

ISSUE 2, VOLUME 13: MAY – JULY 2021



# ARABIAN AEROSPACE

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

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# WIZZ BANG

**VARADI'S AIRLINE  
SET TO IGNITE  
GULF'S LCC  
REVOLUTION**

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IATA's  
new VP  
lists top  
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best for  
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#### AIRPORTS

Unveiled:  
Bahrain's  
\$1bn  
airport

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**COVER:** Wizz Air founder and chief executive, József Váradi, explains how the group's new Abu Dhabi subsidiary will ignite a low-cost revolution in the Gulf.  
**PICTURE:** [wizzair.com](http://wizzair.com)

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# WHY OUR TECHNICAL FUTURE IS OUT OF THIS WORLD

It's been a tough year on Earth. But there is no doubt that the Arab world is casting its ambitious eye beyond the skies.

The successful launch and subsequent orbits of the Mars Hope mission may have inflamed the young people in the UAE and across the region, but, of course, it is manned flight that is the real driver – or should we add 'womanned' flight as well.

When HH Sheikh Mohammed bin Rashid Al Maktoum revealed that a young female mechanical engineer, Nora Al Matrooshi, was to join the gang of four on the nation's astronaut programme, there was amazing joy (See page 7).

The first female Arab astronaut. It seems only yesterday that I

celebrated with a small group of female pilots who had formed the Arabian chapter of the Ninety-Nines association, and it does feel like this is a major move at smashing the glass ceiling.

We wish Nora and her male colleagues the best of luck as they head to Houston for training.

An amazing 4,000 people applied for a place on that programme.

More than a third were women, demonstrating that the commitment and vision to develop science, technology, engineering and mathematics (STEM) subjects in the UAE's schools is proving to be a success.

Increasingly – and rightly – women are playing a greater role in the technological developments, and

aerospace is at the heart of this.

Across the Arab world, other nations are looking at space as an opportunity. Universities in Saudi Arabia have seen their first satellite programmes successfully launched.

Things are looking up!

Having attended the successful IDEX exhibition in Abu Dhabi, and then visited the new airport terminal and a revitalised national carrier in Bahrain, it is clear to me that optimism for the future is justified.

The actions the various segments of the industry have taken to survive the Covid pandemic have worked. Now is the time for governments to share visions and plans to make sure we can thrive here as well as among the stars.

**Alan Peaford, editor-in-chief**



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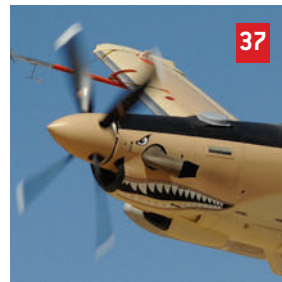
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**Water cannon salute: The flight landed at Ben Gurion Airport at 12:30pm (Israel time).**

**Inset: The cabin crew on board the inaugural service.**

PICTURES: ETIHAD AIRWAYS.



## Etihad flight to Tel Aviv makes history

History was made on April 6 when Etihad Airways launched a regular flight service between Abu Dhabi and Tel Aviv. The launch of scheduled operations comes as the next historic step in developing diplomatic, trade and tourism ties between Israel and the UAE, which were inked as part of the Abraham Accords in September 2020.

Etihad Airways EY598, the first scheduled flight from Abu Dhabi International Airport to Ben Gurion International Airport, carried a diplomatic and economic delegation including HE Mohamed Al-Khaja, the UAE's first ambassador to Israel, Eitan Nae'eh, Israel's head of mission to the UAE, and Tony Douglas, Etihad's Group CEO.

Douglas said: "Today is a hugely significant moment in Etihad's history. "Last year, we witnessed the UAE and Israel make history when signing the Abraham Accords, and we are tremendously excited about the opportunities this poses to Etihad, and our home, Abu Dhabi."

### Airport Show gears up

Reed Exhibitions Middle East, organiser of the Airport Show, has rescheduled the event's 20th edition for three days from May 24 at the Dubai World Trade Centre (DWTC).

The organiser says the airport industry, after a year of unprecedented strain, challenges and changes, has a renewed sense of optimism for 2021, with traffic gradually picking up as more travel corridors are established.

As the airports reset themselves for the post-pandemic influx of travellers, they have started increasingly looking at the latest solutions and technologies to ensure safer travel.

### Strata breakthrough

UAE aerostructures manufacturer, Strata, is to enter the business aviation

sector thanks to an offset agreement between the Tawazun Economic Council and Swiss airframer, Pilatus.

Under the seven-year agreement, Pilatus is awarding Strata three additional work packages for the PC-24 – two for autoclave manufacturing of pylon fairings, bullet fairings and tail cones, and one, for the first time in the UAE, to manufacture aerospace-class hot press composite parts.

### Majali steps up again

Samer Majali has been appointed as president and CEO of Amman-based Royal Jordanian Airlines.

He is widely experienced. In 2009, he was the chief executive officer at Gulf Air for three years and, between 2013 and 2019, he held a similar position at SaudiGulf Airlines. More

recently he was founder of Plane Vision, a Bahrain-based consulting firm specialising in corporate strategy and business advice.

### Action! Hollywood comes to the hub

Dynamic Advanced Training is bringing a bit of Hollywood glamour to its training centre at the Mohammed bin Rashid Aerospace Hub, Dubai South.

More usually known for things like its comprehensive safety and emergency procedures (SEP) training, the facility has just opened up an aviation-themed Hollywood-style film studio, supporting the region's growing production needs.

The venture – the first aviation-themed filming location in the Middle East – has been conducted with the support of The Dubai Film and TV Commission (DFTC).



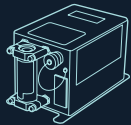
**All's well that ends well: Mother and baby on board the EgyptAir flight.** PICTURE: EGYPTAIR.

## Drama as baby born on EgyptAir flight

An EgyptAir flight from N'Djamena to Cairo had to make an emergency landing at Aswan Airport after a baby was born on board. The Chadian passenger, reportedly named as 27-year-old Kultumah Mohammed, gave birth to her son, Abdel Rahman, with the help of the cabin crew and a medical student, who was also a passenger on the flight.

The airline said: "According to the chief pilot's instructions, and with the help of cabin crew, all procedures for the passenger's safety were followed and dealt with quickly."

Mother and baby were taken to Aswan University Hospital.



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## Moroccan training school boost

Moroccan authorities have approved a draft decree on the reorganisation of the Royal Air School.

It aims to enable air transport companies to benefit from the expertise of the armed forces in aeronautical training, allowing the Royal Air School to train airline pilots, within a contractual framework between the National Defense Administration and the national air transport companies.

This decision was taken following the bailout of Royal Air Maroc and the conflict between RAM and the Moroccan Airline Pilots Association (AMPL), which manages the training process of national airline pilots.

## Ghana gets EgyptAir help

Ghana has enlisted EgyptAir's help to set up a new national airline.

While details of EgyptAir's assistance have still to be made public, the Egyptian flag-carrier has signed a memorandum of understanding (MoU) with the Ghanaian Government to help the west African state create a new flag-carrier.

EgyptAir will become a 'strategic partner' in establishing the new airline; it declined to give further details. The new airline is described as being 'affiliated' with the Ghanaian government, rather than state-owned.

## New IATA boss

Willie Walsh has officially taken over as director general of the International Air Transport Association (IATA), succeeding Alexandre de Juniac. He joins IATA after a 40-year career in the airline industry.



Getting IT right: Saudi Ground Services has chosen Oracle Cloud.

PICTURE: SGS.

## SGS migrates to Oracle Cloud across its airports

Saudi Ground Services (SGS), the national ground services company in Saudi Arabia, is migrating its IT services to Oracle Cloud Infrastructure.

SGS, which operates in 28 airports across the country, has an ambitious vision of providing an end-to-end mobility ecosystem that caters for each customer's specific needs and requirements.

According to the company, this transformational journey has

multiple layers and tracks of implementation, with the IT and technology infrastructure being at the heart of overall operations.

"SGS is the driving force behind the efficient and safe ground-handling of more than 96% of all aircraft and passenger operations across Saudi Arabia," said acting CEO, Raed Al-Idrissi. "In order to further enhance the delivery and reliability of our services, we are focusing on creating an agile, secure, and cost-effective IT infrastructure."

## Arab world's first female astronaut is named

In a giant step for womankind in the Arab world, the UAE has named its first female astronaut.

She is mechanical engineer, Nora Al Matrooshi.

Her appointment was announced by Dubai's ruler, Sheikh Mohammed bin Rashid Al Maktoum, who said there had been more than 4,000 applicants for a place in space.

Nora was joined by Mohammed Al Mulla, a Dubai police helicopter pilot – and the youngest person to have obtained his commercial rotary-wing licence. He has also been the recipient of a bravery award.

The pair join fellow astronauts, Hazzaa Al Mansoori and Sultan Al Neyadi, and will be training at Houston's space centre in the USA.



History-maker: Nora Al Matrooshi. PICTURE: MBRSC.

## Moon mission milestone

The UAE's bid to join the small group of countries to visit the Moon has come a step closer with an agreement between the Mohammed Bin Rashid Space Centre (MBRSC) and Japan's Ispace company.

The UAE's 'Rashid' rover will be transported to the Moon on Ispace's lunar lander during the company's 'Mission 1' in 2022 as part of its commercial programme known as 'HAKUTO-R'.

## Space double

Saudi Arabia successfully launched two satellites in March from the Baikonur Base in Kazakhstan on board a Russian Soyuz 2 rocket.

The first, called Shahin Sat 17, was developed by King Abdulaziz City for Science and Technology (KACST), while the second is a CubeSat from the King Saud University (KSU).

