost of licences.

“Driven by a projected sharp increase in air travel demand, the Middle East region could face a shortage of 3,000 pilots this year and 18,000 by 2032,” Al Hammadi noted. “We’ve definitely seen a spike in interest from students, and their parents, on how they can pursue a career as a pilot, enrol in flight training, and join EFTA.” ▲

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Meet the U.S. Army's LIDS: A sure shot against drones

Raytheon Technologies' KuRFS radars and Coyote® effectors defeat evolving, proliferating unmanned aircraft systems.



The KuRFS radar and Coyote® effector deliver essential detect and defeat capabilities in the defense against UASs.

These proven capabilities are crucial components of the U.S. Army's counter-UAS solution. It's called **LIDS**: the Low, slow, small, unmanned aircraft **I**ntegrated **D**efeat **S**ystem.

In 2022, Raytheon was awarded a contract to equip two Army divisions with its Ku-band Radio Frequency Sensor for 360-degree threat detection and Coyote® for low-cost, highly effective UAS defeat. In 2023, an additional quantity of fixed site and mobile LIDS systems was awarded to further support the Army's Central Command operations.

In LIDS, the Army integrates Raytheon's KuRFS and Coyote with Northrop Grumman's Forward Area Air Defense Command and Control system, or FAADC2, and the electronic warfare system made by Syracuse Research Corporation for the integrated LIDS counter-UAS solution.

LIDS is deployable as either mobile or fixed, relocatable platforms. The system can provide both stationary support for an installation, asset or site, and a transportable configuration for deployment flexibility.

"There are other kinds of counter-UAS configurations, but LIDS is the most robust in everything from detect, track, identify and defeat," said Bill Darnè, Raytheon's Requirements and Capabilities director for counter-UAS capabilities. "That's the advantage Coyote and KuRFS bring to the LIDS configuration. It's been rigorously tested, deployed in theater and getting the job done."

ADVANTAGES

KuRFS:

- Multi-mission KuRFS is so accurate, it can detect a 9mm bullet, and it has few false alarms or dropped tracks.
- The radar offers flexibility of fixed relocatable (KuRFS) and mobile (Ku720) deployment options.
- Precision targeting KuRFS discriminates between actual targets and clutter.

Coyote:

- Coyote is able to down drones at longer ranges and higher altitudes than other systems.
- Effective defeat of drones of varied size and maneuverability.
- Coyote effectors are affordable; therefore, cost-effective to counter UAS threats.

These capabilities now address a critical gap, Darnè said, which existed when he was serving in the Army in the Middle East: "During my time in Iraq, we had a significant number of false warns that had bad, unintended consequences for our mission. Now, the accuracy of the KuRFS radar and its ability to discriminate between real threats and clutter or biological objects gives us a huge advantage over what we had in the past."

TESTING FOR SUCCESS

The proof of excellence is in how KuRFS and Coyote perform as key components of LIDS: "There have been thousands of hours of evaluations leading up to the Army's annual record tests," said Darnè, a retired U.S. Army colonel. "We've co-developed these capabilities with the Army, and they know that what they have will perform reliably as the mission requires."

Building on the milestones achieved in the 2021 test, Raytheon's Counter-UAS team gathered at the Yuma Proving Ground in Arizona for their summer 2022 test.

Again, the results were outstanding:

- KuRFS detected and tracked over 100 Group 1 through 3 drones – singles and swarms – and passed track data to FAADC2 during the test event.
- Coyote Block 2 effectively engaged 11 targets.
- Ku-720-2 (KuRFS distributed radar configuration) identified, tracked and acquired a target, and supported a Coyote Block 2 engagement for the first time.

The consistently successful performance of Coyote and KuRFS during these tests proves that LIDS gives warfighters around the globe a competitive advantage.

"There's significant international interest in LIDS, with more than a dozen countries reaching out for briefings," said Darnè, noting that the U.S. State Department recently approved a potential sale of the counter-UAS system with KuRFS and Coyote to Qatar.

"LIDS is an operationally deployed system today," Darnè said. "KuRFS and Coyote are out there – defending soldiers, bases and assets from enemy drones."