They will be used for tracking maritime activities and for developing further space experiments.

## Algerian boost

ACIA Aero Leasing has completed the transition of two aircraft to Air Express Algeria. The deliveries include one Beechcraft B1900D and one LET 410.

The aircraft are part of a three-aircraft transaction with the third aircraft, a further Beechcraft B1900D, scheduled for delivery as *Arabian Aerospace* was going to press.

## Gulf Air goes green

Bahrain's flag-carrier, Gulf Air, operated its first ever transcontinental lower emission flight in April with a trip from Helsinki in Finland to Bahrain. It used the airline's flagship Boeing 787-9 Dreamliner for the flight.

This followed an earlier domestic demonstration on green fuels for a fly-past at the Bahrain Grand Prix in March.

## Flight of fancy cakes

As Ramadan began, Dubai-based executive aviation company, Jetex, offered a special Iftar experience for passengers who could break their fast with a 25-dish meal on a 90-minute ride on a luxury Gulfstream jet above all seven UAE emirates.

The offer includes a Rolls-Royce chauffeur to the aircraft and desserts in the FBO afterwards. The aircraft takes six passengers and costs \$3,000 a head.

## Qatar renews aid

Qatar Airways has renewed its sponsorship as official airline partner to Orbis UK for a further three years. Together with its partners, Orbis trains, mentors, and inspires eye care professionals in places with the greatest need to save and restore vision in their communities.

The airline has been a supporter of Orbis since 2012.

## ME expansion

International business aviation company, ExecuJet, has expanded the company's Middle East activities by adding a Global 6000 and a Global 7500 to the regional fleet.

## Servicing Emirates

Menzies Aviation has been awarded a five-year contract to provide Emirates Airline with ground-handling services at Oslo Airport, Stockholm Arlanda Airport, and Copenhagen Airport – a new base for the partnership. Across all three stations Menzies professionals will service daily Emirates flights.

## Delivery data

Embraer delivered 71 jets in the fourth quarter of 2020, of which 28 were commercial aircraft and 43 were executive jets (23 light and 20 large). This represents a decrease of 10 aircraft in the quarter in comparison with 2019.



Up and running: SAMI and L3Harris celebrate the new venture: PICTURE: SAMI.

## SAMI's first Saudi-US partnership begins operations

Saudi Arabian Military Industries (SAMI) has successfully launched a new joint venture with L3Harris Technologies, one of the world's largest aerospace and defence systems manufacturers.

SAMI L3Harris Technologies has been created with the goal of accelerating SAMI's growth by developing advanced communication, sensor, and integrated mission systems capabilities in support of Saudi Arabia's armed and security forces.

The initial joint venture agreement was signed at the Paris Airshow in June 2019. It achieved its commercial registration in August 2020 and is now fully operational.

The JV scope will expand to include prime contractor responsibilities for integrated mission systems and platforms, leveraging robust local industry partnerships. Together, the two parties aim to collaborate in areas, such as technical/specialised operator and maintenance training.

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## New training JV

Leonardo and CAE have created a joint venture to support the operations of the International Flight Training School (IFTS) in Italy.

Leonardo CAE Advanced Jet Training will provide training support services, including full maintenance and operation of the M-346 aircraft and its ground-based training system, as well as operation of IFTS base facilities.

## Travel shake-up

Global travel retail platform, Travelport, has launched its next-generation Travelport+. This is a multi-source platform which, according to the company, "offers more dynamic, differentiated, retail-ready content, delivering better choices for retailers and consumers, in a faster, frictionless way".

## Network agreement

Saudia Cargo has announced the signing of an agreement with Cainiao Network – the logistic arm of Alibaba Group – to support e-commerce operations between China and Europe by operating five weekly flights from Hong Kong to Liege in Belgium with Riyadh city as a connection point.

Saudia Cargo CEO, Omar Hariri, said: "This agreement is part of our framework to transform the kingdom into an open gate for world trade and a bridge connecting east and west by leveraging its strategic location in the centre of the world."

"Other promising partnerships will be coming up in the near future to reinforce Alibaba logistics operations in both continents."



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## In the nest for Viper

A Bahraini delegation was in Amarillo, Texas, in April to witness the start of the production of a batch of 12 Bell AH-1 Viper helicopters that will be delivered to the Gulf state by the end of this year.

The special guests signed the airframe and toured the production facility where the helicopters will be built.

## New Edge deal

Edge, the UAE's technology group for defence and beyond, has signed a tri-party strategic cooperation agreement with Ukrainian state-owned defence conglomerate UkrOboronProm, and Ukrspecexport, a Ukrainian state-owned arms trading company.

The agreement will enable the three entities to exchange and develop advanced technologies that could lead to more than \$1 billion worth of investments.

## Let's go!

More than three-quarters of MENA-based travellers would be willing to get vaccinated as soon as possible, according to a survey from online travel marketplace specialist Wego.



**MAX re-joins the Flydubai fleet**

The first five of Flydubai's 14 Boeing 737MAX aircraft completed their operational readiness flights in March and have been approved by the General Civil Aviation Authority (GCAA) to return to service.

Ghaith Al Ghaith, chief executive officer of Flydubai, said: "The return to service for the MAX marks the end of 22 months of diligent work undertaken by the global community of regulators and the uncompromising efforts of the Flydubai team in preserving and returning the aircraft to passenger service."

The remaining nine MAX aircraft are scheduled to rejoin the fleet at a rate of one every 10 days.

**The MAX is back:**  
The first five of Flydubai's 14 Boeing 737 MAX aircraft have completed their operational readiness flights.  
PICTURE: FLYDUBAI

## MRO agreement

Joramco, the Amman-based MRO and the engineering arm of Dubai Aerospace Enterprise, has entered into a new maintenance agreement with the Dubai-based airline, Flydubai.

The agreement includes all C-checks on the carrier's next-generation Boeing 737-800 aircraft.

The work began in March and is set to continue until December.

## Paperwork done

Jet Aviation has received its part 125 operator's certificate from the General Authority of Civil Aviation (GACA) in Saudi Arabia.

The Swiss-based company has been operating in Saudi Arabia for more than 40 years but the certification is now required for all privately operated business jets based in the country.

## Israel connection

Morocco and Israel will be connected by a direct route to develop tourism and trade.

The agreement, part of the peace accord signed by the countries in December, will allow direct flights (including freight) between Israel and all international airports in Morocco, with no restrictions.

The Judeo-Moroccan community represent 50,000 visitors per year.

## Qatar tightens ties

Qatar's air force and the UK's RAF are developing closer ties and have formed a joint training squadron for Typhoon/Hawk operations to be based at Leeming in the UK. The agreement will also enable regular RAF Voyager deployments to Qatar to provide air-to-air refuelling training operations.

## Red Sea move

Air Cairo and SunExpress, a Turkish-German airline based in Antalya, have signed a cooperation agreement that will allow up to 30 flights per week to the Red Sea resort of

Hurghada from 14 airports in Germany, Austria, and Switzerland. It is expected that flights will commence by the beginning of June.

## Spatial grows

Spatial, a specialist in aviation training equipment, has relocated to a bigger facility in the Ras Al Khaimah Economic Zone (RAKEZ). The newly acquired 12,775sqm site is 73% larger than its previous location.

The company is set to increase its production capacity by more than 50% to serve its global customer base, including blue-chip airlines such as Lufthansa, Singapore Airlines, Qantas and British Airways.

## Twin simulator boost for EgyptAir Academy

The EgyptAir Training Academy is enjoying a double boost. It has had its A320neo flight simulator certified by the European Aviation Safety Agency (EASA) and, as *Arabian Aerospace* was going to press, it was reporting that its new Airbus A220-300 simulator was also due to go into service.

According to the academy, these simulators will provide high-level training with new technological support to attract new customers, backing up EgyptAir's strategy to expand its services by targeting pilots from Africa/MENA, Europe, and Indian airlines.

Thumbs up: EgyptAir Training Academy's A320neo simulator is set for action.

PICTURE: EGYPTAIR.



A stylized illustration of a woman with her hair in a bun, wearing a vibrant, patterned dress in shades of red, black, white, and blue. She is holding a matching shopping bag with red handles, which features the 'AJW' logo. The background is a bright blue with a faint, circular pattern and a small airplane icon in the distance.

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*Kamil Al Awadhi has taken up the reins as vice president, Africa and Middle East, for the International Air Transport Association (IATA). He now plans to help steer airline recovery in the region, as he explained to Alan Peaford.*

# UNITED WE STAND

**A**s the former chief executive of Kuwait Airways, Kamil Al Awadhi knows the feeling of shock and bewilderment that hit the aviation industry when Covid struck with a vengeance last year.

"We had nothing, no references, documents, or standard operating procedures to fall back on, so we had to create our own," Al Awadhi recalled.

Kuwait was one of the first countries to lock down. "If you look at some of the pictures from then, we had our crew operating in these white suits from head to toe, and they looked like they were doing spacewalks. Nobody knew what Covid was, or how infectious it was. So it was a horrendous time."

A year later and Al Awadhi is taking his experience and his empathy to his IATA role.

Speaking from the association's regional headquarters in Amman, he said Africa and the Middle East had been harder hit than most.

"I like what IATA's new CEO, Willie Walsh, said – it wasn't the airlines that stopped flying, it was the governments and authorities within each state," he explained.

"My personal take on this is, yes, the EMEA region, the Middle East and Africa region, got hit harder. I think it was a simple reaction by individual states, without consulting anybody else, taking decisions out of fear for their populations. The consequence is massive damage to the aviation industry.