Building up: Airbus A220 fuselage sections are some of the most recent products to be built at the recently extended Casablanca facility. PICTURE: SPIRIT AEROSYSTEMS.



SPIRIT PLAYS ITS PART...

Aerostructures specialist, Spirit Aerosystems, is powering ahead with an increased range of components produced in its Casablanca, Morocco facility.

Alan Dron
reports.

The manufacturing site at Midparc, Casablanca's aerospace industrial park, was expanded to 250,000sqft shortly before it started to build its new range of components in June 2022. The site, which originally started operations in 2013 as part of the Bombardier aerostructures and aftermarket services businesses, was acquired by Spirit Aerosystems in 2020. Since its launch, it had developed expertise in manufacturing a range of components for Bombardier business jets. Now it also has significant capability for nacelles and flight control surfaces assembly.

Last summer the facility started production of the aft and forward sections and the keel-beam of the mid-fuselage for the Airbus A220 crossover jet. The panels, mainly in aluminium, are auto-riveted in Spirit's Belfast plant in Northern Ireland, then shipped to Morocco. Most of the assembly work at Casablanca is manual but it uses advanced drilling equipment (ADE) to produce the keel-beam.

When assembled, the fuselage components are dispatched from Morocco back to Belfast for assembly with other mid-fuselage parts. The Belfast site also provides the A220's integrated wing made with composites.

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Both sites were acquired by Spirit in 2020 as part of a diversification strategy, adding significant Airbus content, further developing the company's global footprint, as well as increasing its aftermarket business.

When A220 component production was inaugurated, Morocco's trade and industry minister, Ryad Mezzour, commented on the meteoric growth of the Casablanca facility, which now employs 300 personnel.

After having been established in 2013, it had become one of the flagships of the aerospace industry in Morocco, said Mezzour. "Spirit's new programme, producing high-tech fuselage sections in Africa for the Airbus A220, further strengthens the kingdom's positioning in complex, high value-added processes, as well as the international influence

of our national aeronautics eco-system." Morocco's proximity to Europe has seen it become a popular manufacturing base for European aircraft manufacturers.

"Our solid partnership with Spirit will continue with the same enthusiasm and could present future development opportunities in Morocco," added the minister.

Moroccan enterprises now build components for all models in Airbus' aircraft line-up.

giant US defence manufacturer, adding that the decision to set up the new plant "marks another milestone for our two companies and for Saudi Arabia's promising aerospace sector". Lockheed Martin has said that there will be specialised knowledge transfer programmes, together with initiatives to train Saudi citizens.

It is thought that there will be a ceremony in the second half of this year to inaugurate the new building and to announce its first project. Like so much in Saudi Arabia, however, little information has been forthcoming since the initial signing ceremony.

The bulk of the centre's work will be to produce components for military aerospace projects. However, it is possible that it may also fabricate components for civil products.

Composites are widely used in both areas of the marketplace, ranging from helicopter fuselage sections to airliner wing control surfaces.



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EgyptAir M&E – the MRO arm of the country’s flag-carrier – is planning for expansion. **Chuck Grieve and Keith Mwanalushi** report.

El-Khafif looks to engineer something special

It stands to reason that when one of the continent’s leading maintenance and engineering operations makes plans for expansion, it would look close to home.

Engineer Walid El-Khafif, the new chairman and chief executive of EgyptAir M&E, says there is a “great opportunity to serve our neighbours” in line with the Egyptian Government’s ambition to further economic integration in the African market.

There’s a long history of cooperation between airlines in the countries of the Middle East and Africa, particularly from the Arab region, explained El-Khafif.

“We are located in a region rich with aviation industry supporters and we witness the birth of new airlines frequently. Under our new strategy to expand, we are working on developing plans to pay attention to start-up airlines,” he said.

Start-ups, he added, face a “difficult equation” balancing cost and quality. His company, he believed, has the solution – international standards at competitive rates, a portfolio of major airline customers, plus close geographic proximity.

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El-Khafif succeeded Yehia Zakaria, who was promoted to lead the EgyptAir holding company, at the tail end of the pandemic in October last year.

He brought more than 30 years’ experience to his new role, having joined the national carrier in 1989 as an airframe system engineer.

He became a supervisor in 2007 before his promotion in 2010 to technical services director.

During his career, he has been a key member of company development projects, including selection of new aircraft and engines for EgyptAir, developing the MRO supply chain, and implementing digital maintenance applications.

“Securing the supply chain was, and still is, the main priority,” he said. “Following the pandemic and the stagnation it caused, it was clear that ramping up again would put pressure on MRO services and the spares supply chain, given the huge losses in the aviation industry.”

Now, however, he sees a steady recovery in operations. “There is strong demand for MRO services, especially for narrow-body fleets,” he said.

The hangars in Cairo are filling up again; recently spotted coming in included a FlyNas A320, the second of three aircraft scheduled for services at



Top: EgyptAir M&E already serves more than 20 African airlines at its Cairo base.
Left: El-Khafif (left) signs an agreement with Petra Aerospace of Jordan at MRO Africa. PICTURES: EGYPTAIR M&E.
Right: A Trent 700 engine undergoing overhaul at the EgyptAir M&E facility in Cairo. PICTURE: KEITH MWANALUSHI.

EgyptAir’s maintenance facility, and a Tunisair A330, also in the facility undergoing a C-check.

El-Khafif said the company’s post-Covid strategy included expanding EgyptAir M&E’s African network of line maintenance stations and attracting African customers for base maintenance at its Cairo headquarters.

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The company moved in that direction when it opened its full-service MRO facility at Kotoka International Airport (KIA) in Accra. The new hangar supports the EgyptAir fleet operating into the Ghanaian capital, in addition to providing line maintenance for Qatar Airways aircraft, the station’s first third-party customer.

El-Khafif is proud that the MRO division already had a wide scope of capabilities, handling almost all modern fleet types up to heavy checks and line maintenance. In fact, prior to the pandemic, there were plans to expand the line maintenance business at 12 African airport destinations – but the company has had to scale back on those for the time being.

However, in addition to the Sudan capital, Khartoum, there are current moves to possibly re-open the line maintenance station at Asmara in Eritrea.

A visit through the engine shop in Cairo saw CMF56-7B, V2500, and Trent700 engines going through various stages of checks. “In addition, we have very strong capability for different C ratings covering thousands of part numbers, and specialised services, such as non-destructive testing (NDT), borescope and calibration, all complementing our service portfolio,” El Khafif noted.

The company is pushing its paint stripping and repainting product to a new level of quality as part of the new heavy maintenance complex it has developed in Cairo, upgrading many of the C rating capabilities as well.

Elsewhere, El Khafif is keen to expand via cooperation and partnerships, especially to strengthen aviation services in Africa.

The company recently signed a partnership with Petra Aerospace of Jordan that will extend the capabilities of the Egyptian MRO’s engine services for repair and overhaul of CFM56-3

engines. The extension of engine services with Petra would also include engine teardowns at the Cairo facility, explained El Khafif.

This will no doubt benefit the region, which requires improved access to used serviceable materials, pooling and parts exchanges in local markets.

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Other recent signings include a memorandum of understanding (MoU) with US company United Aviation Solutions to cooperate on aircraft, engines, and component repair and overhaul, along with marketing the capabilities of EgyptAir’s maintenance division’s workshops in the US.

El Khafif also confirmed the company was exploring opportunities for further cooperation with Serbian MRO, JAT Tehnika, to seek added value and synergies.

He said several African airlines were currently customers, pointing out that EgyptAir M&E was providing them with technical services and solutions, such as base maintenance checks, engines repairs and overhaul, components repair,

components pool solutions and consultancy service for CAMO, and other fields related to technical support.

El Khafif is aware that challenges in the MRO industry persist on several fronts. Some airlines have reported problems, for example, with parts availability for the A220, and this has led to several of these aircraft being parked in storage.

“The key issue we have with the A220 fleet actually relates to the availability of engines,” he explained. “We are working closely with the engine OEMs to find solutions to this problem and we are hoping to find a resolution soon.”