#### Cutting costs tremendously

"You have to consider that airlines are cutting costs tremendously. It was one of the things I started doing in May of last year. And, of course, you know the quickest solution is to lay off staff. That's unfortunate, but they [the airlines] are improving efficiencies, and so forth.

"One of the things that you have in front of you, day in and day out, is how much cash you have left.

"Of course, this pandemic also caused mistrust with handling agents and other companies etc. So, a lot of companies started asking for cash up

**My top priority is getting the stakeholders in each state to meet internally and accept a standard that will be applied within the region, and, hopefully, then globally.**

KAMIL AL AWADHI

front because they needed the money too. There was none of this IATA clearing house, or 'we'll send you the bill on the end of the month'.

"So that means that, as an airline, you need to have that cash in your hand.

"Subsequently, you don't operate a flight if you're going to lose on it because you can't afford to do it anymore. You're not building up a route, you're trying to survive at this point. And so, immediately, the consequence is the price of tickets goes straight up."

In his new role, Al Awadhi will be addressing governments across the region to try to find a balance between health concerns and the industry revival.

"As a CEO, I was frustrated at governments not talking," he said. "It could be a state government not talking internally with its stakeholders – all stakeholders, and there are many, a lot more than most people think. And then, subsequent to that, I was frustrated that one state was not talking to another state."

Al Awadhi cites examples of aircraft, with passengers on board, being halted because the destination state had changed flight filing rules. He has taken that experience to his new job.

"I'm still bleeding from my experience," he said. "I want to use it to avoid airlines suffering even further because of the disconnects that are happening within a state and between states. That's my focal point.

"I need to get the states to accept a standard that gets applied by them all. There's no point, if a flight is from A to B, if A is sorted out yet B isn't. That flight is not going to happen."

IATA, along with partners like the International Civil Aviation Organization (ICAO) and the World Health Organization, is working to get a common travel pass on a mobile app that can be used by passengers to obtain and store their Covid-19 test results from accredited laboratories and vaccine records.

#### There are still barriers

But, although some major airlines are testing an IATA system, there are still barriers.

"The only way you're going to get everybody on board is by having them all on the same platform. The disconnect remains massive within this region. My top priority, now, is getting the stakeholders in each state to meet internally and accept a standard that will be applied within the region, and, hopefully, then globally," he said.

Al Awadhi said that IATA member airlines – and many non-member airlines – had expressed interest in installing the travel pass into their booking systems.

Aside from Covid, IATA in Africa and the Middle East has other issues to challenge the new regional vice president. Key among these is blocked funds.

Some states – particularly in Africa – have held on to payments made in a local currency that should have been repatriated to the airline.

"When Covid hit us we were consuming cash. We were burning through it and every airline can calculate per minute [how much it is losing] while it's on the ground. So, the first immediate thing is to look for all your money, bring it in from all the outstations – every airline has bank accounts at



**Kamil Al Awadhi: “The EMEA region, the Middle East and Africa region, got hit harder. I think it was a simple reaction by individual states, without consulting anybody else, taking decisions out of fear for their populations. The consequence is massive damage to the aviation industry.”**

PICTURE: BILLYPIX.

outstations for things like sales. You literally need to build cash,” Al Awadhi explained.

“So, blocked funds in Africa is a big number. These funds are owed to airlines, yet we hear of some carriers that have had to go to a bank and take a loan with a high interest to get cash. Yet, they actually have cash being locked up in a state in Africa. They end up paying interest on the cash that they already have in Africa.

“There is no excuse for blocking funds. African states should really consider releasing the money because it can affect their own airlines. It may also cause an airline that was actually a lifeline for their own state to go out of business. They then lose that lifeline. This should be addressed with urgency,” said Al Awadhi.

An engineer by background, Al Awadhi “jumped at the chance” to join his national airline. “Aviation was the ultimate of avionics, electronics, mechanics, engineering and so on,” he said.

#### **Safety management**

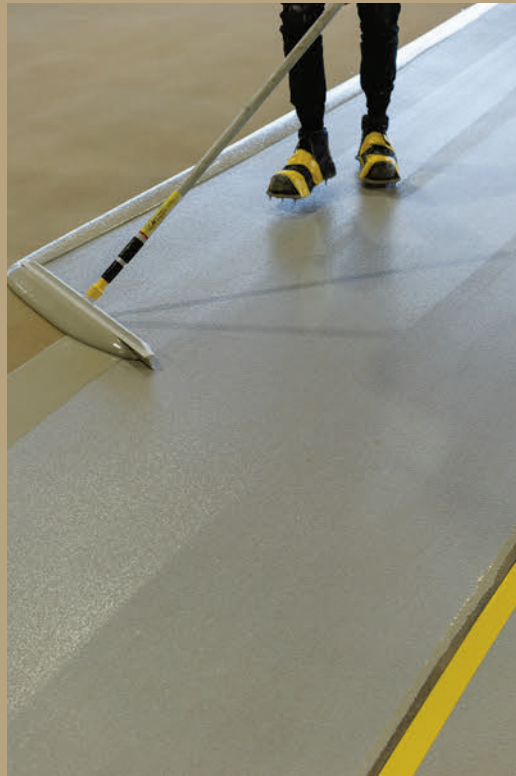
His career took him through the maintenance side and on to a master’s degree in aerospace at Toulouse before, in 2013, moving into safety management by heading up Kuwait Airways’ operational safety and emergency response team. In 2015, he became chief operating officer, then deputy CEO the following year. He became CEO in 2018.

He believes that there will be a return to “some kind of normality” by 2023, when airlines will be able to continue their work in achieving sustainability goals.

“Sustainability is going to be an issue for every CEO of every airline. And this is where governments can help,” he said. “They don’t have to provide cash, but they can support with government loans at very low interest rates. They can remove the taxes, they can move tariffs, and so forth. This reduces the cash burn and the daily operating cost of an airline.

“Even though the airlines are definitely becoming far more efficient in their operations today, the cash position has to be resolved.” ■

# AMAC AEROSPACE



**AMAC AEROSPACE**



# HANGAR 5

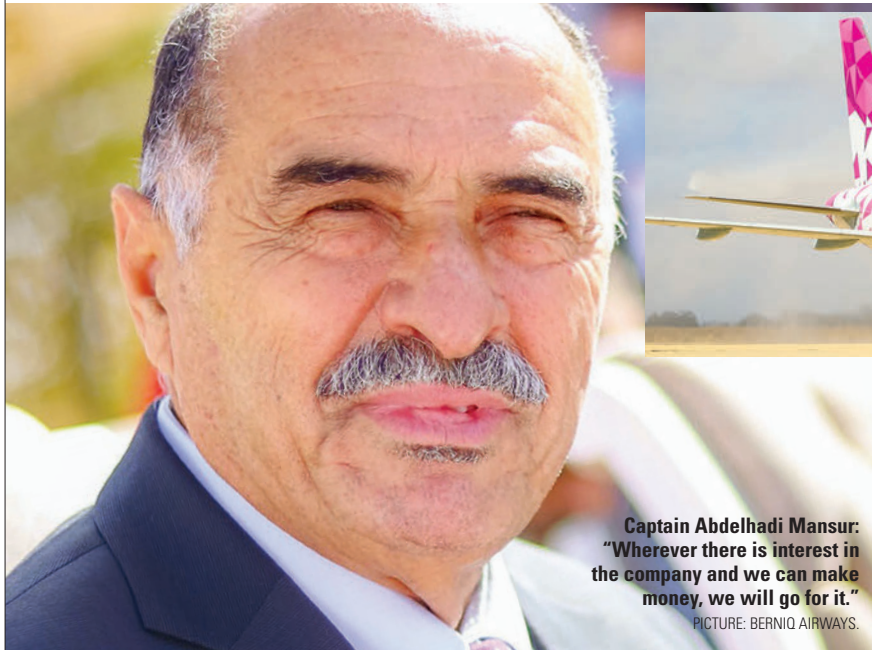


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Captain Abdelhadi Mansur, general manager of Benghazi-based Berniq Airways, talks to **Martin Rivers** about his plans for the Libyan start-up.



**Captain Abdelhadi Mansur:**  
 “Wherever there is interest in the company and we can make money, we will go for it.”  
PICTURE: BERNIQ AIRWAYS.



**Warhorse:** The new airline launched operations with a nine-year-old Airbus A320.  
PICTURE: BERNIQ AIRWAYS.

## Berniq launches with a mission to unify

Libya’s Berniq Airways took to the skies in March with an inaugural service from home base, Benghazi, to capital city, Tripoli. The new airline, which is named after Princess Berenice II of ancient Egypt, launched operations with a nine-year-old Airbus A320.

Its largest shareholder is Benghazi’s Bank of Commerce & Development, which is partly state-owned. But, with 60% of the company in private hands, general manager, Captain Abdelhadi Mansur, said he has no concerns about political interference.

“The company has nothing to do with the government of the country,” he said. “The traditional [state-owned] airlines lost a lot of aircraft during the war, and because of this the country became very short of large aircraft. So the private sector started working.”

Flying the Benghazi-Tripoli trunk route is symbolically important, Mansur said, as it underlines Berniq’s commitment to serving the whole of the war-torn nation.

Libya’s other domestic airlines are all headquartered in Tripoli, which was, until recently, the power base of the internationally recognised Government of National Accord (GNA). Benghazi, meanwhile, is the stronghold of warlord Khalifa Haftar, who commands the Libyan National Army (LNA), and for years threw his weight behind a rival government in the eastern city of Tobruk.

While the GNA and LNA have nationalistic names, the reality is that Libya has been mired in civil war for a decade – making travel between east and west a challenging and, at times, treacherous affair.

Hopes for a better future were bolstered in March, when a new Government of National Unity was sworn in.

Its chances of success are unclear. But, whatever happens on the political front, Mansur is keen for Berniq to help the citizens of Libya get moving after years of strife.

“Our airline has hubs in Benghazi and Tripoli, and we will try to provide for Libya and connect Libya to the neighbouring countries and to Africa,” he affirmed. “Wherever there is interest in the company and we can make money, we will go for it.”

The network has already grown to include flights from Tripoli to another two eastern destinations – Tobruk and Al Labraq, near Bayda. All flights to and from the capital are routed via Mitiga International Airport, as Tripoli International Airport remains closed following years of aerial bombardment.

Berniq’s second A320 was scheduled for delivery at the time of writing and talks are at an “advanced stage” for up to two further units.

“I hope we are going to reach four aircraft this year, but for sure [it will be at least] three,” Mansur confirmed. “Then, when the country has settled down and everything has smoothed out and... the Covid problem is solved, I’m sure we would increase our fleet. We have good opportunities to increase the fleet.”

He said Tripoli is likely to become the airline’s main operating base due to the size of its population.

One aircraft may also be stationed in Sabha when the southern city joins the network.

Management are evaluating charter flights to Libya’s oilfields with a smaller A319, but probably not before foreign workers return in greater numbers. The charter segment is currently dominated by Petro Air, a subsidiary of the state-run National Oil Corporation.

Asked when he plans to unveil international services, Mansur said the intent is there but Libyan carriers face heavy restrictions when crossing borders.

Aircraft registered in the country have been banned from EU skies since 2012, and many Arab and African countries remain wary of their neighbour – jarred by video footage of bombed runways and smouldering aircraft. “With all the problems and restrictions, Libyan airlines have a hard time going anywhere,” Mansur shrugged.

Only a handful of regional points are currently served by local operators. No foreign airlines fly to Libya.

Nonetheless, Mansur identified Cairo (Egypt), Istanbul (Turkey), Khartoum (Sudan), Jeddah (Saudi Arabia) and Niamey (Niger) as markets of interest. Berniq’s website also names Alexandria (Egypt), Amman (Jordan), Djerba and Tunis (Tunisia) and Dubai (UAE).

**“We will try to provide for Libya and connect Libya to the neighbouring countries and to Africa.”**

**CAPTAIN ABDELHADI MANSUR**

# LAST-DITCH HITCH STALLS QATAR-EU DEAL

Plans for a new aviation agreement between Qatar and European Union nations have encountered opposition from representatives of European pilots and members of the European Parliament.

The EU and Qatar initialled a comprehensive air transport agreement (CATA) in February 2019 that would open up both markets to unlimited competition.

However, the CATA goes considerably beyond traditional 'open skies' agreements. As well as traffic rights, it sets a single set of rules and standards for both sides, together with cooperation on aviation issues such as safety, security and air traffic management.

It also made provisions for fair competition, with enforcement mechanisms to avoid distortions or abuses of competition and additional provisions on social matters, such as improving social and labour policies. The last of these was seen as an attempt to improve workers' rights in Qatar.

Qatar ratified the CATA some time ago, but it has been working its way through the EU's procedural processes for two years.

The agreement is now on the verge of being ratified. However, several groups, including the European Cockpit Association (ECA) and Europeans for Fair Competition have urged the European Commission to pause the agreement as European airlines have been severely weakened by the pandemic.



Pause for thought: The European Union is in the 'final stages' of ratifying the EU-Qatar comprehensive air transport agreement.

PICTURE: WIKIMEDIA COMMONS.

They believe the CATA to be unbalanced, as it will give Qatar Airways unfettered access to the EU's 27 countries, while European carriers will only be granted access to Qatar, much of whose traffic is already carried by Qatar Airways.

An ECA source asked: "Where are the equal opportunities for European carriers?"

The source added: "Some airlines and unions have said to the European Commission: 'Do an impact assessment. Is there really an opportunity for European carriers to go [to Qatar]?' We think these

aspects were not really thought about by the European Union when they were negotiating."

The Europeans are also worried that the CATA could set a precedent, with similar agreements currently being negotiated with Oman and Morocco.

An EC spokesman said that, at the time of writing in late March, the Qatar agreement was close to completion, but that details remained to be finalised. Approval was also required from representatives of the bloc's 27 nations.

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Primed and ready: The airline has stationed four Airbus A321neos in the emirate and was preparing to launch another eight routes.

PICTURE: WIZZAIR.COM.



Wizz Air founder and chief executive, József Váradi, tells **Martin Rivers** that the group's new Abu Dhabi subsidiary will ignite a low-cost revolution in the Gulf.

# Váradi's words of Wizzdom

**A**s Europe's fastest growing low-cost carrier, it should come as no surprise that Wizz Air jumped at the chance to establish a subsidiary in the United Arab Emirates.

Wizz Air Abu Dhabi launched operations this year as a joint venture between the Hungarian airline group and ADQ, Abu Dhabi's sovereign wealth fund. It is hoping to grab a large slice of the lucrative Gulf market, which has, to date, been relatively inhospitable to low-cost carriers.

Much more surprising was the willingness of Abu Dhabi to partner with Wizz Air in the first place.

Low-cost carriers have driven several of Europe's state-owned airlines to the wall in recent times – propelled by an obsessive focus on discounting – and Etihad Airways, Abu Dhabi's own flag-carrier, is already deep in the red after years of largesse.

Inviting competition from the most ruthless cost-cutter of all was a bold move by the emirate.

But for József Váradi, Wizz Air's founder and chief executive, there is no question that the two businesses can't thrive alongside each other.

"They are chasing a totally different customer versus what we want to bring to the market," he said. "These [full-service Gulf] carriers are doing great in certain regards... They can serve a certain segment very well – especially the high-yield part – but they are not really capable of creating markets. They are not the lowest-cost producers in the world.

"I think this is the realisation Abu Dhabi has come to; they clearly see that the model they have built up served its original purposes, but now they need to put in new purposes – because the world is changing and they need to accommodate those changes."

The emirate's top priority is transforming its oil-centric economy

Continued on Page 20



**I'm encouraging everyone inside the company to look forward to competition.**

JÓZSEF VÁRADI

PICTURE: WIZZAIR.COM

## CONTINUED FROM PAGE 19

into a more diverse, sustainable, business landscape. And tourism is, perhaps, the sector most ripe for development – as long as the cost of flying from Europe comes down.

Wizz Air Abu Dhabi took off in support of this strategy in January with an inaugural service to Athens (Greece), followed by a second route to Alexandria (Egypt).

The airline has stationed four Airbus A321neos in the emirate and was preparing to launch another eight routes at the time of writing: Almaty and Nur Sultan (Kazakhstan), Kutaisi (Georgia), Larnaca (Cyprus), Odessa (Ukraine), Tel Aviv (Israel), Thessalonica (Greece), and Yerevan (Armenia).

Prior to Covid-19, inbound services were also operated to Abu Dhabi under Wizz Air's European licence from Bucharest and Cluj-Napoca (Romania), Budapest (Hungary), Katowice (Poland), and Sofia (Bulgaria).

Váradi said that opening air corridors to eastern Europe, the Mediterranean and the Caucasus was a natural first step for the Gulf carrier.

"We are targeting leisure, but we are also aiming to get those people into the country who actually serve the leisure market," he noted. "Let's not forget, the proportion of Emiratis in the UAE is fairly limited. This country heavily relies on expatriates... and, increasingly, they are relying on the hospitality industry.

"We are much better placed for that traffic flow than anyone else, because we know that this is really a commodity and people don't want to be overcharged. It's a functional product."

**100-strong fleet**

European, Asian, Middle Eastern and African destinations will all be targeted as the airline expands, he confirmed, with management aiming to reach a 100-strong fleet by 2035. Abu Dhabi-London is among the long-haul routes being considered for the group's A321XLRs, the first of which is due to arrive in 2025.

However, while the near-term growth will centre on Abu Dhabi, Wizz Air is also using its European playbook as a template for expansion.

In short, the company plans to open multiple operating bases across the Gulf.

Point-to-point connectivity is a difficult nut to crack in the Arab world because of the region's fondness for bilateral traffic agreements and ownership restrictions. Those regulatory hurdles protect state-owned airlines by making it expensive and laborious for low-cost carriers to base aircraft abroad – a freedom that Hungary's Wizz Air and Ireland's Ryanair take for granted when operating in the EU.

Within the Gulf Cooperation Council (GCC) though – which comprises Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE – Váradi believes that long-delayed talks about deregulation should, eventually, bear fruit.

"Over time, will there be a kind of a regulatory consolidation process happening in the GCC similar to what happened in the EU? Essentially,

what that would mean is that once you have an operating platform inside the GCC, it could be extended and rolled out in other countries [under] a unified regulatory framework... This is the 15-year plan. And looking at our [European] network, I think we have the track-record to do that."

He cited the example of Israel, which signed an open-skies treaty with the EU eight years ago. Wizz Air is now the largest international airline in Israel, and visitor numbers to the country had been surging prior to Covid-19.

Jordan and Morocco have also welcomed Europe's low-cost carriers in recent years – again spurring growth in their tourism sectors – but there has been little progress at an intra-regional level.

**Slower pace**

"I think this will get rolled out over time, and maybe at a slower pace than what we would have hoped for," the chief executive admitted.

"But I think it is happening. The question is, will the regulatory framework of aviation globalise, regionalise, or nationalise?"