Looking inwards, studies are taking place to evaluate upgrading the cabins of the four A330s in the EgyptAir fleet and, considering there is a wait of around two years for any possible new equipment in that size category, the upgrades look likely.

In February, the airline also took delivery of its first A321neo and, in March, launched dedicated freighter operations with a converted Boeing 737-800SF.

Other future plans may include performing in-house passenger-to-freighter conversions based

on market demand but, predominately, for EgyptAir and other operators too.

Speaking at the recent MRO Africa event in Cairo, of which EgyptAir M&E was a sponsor, El-Khafif re-affirmed the company’s commitment to Africa, pointing out that it already served more than 20 of the continent’s airlines.

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The Accra outstation, he said, was the start of a long-term plan to expand inside the continent to serve the goals of development and promotion of the African MRO industry.

“This keenness to be the MRO partner of as many African airlines as we can is based on our belief that our role in supporting the industry should be matching with our long history and leading profile in the market.

“Thus, we have an additional strategy to work on moving our knowledge to the emerging counterparts inside the continent through partnerships that include intensive training... to create entities capable of covering the technical services for the growing fleets of the continent,” he concluded. ▲

Walid El-Khafif: “Under our new strategy to expand, we are working on developing plans to pay attention to start-up airlines.”
PICTURE: EGYPTAIR M&E.





Top: Record year – MRO Middle East 2023 set a record in numbers of visitors and exhibitors.

Left: Experts lined up to discuss the issues in the Go Live! Theatre.

Right: SAEI used the show to highlight 10-year pooling agreements with Lufthansa Technik and Collins Aerospace among others. PICTURES: ARABIAN AEROSPACE.

Time is the enemy as MRO comes bouncing back

Record attendance at the Middle East's premier MRO and aircraft interiors trade show in March underlined the buoyancy in those key parts of the aviation market. **Chuck Grieve reports.**

Colour, bright lights and the din of voices at a trade show are good signs for an industry, and this year's MRO Middle East and the co-located Aircraft Interiors Middle East (AIME) in Dubai would have proven that, except for one small niggle.

In the current unsettled environment, the MRO industry is struggling to keep up with demand.

The reasons are well-rehearsed, as are the paths to resolution. Building is happening – everything from partnerships and alliances to hangars and hardware – but it all takes time.

Meanwhile, industry leaders at MRO Middle East reported full hangars and workshops, with forward slot bookings taking them – plus capacity yet to be built – into the years ahead.

“The demand for our MRO solutions is at an all-time high,” said Abdul Khaliq Saeed, chief executive of Etihad Engineering.

Fraser Currie, chief executive of Joramco, echoed the sentiment. The Amman-based



Fraser Currie: Joramco needs expansion to keep up with the market demand from the fleet size increases.

PICTURE: ARABIAN AEROSPACE.

independent is expanding to gain “the full capability and scope that’s needed to keep up with the market demand from the fleet size increases going on, not just in this region but globally”.

Visitors to both MRO Middle East and AIME found no shortage of solutions from the 194 exhibitors, 56 of whom were new to the event this year.

The organiser, Tarsus Aerospace, reported more than 6,000 trade visitors, a record. It had been a “remarkable year” for MRO Middle East, with “significant levels” of innovation on display; this, alongside the orders, deals, and announcements at the show, reaffirmed the continued growth of this sector.

Annual growth in fleet size in the Middle East is a healthy 7-8%, driven by narrow-bodies, as highlighted by keynote speaker Brian Kough, senior director, forecasts and insights for *Aviation Week*, and that has implications for MRO.

Around the world, new-generation engines are “taking over” from legacy engines in the in-service fleet. He said an important “inflection point” will occur first in the Middle East within the next 10

Continued on Page 46

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CONTINUED FROM PAGE 44

years, when the number of new-gen engine shop visits exceeds that of legacy engines.

One organisation getting on top of the situation is Joramco, the engineering subsidiary of Dubai's DAE Group, which opened the show with the announcement of an extensive building programme at Queen Alia International Airport (QAIA) in Amman.