"I don't think it is going to nationalise; I think that would go against what has been achieved over the last decades. I can't predict the pace, but I think it will continue to liberalise going forward. And I would be expecting more regional developments before global developments."

Asked whether there is cultural scepticism about low-cost business models in the Middle East, Váradi described this as a dated and somewhat naive notion.

"If there is one universal statement you can make, it is that mobility is universal, and consumer needs are exactly the same, no matter where you are in the world," he argued. "The purpose of your travel is not the travel itself, but [the fact that] you want to do something in another place.

"So you want to get there as cheaply and as hassle-free as possible. That's it."

Indeed, there is no shortage of entrepreneurs trying to reinvent low-cost travel specifically for the over-regulated Middle Eastern market. Today, Air Arabia is the closest thing the region has to a European-style budget airline, albeit with some notable differences.

The Sharjah-based company relies on politically fragile partnerships with local operators to circumvent restrictions. Its approach has delivered positive results in

Morocco and Egypt – as well as the Sharjah hub – but it was not successful in Jordan. Crucially, chief executive, Adel Ali, draws a distinction between Europe's ultra-low-cost model and his more expensive but more generous approach.

"We find people are prepared to pay a little bit more if you give them a little bit more convenience," he told *Arabian Aerospace* in 2017.

That makes it all the more intriguing that Abu Dhabi last year invited Ali to launch a second low-cost carrier, Air Arabia Abu Dhabi, which is jointly owned with the government through the Etihad Aviation Group.

Establishing two state-owned low-cost carriers is a curious move, given the obvious risk of cannibalising traffic. Air Arabia Abu Dhabi launched in July 2020 and currently deploys a pair of A320s to nine destinations: Alexandria, Cairo and Sohag (Egypt); Dhaka and Chittagong (Bangladesh); Kathmandu (Nepal); Khartoum (Sudan); and Muscat and Salalah (Oman).

**Two-pronged approach**

Whatever the wisdom of this two-pronged approach, it leaves no doubt that Abu Dhabi is determined to ignite a new era of genuinely affordable air travel in the Gulf.

And, with the lowest cost-base in the industry, Váradi relishes the prospect of battling Air Arabia for pole position.

"I'm encouraging everyone inside the company to look forward to competition," he smiled. "We always think that it's an easier way of running a business when you are monopolised. But the problem with that is it makes you complacent, and one day the situation can change dramatically and you are not ready to compete.

"That's why I think it is important that we get contested. It is certainly good for the consumer, and I also think that long-term, strategically, it is good for us as well. Competition simply makes us a better airline." ■



PICTURE: WIZZAIR.COM

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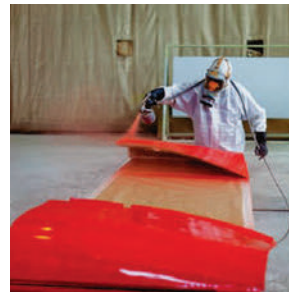
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طيران أبو ظبي  
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# Supporting aviation recovery in the Middle East

## AUTOMATION AS THE KEY DRIVER FOR A COST-EFFICIENT ATM POST-COVID

Is inefficient air traffic control costing your airport more? Josef Kutschi, Managing Director Frequentis Middle East, and Wolfgang Hatzack, CEO of ATRiCS, propose a solution for enhancing controller productivity and safety. Could it also reduce CO2 emissions?



The ATRiCS TowerPad allows increased safety and more efficient taxi, improving airport capacity as a result.

**A**ir traffic in the Middle East, like the rest of the world, suffered immensely during the pandemic. With passenger traffic slumped the world over, and the entire aviation ecosystem impacted, airports, air navigation service providers and airlines have needed to rethink their working processes to remain safe as well as cost-effective.

Middle Eastern economy is heavily supported by the aviation industry and Covid-19 caused an almost 50 per cent reduction in the regions aviation and related industry jobs in 2020. The International Air Transport Association (IATA) reported that income from the industry also fell by 39 per cent compared to 2019. As passenger traffic in the region

starts to recover there remain things to consider:

1. Increasing capacity to meet, difficult to predict, passenger demand
2. Reducing controller workload, and minimising controller error, while overcoming workforce fluctuations and a shortage of controllers
3. Improving resilience, especially in low visibility conditions, during the regions continued airport expansion projects

Starting with increasing capacity, we are reminded of the industry's concerns pre-covid. The factors limiting aviation growth were, and still are, in the areas of airspace organisation and automation. At the same time air traffic controllers (ATCOs) are under increasing pressure to

manage larger volumes of traffic in increasingly more dynamic environments, raising the potential for human error.

In addition, the variance of controller performance is broader in regions with a stronger cultural diversity making automation of controller support tools an even more interesting asset in the Middle East.

Airport expansion in the Middle East includes developments in Bahrain, Dubai, Abu Dhabi and Saudi Arabia, among others, totalling some \$36 billion between 2018-2021. While undergoing significant expansions, procedures must be adjusted and areas closed and re-routed, adding to the complexity of the controller's role.

### INCREASING AUTOMATION

Remote digital towers and digital tower tools have come some way to offering a solution to the in-creasing controller workload by enhancing visibility and automating functions and workflows. From replacing paper strips with electronic ones as a first step, to fully digital tower solutions with auto-matic object detection, automated warnings, and tracking and data fusion, ATCOs are supported by technology in the tower.

In March 2020, Frequentis acquired a 51 per cent share in ATM automation technology supplier ATRiCS. ATRiCS provides software products and services to airport operators and ANSPs to optimise arrival and departure times as well as supporting digital towers with automated functionality including routing.

As Frequentis and ATRiCS work together we have the ability to integrate an advanced surface movement guidance and control system (A-SMGCS) and the ATRiCS TowerPad into the digital tower environment. This further enhances airport surveillance and controller functionality.

The ATRiCS TowerPad intelligently unites information and the appropriate action into a single user interface, allowing



## Evidenced Improvements with "Follow-the-Greens":

	CAVOK	LVC	
Safety	▲	▲	
Predictability	▲	▲	
Communication Time	-48%		▼
Taxi Time	-17%	-38%	▼
Taxi Interruptions	-41%	-66%	▼
Fuel Burn & CO <sub>2</sub>	-19%	-41%	▼



The solution reduces ground Co2 emissions thanks to its "Follow the Greens" guidance system aimed at reducing taxi time on the runway.

increased safety and more efficient taxi, improving airport capacity as a result. The TowerPad, similar to the glass cockpit onboard the aircraft, equips the controller with an advanced touchscreen, allowing them to fully focus on their planning and traffic coordination tasks. Data from the TowerPad module can also exchange data with other tower modules in real-time, further enhancing controllers' workflow.

The controller now has a modern topographical view of the whole airport surface and sees required information, recommendations, and alerts at the right time. Workload is reduced, situational awareness improved and the danger of making error is lowered. The TowerPad generates safe routes for aircraft and provides guidance using the installed lighting system. A controller with less to look at can see and manage more.

### AND THERE'S MORE...

The TowerPad is in active and mature service, operational at several major airports since 2008, using artificial intelligence to provide advanced human centered automation services for aerodrome controllers. The system has

proven to reduce costs for airlines, airports and ANSPs, improves safety, reduces taxi times and consequently the environmental impact of airport traffic.

The solution reduces ground Co2 emissions thanks to its "Follow the Greens" guidance system aimed at reducing taxi time on the runway. It also offers controllers a solution that significantly reduces mental workload while increasing situational awareness. The new system further improves movement rate in low visibility by using only the centreline lights for automatic separation and thus maintaining maximum ground capacity.

Instead of remembering lengthy taxi instructions at an unfamiliar airport green centreline lights illuminate in front of the aircraft and extinguish behind it, guiding the pilot safely and efficiently to its destination, considering other traffic and the individual constraints of the airplane. If required to stop, the green lights will be replaced with a red stop bar.

In 2017 the SESAR (Single European Sky ATM Research) validation exercise, VP-649 and VP-759, was already able to show the potential for significant financial benefits up to €30 million annually thanks

to fuel savings from "Follow the Greens" at large aerodromes.

The TowerPad has been operational in the Middle East since April 2012, at Dubai International Airport, and is the only system worldwide able to double airport capacity in low visibility through the automatic separation of aircraft by stop bars.



### Josef Kutschi, Managing Director Frequentis Middle East

Josef has worked in the Middle East for the last 10 years, in various management positions for

satellite communication and ATM industries. Josef joined the Frequentis Group in 2019 as ATM Sales Director, Frequentis Middle East, and was appointed Managing Director for the region in January 2020.



### Wolfgang Hatzack, CEO ATRiCS

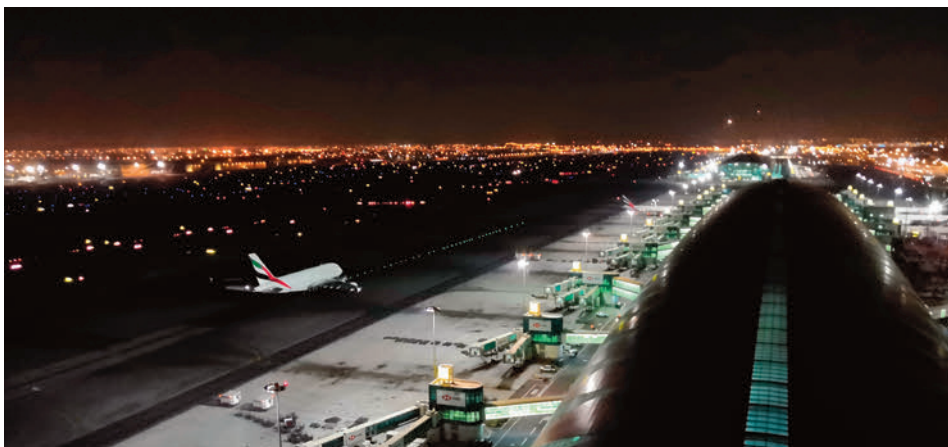
Wolfgang founded ATRiCS in 2001 and is the visionary behind the company's innovations, designing the world's first fully

automated routing and guidance system. Under his leadership and AI-based automation background, ATRiCS pioneered the field of integrated controller working positions and is known for the TowerPad system in the ATM industry.



Frequentis safety-critical communication and information solutions leverage more than 70-years of experience worldwide and has been serving clients throughout the entire Middle East region with tailor-made solutions for over 20 years. Frequentis Middle East offers the full range of solutions developed within the Frequentis group based on expertise in mission critical voice and data communications, information management, networking technologies, surveillance, AIM and message handling. The company provides voice communications for over 50 airport systems in the Middle East and 17 air bases and control reporting centres. Its philosophy focuses on practical usability, providing user-centric systems that conceal the underlying complexity to support rapid, effective, and cost-efficient control center operations.

For more information, visit [www.aerosense.solutions](http://www.aerosense.solutions)



Using the installed lighting system, the ATRiCS TowerPad generates safe aircraft routes and provides guidance to pilots, reducing mental workload.

*The revival of the airline business across the Middle East in the post-pandemic era will depend on carriers being able to fly cost-effectively. Embraer has a solution. Alan Peaford reports.*



# Dabbas on the right track

**H**ussein Dabbas knows what it takes to make an airline financially successful. His CV includes time as CFO and CEO of Royal Jordanian Airlines, as well as regional vice president for the International Air Transport Association (IATA) across Africa and the Middle East.

He has taken that experience to Embraer, the third of the three western commercial airliner manufacturers.

But nothing prepared him for the impact of the Covid pandemic.

“It’s something that we will remember for ages to come. This was really the worst issue to hit the aviation industry ever, and no airline has escaped that,” he said. “It’s going to take us some time. Nothing’s going to come back to 2019 levels before 2024.”

Dabbas believes airlines need to be addressing a capacity issue if they are to survive the post-pandemic recovery period.

“Airlines are realising that they need to right-size, and they need to be at the right market with the right aircraft,” he said. “Not every airline can have, and operate, at the very high seat factors, whether with wide-body aircraft or even the single-aisle jets that are becoming bigger and bigger.”

## New generation fly-by-wire aircraft

Dabbas said more than a quarter of Middle East regional flights depart with less than 70% of seats filled, with the region’s carriers sometimes using wide-body aircraft to make short hops.

“We do a lot of studies and we show airlines the numbers, and they share with us their forecasts, their cost, their revenues, and so on. And we come back to them with a study that clearly indicates that, in order for them to make money to generate more business, they must be operating on this kind of a schedule on that kind of a frequency.

“And again, let’s be honest, if you build it, they will come. If

**Hussein Dabbas:**  
“If you put the right aircraft at the right time, people will travel.”

**Inset: The E2, with its new wing and new engines reducing fuel burn and emissions, has more than 500 improvements over the original E-Jets.**  
PICTURES: EMBRAER.

“Airlines are realising that they need to right-size, and they need to be at the right market with the right aircraft.”

HUSSEIN DABBAS

you put the right aircraft at the right time, people will travel.”

Dabbas said he had seen the difference at Royal Jordanian, when the airline bought Embraer regional jets. “It was a major game-changer. Instead of just flying Tuesdays and Fridays, we were flying every day.

“Nowadays, with the high cost of operation, unless you really have an 80-plus seat factor or load factor, you’re not covering your costs,” he added.

The E2, with its new wing and new engines reducing fuel burn and emissions, has more than 500 improvements over the original E-Jets, and offers a real opportunity for airlines and passengers, claimed Dabbas.

## New generation fly-by-wire aircraft

“We have new engines, new wings, new avionics, new stabilisers, new interiors, and new landing gear for the new generation fly-by-wire aircraft. So everything is new. When you go into the cabin as a passenger, you will notice the great feeling of entering an aircraft that is roomy; there are no middle seats, so it’s either window or aisle, and that’s what passengers like all the time.

“We have worked on the overhead bins so that they are much larger, and every passenger on board has the chance to put a carry-on bag up there, and there is the quietness of the aircraft. When it’s taking off and while it’s flying, you don’t hear the noise, you don’t hear the vibrations. It’s a very quiet and beautiful aeroplane.”

The aircraft has been dubbed ‘The profit hunter’ because of its favourable operating economics. And it even works when it comes to the growing requirement for business-class seats. “The new E2s have the option of what we call staggered seats, giving you 56-inch distance between the other seats in front of you,” Dabbas said. “The airlines are just flabbergasted when they see the layout.”

# 2021: year of the real Deal?

*It's been a long time coming, but 2021 should be the year in which Saudi low-cost carrier, Flyadeal, finally begins international services. Alan Dron reports.*

Originally, it was coping with the sheer scale of domestic demand in 2018 that persuaded Flyadeal's management to postpone the airline's international expansion plans.

Then, the grounding of Boeing's 737 MAX, for which the Jeddah-based low-cost carrier (LCC) had placed an order of 50 aircraft, forced a change of direction to the Airbus A320neo and cost the airline another year.

Finally, the Covid-19 pandemic threw every airline's plans for 2020 out of the window.

Now, however, "International is definitely on the agenda for 2021", according to Flyadeal CEO, Con Korfiatis. "We have significant international aspirations."

Destinations are not yet being revealed, but there have been previous suggestions that Dubai will be an early target.

Helping to underpin the LCC's expansion into the international sector will be a major fleet expansion.

There was a slight contraction of aircraft numbers as the pandemic struck, with a decision to relinquish a small number of wet leased, older aircraft, which had boosted the fleet to 14 at one point.

At present, Flyadeal has a 12-strong fleet, consisting of 11 Airbus A320s, plus the first of its batch of new A320neos.

## "Big chunk" of new arrivals

That newcomer is scheduled to be joined by no fewer than seven more this year and what Korfiatis described as "a big chunk" of new arrivals in 2022. The airline is due to receive 30 A320neos, part of a 100-aircraft order (65 firm and 35 options) placed by parent Saudia Group at the 2019 Paris Airshow.

As well as its incoming 30 A320neos, Flyadeal has options for more, and this latter tranche has the flexibility to allow the carrier to trade up to the larger A321neo.

"Some of the domestic routes we've been flying are very thick and could quite easily take an A321 – even at the moment. And the seat economics improve, which is good news for an LCC like us," said Korfiatis.

"We do see the A321neo featuring in our fleet at some stage, but no decisions have yet been made."

Saudia's 2019 order with Airbus included 15 of the A321XLR model, whose significantly greater range (8,700km / 4,700nm) would open up considerably the number of possible destinations available to Flyadeal.

For the moment, however, demand for domestic flights has



**Breakthrough moment: Con Korfiatis (left), seen here with the then Saudi Airlines Group director-general, Saleh bin Nasser Al-Jasser, during the handover of the carrier's first Airbus A320.**

PICTURE: AIRBUS.

**Above: Flyadeal's existing fleet of Airbus A320s will be significantly expanded over the next two years by the arrival of the A320neo version, with larger A321neos possible additions in years to come.**

PICTURE: ALAN DRON

been strong, ever since the Saudi Government ended a March 2020 shutdown of all services at the end of May. The government allowed 10-15% of pre-Covid flights to restart initially, and Flyadeal had "no problems" filling those services.

Indeed, added Korfiatis: "We've been progressively

able to bring more flights back and demand has stepped up every time we've increased frequencies. The government has done a great job in managing the pandemic and people have been able to move around domestically.

"In January this year we were close to 90% in frequency terms; in capacity terms we still have 30% that we can't sell because we have to keep middle seats free to allow for social distancing on board."

The market has revived quickly, he said. One of the revelations over the past year has been the strength of the domestic tourism market. This has flourished, with many people flying around the country for leisure breaks.

The domestic network has been very largely restored, with all airports now reopened.

"What has happened to the industry is beyond sad and we're not through this completely yet," said Korfiatis. However, both Saudia and competing low-cost carrier, Flynas, have been flying with healthy load factors, at least in terms of seats that are sellable.

Korfiatis hopes there will not be too much more economic carnage. Flyadeal was not yet making money, he said, but the airline was not in dire straits. And it had been able to keep all its staff – just under 600 – in work throughout the pandemic.

This year, at last, flightcrews should start to see some new airports. ■



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*Khaled Chelly is the new man in the hot seat as Tunisair attempts to solve its financial crisis and pull out of the nosedive that potentially threatens its very existence.*

*Anuradha Deenapanray and Vincent Chappard report.*

# Tunisair in turmoil: new boss takes on tough challenge

**A**t the beginning of March, Khaled Chelly took over the management of Tunisair. His appointment came just days after previous CEO, Olfa Hamdi, had been dismissed. Her tenure had lasted just seven weeks.

The airline is in crisis, salaries are not being paid, union members are up in arms, and debts are being called in.

It all used to be so different. For nearly three-quarters of a century – since its foundation in 1948 – Tunisair has contributed hugely to Tunisia’s tourism industry.

However, in recent years, even before the Covid-19 crisis, the carrier had been experiencing financial turmoil.

Last year, the airline recorded a 70% drop in revenue, while the number of passengers across all activities fell by 80% and its transport revenues by 77%, despite an improvement in the average revenue per passenger of 13% for scheduled flights.