Currie said the expansion of the organisation's footprint and capabilities would include two new wide-body hangars at its QAIA hub. "We're also expanding into wide-body paint," he added.

The first new hangar, designed to take one wide-body up to A380 and four narrow-body types in parallel, was expected to be operational by Q3 of 2024.

Joramco and Spirit AeroSystems used the show to confirm their intention to service composite and metallic aerostructures for Middle East customers. The partners initially will provide nacelle repair services on Airbus A320 and Boeing 737 types at Joramco's base, with a view to expanding to other platforms, including the 777.

"This is hopefully just the beginning of an evolving collaboration," said Currie. It was "another key step" to expanding Joramco's capabilities.

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Joramco recently secured a deal with Emirates to carry out C-checks and modifications to its 777s. The 15-month extendable contract comes at a time when the Dubai carrier is operating at full capacity in its maintenance division with its own multi-billion-dollar cabin retrofit project.

Etihad Engineering, now part of ADQ, used the show to announce an ambitious project to expand capacity at its 500,000sqm Abu Dhabi International Airport site – already the largest of its kind in the Middle East.

In addition to adding 50,000sqm of incremental space, the project includes building two new wide-body hangars and boosting its A380 capabilities.

More expansion comes from players such as FL Technics and benefits the region's operators. FL, a member of the Avia Solutions Group of Lithuania, demonstrated its commitment to the Middle East by opening its second line station last autumn in Abu Dhabi.

As Arif Alameri, Abu Dhabi station managing director, put it, FL doesn't see itself as a UAE maintenance provider: it has the whole region in its sights. The group is focused on expansion; getting GCAA approval was "a decisive step" toward establishing its presence in the Middle East.

The message from the on-site Go Live! Theatre, where industry leaders and experts chewed over current and perennial challenges, was that flexibility by both airlines and MROs, and better communication, will go a long way to solving some of the capacity challenges.

Pulling no punches, the organisers invited senior industry figures to talk about their biggest headaches.

Ziad Al Hazmi, chief executive of Lufthansa Technik Middle East, said the accelerated recovery exacerbated the "human side". He also said the parts shortage was encouraging recycling: looking into repairing parts that might have been discarded before. Circumstances were also making partnerships between suppliers and stockists more attractive.

The trend toward working together received a boost from SAEI, which used the show to highlight four new agreements, including two 10-year pooling agreements with Lufthansa Technik and Collins Aerospace.

SAEI also announced a memorandum of understanding (MoU) with the Aramco subsidiary, Luberef, for localisation of lubricants, and with GE for its digital asset records software.

SAEI's Dr Rainer Fink, vice-president powerplant maintenance, noted a trend in logistics and aftermarket toward creation of "an ecosystem of MRO suppliers and airline customers, working closely together to capitalise on the current supply chain opportunities".

An example of this "bundled capability" was the decision by Collins to move its nacelle centre of excellence from Dubai South to the Etihad Engineering site in Abu Dhabi, a well-resourced and busier location.

Dana Stephenson, Collins' vice-president of aftermarket, said: "Offering Collins' nacelle technology along with Etihad MRO capabilities is highly desirable to our international customers." ▲

■ **MRO Middle East and AIME return to Dubai World Trade Centre on March 5-6 2024.**



Private space: Lydie Blanque tries out Stelia Aerospace's 'cocoon of comfort' mock-up at AIME.
PICTURE: ARABIAN AEROSPACE.

NARROW-BODY CHALLENGE FOR CABIN DESIGNERS

The trend of flying narrow-body aircraft on longer sectors gives cabin designers a new challenge: recreating the wide-body passenger experience in aircraft not necessarily designed for that role.

The pressure is only going to increase as even longer-range narrow-bodies, such as the Airbus A321XLR, enter service in the next few years.

On display at AIME from French exhibitor, Stelia Aerospace, an Airbus subsidiary, was its Opera range of seating modules.

Designed to envelop passengers "in a cocoon of comfort" in single-aisle aircraft, both luxury and high-density versions offer seats that convert to a full-length bed.

Like premium economy, a concept that's been around for almost 30 years but only recently gaining widespread acceptance, expect any new ideas to take their time getting off the ground.