Tunisia’s new minister of transport and logistics, Moez Chakchouk, is currently treating the restructuring of the airline as a major priority, before considering how any relaunch might work.

In mid-February he admitted: “Tunisair is in great financial difficulty and we are unable to pay salaries or to honour our commitments to suppliers.”

The minister also said that the restructuring plan, drawn up in agreement with the UGTT – the Tunisian general labour union – had not been fully implemented.

## Major causes of instability

Industry observers believe this to be one of the major causes of the airline’s current instability.

According to the minister, state intervention is vital and he ruled out both privatisation of Tunisair, or any recourse to a strategic partner.

In early January, the appointment of Olfa Hamdi as Tunisair’s new CEO, to replace Elyes Mnaki, had brought signs of hope. The new CEO’s mission was ‘to develop a strategic action plan to save and promote Tunisair in order to face international competition’, especially from European and African companies.

Hamdi also established a new strategic committee of independent advisors, made up of nine senior players from the local and international aviation world. But it was soon clear that the crisis was far from stabilising.

On February 18, TAV Tunisie, a local subsidiary of the Turkish company, TAV Airports, which manages the Tunisian airports of Enfidha-Hammamet and Monastir Habib Bourguiba, announced the seizure of €8million (\$9.65m) from Tunisair, partially to cover a debt estimated at €20 million, excluding penalty costs, that dated from 2015.

On the following day, the minister organised a crisis meeting, in the presence of Hamdi, representatives of TAV Tunisia, and the Office of Civil Aviation and Airports



**Khaled Chelly:**  
Vastly experienced.

PICTURE: TUNISAIR.



**Moez Chakchouk:** Treating the restructuring of the airline as a major priority.

PICTURE: MOUMOU82, VIA WIKIPEDIA.



**Olfa Hamdi:** Dismissed after just seven weeks.

PICTURE: WIKIMEDIA.

(OACA), to address the financial dispute. At midday that day, the UGTT called a strike during protests at the company’s headquarters in Tunis. Its secretary general, Nourredine Taboudi, called for a rescue plan and rejection of privatisation.

After long discussions, the transport minister gave hope with the announcement of an agreement between Tunisair and TAV Tunisia on the rescheduling of the debt.

However, just three days later, on February 22, there was a dramatic turn of events when Hamdi was dismissed.

Chakchouk explained the decision to dismiss the CEO, just seven weeks after her appointment, by saying that she had “made many mistakes and also disclosed confidential documents”.

The day before, Hamdi had responded on her Facebook account to attacks by the UGTT union: “I refused to award a financial advance and I counted on Mr Nourredine’s understanding of the difficult situation of the company,” she wrote, stressing that a strike would have a major effect on Tunisair.

A few days later, in early March, Chelly was appointed.

The new CEO has plenty of experience – he was deputy managing director of the national airline between 2012 and 2014, before heading up OACA between 2015 and 2018. He was also the International Air Transport Association (IATA) representative for north Africa from 2009-2012.

He now has the difficult task of getting Tunisair out of the crisis.

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*While private aviation globally has rebounded in the last few months, now running globally at around 70% of pre-Covid levels, figures for Dubai show not just recovery, but growth.*

**Jill Stockbridge** reports.



PICTURE: JETEX

## Private's progress speeds up in Dubai

In January, the Mohammed bin Rashid Aerospace Hub (MBRAH), at Dubai South, announced that private jet movements in the Emirate grew by 21% in 2020, compared to 2019, driven by a 78% year-on-year growth in movements in the fourth quarter.

Adel Mardini, founder and CEO of Jetex, which operates three of the four lounges at the VIP Terminal, said: "2020 was a very good year for us and for Dubai. Our growth in numbers of movements started in the third quarter and, on average, it was 300% higher than 2019."

The figures include travellers who are new to the market, and Mardini believes they will continue to utilise private aviation.

He said: "70% are new customers, coming to us from first and business class on commercial airlines. I don't believe that these people will go back. One customer told me that his budget allows for up to six first-class tickets per year. He will now fly only two or three times per year, but fly private. People are realising how important and safe it is to fly private."

Short waiting times in private fixed bases of operation (FBOs) are a major driving force for travellers concerned about their health. Mardini cited a study from research

**“I expect the platform of users of private jets to at least double.”**

**ADEL MARDINI**

specialist organisation, McKinsey, that showed passengers with commercial airlines are exposed to 720 touchpoints. Flying privately cuts that to less than 30.

He said: "A passenger who flew to Mykonos counted 22 touchpoints from leaving his car to leaving the FBO in Greece. Here you meet only two or three staff, and we can make that even fewer if you require."

While Covid caution has brought new customers to the industry, there has also been a boost to the UAE market due to the opening of trade and tourism with Israel. This has encouraged a raft of private charters for leisure and business into the city, and, in 2021, Mardini expects the UAE-based Expo and the Dubai Airshow to drive further growth.

He is typically bullish about the future. "The existing customers who usually fly private jets are not travelling at the moment. So we have all this growth, even without our base market. Once they come back, we will see consolidation of the market. I expect the platform of users of private jets to at least double."

### Conservative view

While DC Aviation Al Futtaim also enjoyed growth in the last quarter of the year, managing director, Holger Ostheimer, takes a rather more conservative view, remaining carefully optimistic. He has seen new customers enter the market, but is not convinced it is a long-term benefit.

Ostheimer said: "With the restriction of movement in 2020, we had an exorbitant number of charter enquiries from people who were not familiar with our business previously. However, we only had one flight per 100 enquiries, which is a very unusual ratio."

"A charter broker would tell you that the more normal ratio is 15 enquiries to one booked flight on average, but these enquiries were from people who were not aware of the price point of private aviation."

"Since November, we have seen a lot of leisure business coming into Dubai, an unusual mix of up to 80% leisure and only 20% business flights. That is now phasing out, and we have to see how robust the recent trend continues to be and where the business is going to come from this year."

"You may be able to generate seasonal, or event specific, demand – such as Expo – but that is within a defined period of time. It may grow the market marginally, but the driving force of activity in the summer was repatriation of people across the Gulf, and that has now stopped. The major source of our business is from the ultra-high-net-worth individuals, and there is a very defined number of people who can afford a better, more bespoke level of service." ■



**Holger Ostheimer: "There is a very defined number of people who can afford a better, more bespoke level of service."**

PICTURE: BILLYPIX



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Photographic record made by the Brazilian Air Force on one of the missions to combat COVID-19 in Brazil.

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Where offset requirements may have once clouded Middle East defence procurement, new strategic direction in key markets promises to harness this policy tool for substantial socio-economic and industrial benefits. **Chuck Grieve reports.**

## TIME TO SWITCH ON TO OFFSET

**W**inds of change blowing through the defence export sector could bring widespread benefits across a widening swathe of social, economic and scientific interests in the Middle East.

At its core is a new approach to offsets, or industrial participation (IP) as it's increasingly known.

That's the view of Dr Kogi Balakrishnan, director of client and business development for the Warwick Manufacturing Group at the University of Warwick, an authority in the field of offsets and a regular contributor to the debate at events such as the IDEX conference. She is also scheduled to speak at next year's World Defense Show in Saudi Arabia.

She observed "an interesting twist" at IDEX this year as leading figures from US industry signalled a sea change in the defence exporter's approach to IP.

"We heard [Lockheed Martin senior vice-president] Tim Cahill stressing the importance of industrial participation, which is a strong commitment, hugely positive and encouraging. You seldom hear this from US primes, who traditionally take a very hands-off approach to offsets," she said.

Equally important was the "change in US culture" discussed by Heidi Grant, director of the USA's Defense Security Cooperation Agency, at the IDEX conference. Dr Balakrishnan saw Grant's commitment to setting up a process to make technologies available to partners and allies as a "game-changer... a positive step".

"These changes will be hugely significant to demonstrate the collaborative effort being taken by the US and other partners in Europe to engage in sharing capability and economic spin-offs."

### Developing regional partnerships

European companies, among them SAAB, Thales, MBDA, Leonardo and BAE Systems, have also been active in developing regional partnerships. Such activity is "clear evidence" of how IP will carry "significant weight" in future defence procurement decisions, said Balakrishnan.

At present, she said, only Saudi Arabia, the UAE and Oman, among GCC countries, have written policies on IP. "The evolution of the Saudi and UAE policies over the last 30 years has seen a change of focus from capital investment in civil sectors to a more strategic and targeted approach."

Tawazun Economic Council (TEC) in the UAE and Saudi Arabia's General Authority for Military Industries (GAMI) are guiding the development of indigenous high-value-added sectors in line with their respective overarching strategies: the UAE's fourth industrial revolution and Saudi Arabia's vision 2030.

In practice, said Dr Balakrishnan, there is sometimes a "disconnect" as the IP policy tends to focus on direct



ILLUSTRATION: ALASHI, ISTOCK



**Dr Kogi Balakrishnan:**  
"These changes will be  
hugely significant."

PICTURE: K BALAKRISHNAN.



**Together:** HE Jassem Mohammed Bu Ataba Al Zaabi (right), secretary general of Tawazun's board of directors, and HE Ahmed bin Abdulaziz Al-Ohali, governor of GAMI, celebrate signing their MoU at IDEX 2021.

PICTURE: TAWAZUN.

industrial benefits related to defence and security industries, while national industrial strategies are broader and focus on wider industrial and technological sectors. IP authorities "need to engage with the different stakeholders and incorporate the national industrial strategy requirements so the implementation is aligned", she said.