Though not at the show as an exhibitor, in terms

of cabin refits, Emirates was truly the elephant in the room – its \$2 billion fleet refit of 120 A380s and 777s is flagged as the biggest single programme anywhere, ever.

Significantly, it marks the Dubai carrier's adoption of premium economy, one of the key trends in interiors.

Cabin digitisation got a new twist from newcomer AERQ. This first-time exhibitor is a joint venture between Lufthansa Technik and LG Electronics, the Korean consumer electronics giant, and it's aiming to transform cabins with a new kind of digital ecosystem that will work for both airlines and their customers.

Verena Bintaro, AERQ's head of marketing and PR, said: "To increase [airline] revenue in the sky, we need to open up the cabin and make it available to potential app partners to integrate new content and make it available to the passenger." ▲

SIMPLICITY FOR THE WIN

WHEELS AND BRAKES IT'S THAT SIMPLE

WHY P2F MROs ARE GAINING MORE CONVERTS

Reports that the passenger-to-freighter (P2F) conversion market is overheating may be premature, an opinion that MROs are backing up with their actions, as **Chuck Grieve** reports.

To convert or not to convert? Good question. Industry analysts may be calling for caution due to demand uncertainty, but Middle East MROs remain bullish with Turkey, India and, potentially, Egypt the latest to signal intent.

As long as demand remains strong, currently a function of disruption in supply chains and the strength of e-commerce, there will be corresponding pressure on airfreight that belly-hold and original equipment manufacturer (OEM) production lines cannot satisfy.

You know there's demand when a 44-year-old airframe returns to service, as is reported from Kyrgyzstan, where a 1979 Airbus A300F is expected to rejoin the fleet of charter cargo operator, Aerostan, from deep storage after heavy maintenance.

But, as analysts point out, conditions are in flux, and the airfreight market is showing signs of

weakening because of inflation and a slowdown in global trade.

The International Air Transport Association (IATA) forecasts a decline in cargo volumes this year, although not yields. Meanwhile, Cirium, the aviation data analyst, says cargo rates remain above pre-pandemic levels.

Cirium has forecast demand for 3,560 freighters over the next 20 years, of which 2,480 will be converted passenger aircraft and 1,060 will be new-builds. As many as 220 conversions could be completed in 2023.

"What we especially see is a new demand for narrow-body aircraft that, in the past, were not specifically built or used for cargo purposes," said Nina Schutz, managing director of the Independent Aircraft Modifiers Alliance (IAMA).

Now they are in demand for point-to-point

services or as feeders for cargo hubs. She considered P2F "the perfect opportunity" to accommodate these needs.

Mike Stengel, of AeroDynamic Advisory, believes there will "eventually have to be a reckoning" but not before "a healthy uptick in conversion volumes through 2025", softening in the second half of the decade. Even so, he said: "We expect that conversions will still be at historic levels."

Another reason for optimism among converters is the fact that many aircraft in the current freighter fleet are approaching their end of life and will need to be replaced.

"Roughly 120 wide-body freighters are over 30 years of age," Michael Steen, chief operating officer of Atlas Air, was reported as telling delegates at the International Society of Transport Air Trading (ISTAT) conference in March. He



Inside job: Technicians of Germany's Elbe Flugzeugwerke work on an Airbus P2F conversion.

PICTURE: EFW.

forecast a "significant" number of retirements in the next 5-10 years, driving demand for both converted and new-build freighters.

Turkish Technic was expected to roll out its first converted Airbus A330 in Q3 of this year under a partnership with supplemental type certification (STC) holder Elbe Flugzeugwerke (EFW), the Dresden-based Airbus subsidiary and conversion specialist.

The work – the first third-party conversions in

EFW's growing A330P2F programme – was to be undertaken at Turkish Technic's Istanbul base.

Professor Dr Ahmet Bolat, Turkish Technic chairman, hinted at "expanding our partnership further with EFW", which holds STCs for all new-generation Airbus conversion programmes.

Competition will likely come from Asia, where EFW was scheduled to open its second A330P2F conversion line in China with the induction of its first aircraft in April.

Meanwhile, India's GMR Aero Technic and Boeing plan to set up a 737 P2F conversion line – India's first – at the MRO's site in Hyderabad. Making the announcement in mid-March, Salil Gupte, the president of Boeing India, said the expected growth of air cargo in the country makes this "an opportune time" for such a development, although no start date had been given.

Feedstock may be available in-country among the 737-800s tipped to be replaced by 737 MAX examples included in the massive Air India order announced in February.

EgyptAir Maintenance and Engineering (M&E), whose parent company took delivery of its first converted 737-800 freighter earlier this year, was reportedly studying whether to add P2F conversion to its portfolio. If it did, the MRO would have ready access to feedstock from EgyptAir's fleet of 737s, some of which are at an age when conversion is an attractive option. ▲

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UAE astronaut, Sultan AlNeyadi, is now settling in on the International Space Station (ISS) on his mission to conduct scientific experiments for six months. **Steve Nichols** reports.



Couldn't be happier:
Sultan AlNeyadi
aboard the ISS.
PICTURE: SULTAN ALNEYADI.

AlNeyadi another giant step for UAE

Sultan AlNeyadi has been on the ISS since early March, blasting off on a SpaceX Dragon Endeavour spacecraft from the Kennedy Space Centre in Florida USA.

More than 24 hours later, the rocket's four-man crew docked with the ISS.

AlNeyadi is involved in more than 200 science experiments and will take part in live interactions with various universities and schools from his temporary home, 250 miles (400km) above the Earth.

The experiments will range from learning about the cardiovascular system, epigenetics, the immune system, fluid science, plant biology, sleep analysis, and radiation.

AlNeyadi had an early message from the ISS for fellow Emiratis: "I can't be happier than this. Seeing old friends in space and gathering as a big family."

"The UAE is taking great steps in pushing the boundaries in exploration and cooperating with spacefaring nations," he said.

AlNeyadi was granted his NASA astronaut's pin after completing around 20 months of general training at NASA's Johnson Space Centre.

Salem al-Marri, director-general of Dubai's Mohammed Bin Rashid Space Centre (MBRSC), said long-duration space missions play a crucial role in "advancing our understanding of space and our ability to explore and utilise it in the future."

"With the successful launch of the UAE's second manned space mission and the longest Arab space mission in history, we have proven that our aspirations and the will to achieve them are limitless."

"Congratulations to Sultan AlNeyadi and the entire team behind the mission, who have worked tirelessly to make

this historic moment a reality. We are looking forward to the 180 days on board the International Space Station."

Meanwhile, the UAE's Rashid rover was expected to have landed on the Moon's Atlas crater by the time *Arabian Aerospace* was going to press.

At the time of writing, Rashid was now in orbit around the Moon, having been launched on a SpaceX Falcon 9 rocket from Cape

Canaveral in December 2022.

It completed its first orbit control manoeuvre in the same month, followed by a second orbital control manoeuvre in January. The lander also conducted successful manoeuvres in February.

Landing is seen as the most critical part of the lunar mission, with several missions having failed before, including those from India and Israel.

As the Moon does not have an atmosphere, parachutes can't be used, so complex manoeuvres are required to reduce the speed of the lander for a soft touch-down on the surface.

If successful, the diminutive 10kg Rashid rover will then use its four cameras, including a microscopic and a thermal imaging camera, to study the rocks, soil, dust, radioactivity and electrical activity on the Moon's surface.

Rashid was designed and built in the UAE by a 100% Emirati team of engineers, experts, and researchers. If successful, the UAE will become the first Arab country to land on the lunar surface.

Plans are also under way for a subsequent Rashid 2 rover, which will be launched on a Chinese rocket in 2026.

□ □ □ □ □

Further out into space, the UAE's Hope Mars probe has a new objective after completing the first stage of its mission to the Red Planet. Hope will now study one of Mars' two moons.

The probe has transitioned to a new orbit to study the tiny moon, Deimos, whose radius is only 6.2km. The orbital transfer allows the Hope probe to fly within approximately 150km of Deimos.

Hope completed two out of three manoeuvres using its main thrusters in September 2022 and January 2023, marking the first time the thrusters were activated remotely. While in its new orbit, Hope can continue to monitor Mars at the same time.

Deimos is the least observed compared to the Red Planet's second moon, Phobos.



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▼ The UAE is taking great steps in pushing the boundaries in exploration and cooperating with spacefaring nations. ▲
SULTAN ALNEYADI

Arnd Kikker

Marcelle Nethersole speaks to the co-managing director at AERQ.

Can you tell me about AERQ?

AERQ takes the digital transformation of aircraft cabins to a new level by turning them into spaces for new ideas and business development.

Since AERQ is a joint venture between LG Electronics and Lufthansa Technik, it uses the extensive knowledge from both parent companies about consumer electronics and aviation to develop digital solutions for the aircraft cabin.

Its goal is to create revenue, savings, and growth for the airlines, kick-starting a new economy in the sky.

This can be achieved through AERQ's open IT platform AERENA, which empowers airlines to gain complete control over their digital cabin experience, while providing them with a deeper understanding of their passengers' in-flight behaviours and needs.

Smart data capturing, analytics, and matching ensures accurate data-driven and intelligent decision-making, which will grow the airlines' business while providing passengers with a digital experience as unique as themselves.

How does AERQ take digital transformation of the aircraft cabin to a new level?

AERQ's goal is to fill the passenger's emotional gap between take-off and landing by making their time on board even more valuable, productive, and worthwhile.

AERENA facilitates greater passenger engagement, leading to insights about their in-flight behaviours and needs. This, in turn, allows the airlines to create a more personalised experience, adapted to their passengers' needs, while at the same time opening up new revenue opportunities for airlines and selected partners through advertising, e-commerce, destination services and more.

In this new ecosystem that includes airlines, passengers, and third parties, a portfolio of targeted media content, products, and services will be provided. This way airlines will be more than a means of transport, but will bring meaning, joy, and value to journeys across airlines' fleets.

What projects do you work on in the Middle East?

At the moment we are starting to expand into the Middle East region. This year we had the opportunity to attend the Aircraft Interiors Middle East show for the first time. It was an excellent occasion to meet many interesting people and to make numerous connections that we expect to lead to fruitful partnerships in the future.

What makes your products differ from competitors?

Our platform, AERENA, is user-friendly, especially regarding its app integration.

With only one login, airlines gain end-to-end control of their app management, from the development to the deployment. They can pick and choose between apps from the entire AERENA platform to tailor exactly the digital experience they aim for.

With just a few clicks over a virtual preview, the experience of exploring apps gives airlines full transparency on the app's performance and how it could contribute to their digital offering on board.

Airlines can choose applications, media content, and user interface (UI) and create their on-board product quickly and easily.

This superior deployment infrastructure allows updating new applications and media content on to the aircraft in days. This leads to substantial cost-savings compared to incumbent media processing and integration cost.

How do you see the future of cabin interiors?

Personally, I see a digitalised future that creates a space where airlines, passengers and selected third parties meet through various digital touchpoints – one being a welcome display, which passengers notice as soon as they board the aircraft.

A seat-centric system is key for creating a personalised experience. Here passengers are presented with individualised options, ranging from their preferred food and drinks to entertainment in the form of movies and games. They can also view information about their travel destination, combined with the possibility of making last-minute bookings.

Further digital touchpoints I visualise are transparent, high-resolution screens that separate the rows and are visible for everyone.

What does a typical day involve for you?

As a co-managing director leading a company, it is my responsibility to oversee the team and steer them in the right direction.

A very significant part of being in that position is engaging with people; I'm in constant contact with our employees, seeing how I can support them in their respective areas. Furthermore, I'm also in ongoing exchange with our partners, finding possibilities of improvement and ways to strengthen our partnerships. I actively engage with them to find out what their needs are and how we can assist them in their digital journey.

That is also my favourite part of the job: pushing the limits to shape a new era of cabin digitalisation.

“Airlines will be more than a means of transport, but will bring meaning, joy, and value to journeys across airlines' fleets.”

PICTURE: AERQ

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