IDEX also highlighted the opportunities for regional collaboration in IP, when TEC and GAMI signed a memorandum of understanding (MoU) to build a strategic partnership to enhance the capabilities of the defence sector, explore the potential for joint projects and identify areas of cooperation in defence industry-related research and development.

"I certainly see these initiatives as a positive move," said Balakrishnan. "There are plenty of opportunities for both countries to collaborate and complement each-other and to learn on the strength of each-other's policies."

"The UAE certainly has been the lead for IP for the region. With its track record, the UAE could be a catalyst for reform, especially for Saudi Arabia and other GCC countries."

Regional tie-ups could avoid challenges that can arise in international collaborations from cultural differences, she said. Partners in Asian and Middle Eastern countries may expect some "flexibility" in the execution of contract terms, where rigid adherence to obligations and schedules is the norm for their European and American counterparts. "Sometimes the contract is not as important as the relationship," she added.

On the other hand, it can be a mistake for an indigenous company to drop its foreign partner once a certain level of capability has been gained. "People often overlook the fact that technology is continuously evolving. A long-term partner will continue transferring knowledge to you."

From her perspective of having worked on all sides of the IP equation, Balakrishnan said it's important to have a clear process to govern "how we place contracts, negotiate programmes, implement and monitor the project outcomes".

# WHY THEON SENSORS IS ONE TO WATCH

THEON SENSORS is a world leader in night-vision and thermal-imaging systems. It's also a vibrant example of a successful win-win approach to industrial cooperation and collaboration on a global scale.

'Extroversion' is a word that appears frequently in references to THEON SENSORS, the Athens-based manufacturer of night-vision and thermal imaging systems. In the case of this dynamic company, it's an attitude, a differentiator, and more.

In a word, it's goes a long way to explaining the company's extraordinary success in the competitive and technologically demanding business of military-grade electro-optical systems, where it has built a reputation for innovation, agility, competitive pricing and an approach to industrial collaboration seldom seen among market-leading OEMs.

Christian Hadjiminis is the Chief Executive of THEON SENSORS and President of its parent EFA GROUP, the largest Greek defence group. He said THEON SENSORS follows a business model based on deep collaboration, "where we go to a country which buys our products and co-produce them. The second part of that equation is reciprocal transfer of knowledge and products.

"Once you have created a defence ecosystem in-country, based on quality and attractive prices, you repeat the process but on a global basis."

Set up in 1997, THEON SENSORS has grown from a supplier to its domestic market in Greece to one of the leading global players, with more than 100,000 of its systems in use worldwide, and a de facto best-in-class designation from the US Department of Defense (DoD). About 90 per cent of its business activity is export-oriented.

Currently, its major export markets are in Europe, where a shift in policies and defence spending has led to a surge in demand that's likely to continue through next year at least.

## GROWTH VALIDATES BUSINESS MODEL

For the last two years, THEON SENSORS has been growing at a rate of 40 per cent



*Christian Hadjiminis: successfully following a business model based on deep collaboration.*



per annum, and the CEO expects that to continue. "We're not a big company, and we started from a lower base, but it validates our business model of industrial cooperation," he said.

The Group employs just 300 people globally, the majority in Greece. Hadjiminis anticipates some increase to accompany the expansion of its global markets, but growth is mainly accomplished by leveraging the industrial capabilities of its partners around the world.

THEON's main product lines, which are in service with armed forces and special forces around the world, are night-vision monoculars and binoculars, night-vision sights, clip-on night sights, night driver's viewers, digital day-and-night cameras and upgrade kits for armoured vehicles, thermal stand-alone and clip-on uncooled sights, vehicle and platform-based thermal imaging systems and short-

wave infrared (SWIR) systems. It offers customised design of optical and mechanical systems, ILS and maintenance services.

The company operates from an expanding network of sites, stretching east to Singapore and west to Baltimore, Maryland, from its main production facility in Athens. In the Middle East, THEON SENSORS has bases in Abu Dhabi and Riyadh; in Europe, a maintenance and soon assembly facility in Germany serves regional customers including several NATO members. It also has strategic partners in the US, Saudi Arabia, India and Indonesia.

THEON SENSORS' latest international expansion resulted last year in the creation of Theon Saudi Arabia, to develop existing and new night-vision and thermal-imaging systems, particularly larger applications for platforms and vehicles.

As Hadjiminis explained: "Moving from portable devices to the bigger platform systems, you need to develop the electronics. Saudi Arabia has invested in its defence industries and has many of the elements and components that we need to do this. So we're hiring Saudi electrical engineers as well as using the expertise of existing companies.

"It's good to co-develop with Saudi engineers. We're looking forward to exporting with them."

Theon Saudi Arabia was one of first foreign companies licensed for defence production. The necessary approvals were received quickly – further emphasising "the right approach", said Hadjiminis. "GAMI was very supportive. They understood what we wanted to do, which was in line with what they wanted to do – core R&D."

Collaboration is a two-way street: "That's the beauty of this model," he said.

THEON's success has not gone unnoticed. The company is in discussions with two major defence companies in Europe around re-engineering some of their products to make



Cutting-edge NYX dual-tube binocular.

them “as competitive as we are in night-vision products”.

#### ATTRACTING ATTENTION AT IDEX

THEON SENSORS recently attracted attention at IDEX 2021 where it featured the 16mm Mikron-D night-vision binocular, one of the lightest and smallest binoculars on the market, which offers performance relatively comparable to the more common 18mm devices.

THEON also presented its Quantum 360-degree optical imaging camera developed in collaboration with its affiliated Baltimore-based security specialist DEFENDER, and an ultra-light thermal sight using its new 12 mikron thermal sensor.

It follows a successful 2020, when the company signed new contracts valued at more than €50 million (\$60 million) with 18 countries, including several new markets; as a result, it now exports to more than 55 countries compared with 45 in 2019.

The company’s steady growth in recent years “proves that Greek high-technology companies can compete with global multinationals.” Hadjiminias credited his company’s robust business model and totally different approach to overcoming the lack of a Greek ‘brand’ in defence industries.

“We believe in the Elon Musk model – take something that’s expensive and produce it cheaper, using commercial off-the-shelf (COTS) components wherever possible. We believe in that.”

THEON’s approach to transfer of technology – often a bone of contention in

foreign markets – differs markedly from that of many OEMs. Rather than training workers in the host country simply to assemble its products, THEON looks for genuine co-development opportunities, and that requires a partnership of equals. “If you mean business, you have to transfer knowhow.”

#### IMPORTANCE OF INTEROPERABILITY

From the beginning, THEON SENSORS has emphasised quality and precision in its entire product line. Everything that carries the company name is designed in-house by a team of experienced engineers bringing to the table specialist skills in related disciplines such as optical, mechanical, electronics and system design.

Thanks to a fast-track design and prototyping procedure, THEON’s engineers



Lightweight Mikron-D binocular.

can respond to modification requests in a time frame less nimble organisations would find hard to match.

At the start of any new relationship, a THEON SENSORS team makes the effort to understand the particular use, mission profile and challenges of the customer. In this way, the company spotted early on the importance of interoperability for future military operations, and positioned itself to satisfy it.

Living proof is SCYTALYS, the EFA GROUP’s interoperability systems company, which is doubling in size this year and remains on a steady growth trajectory. “The potential of this business is amazing,” said Hadjiminias. Its work addresses a core principle of multiplying capability by interconnecting a full suite of assets.

An interesting aspect of its R&D is incorporating the high levels of interoperability normally associated with major assets such as aircraft, surface combatants and armoured vehicles on a micro scale with devices that give individual soldiers a unified picture of their surroundings and threats. “This simple concept is revolutionary at the same time,” said Hadjiminias. “We’re not the first to do this but I think we’ll end up succeeding by doing it more competitively.”

Success hasn’t come overnight; it’s taken 20-30 years. The financial crisis in Greece in 2010 was near-crippling, but fortunately for the EFA GROUP, it emerged stronger than before. Operations today are much more global than pre-crisis, with a strong leaning toward emerging economies such as the UAE, Saudi Arabia and Indonesia.

A recent defence accord between Greece and Saudi Arabia is a positive step at the diplomatic level, he believes. However, for it to flourish, it has to be “cemented” by closer industrial links. He sees Theon’s Saudi Arabian venture as part of that: the accord is “wind to our sails,” he said.

SCYTALYS is currently looking for a partner in Saudi Arabia to co-develop its business. “This will be our next investment,” said Hadjiminias.

Now that counties in the Middle East, particularly the more advanced economically, have started promoting local defence industries, a big game-changer will be linking their clusters of both large and small companies with their counterparts in Europe – the regional aerospace clusters.

Making such connections is vital to reaching the sustainability targets of Vision 2030. “Industrial cooperation and offsets policies in those countries have been successful in setting up a local defence industry but they also need to take the next step, that is, to connect them closer to the European A&D industry/market.”

**Game-changer:** The ASRAAM has been cleared only for external carriage on the F-35B.

PICTURE: LOCKHEED MARTIN US DOD



## ASRAAM's six appeal

*A new 'block 6' version of MBDA's advanced short-range air-to-air missile (ASRAAM) is on the verge of entering service, with Oman and Qatar having already ordered the type.*

**Jon Lake**  
*reports.*

**T**he existing block 4 ASRAAM is already widely reckoned to be the best short-range AAM in the world, with an unmatched combination of lethality, agility and range.

The new block 6 looks set to be even better, promising to give its users a powerful edge in air combat.

And, unlike its predecessor, it is cleared for widespread exports.

Oman and Qatar have already ordered the weapon for their Typhoons, and further orders are imminent.

ASRAAM was developed as part of a wider missile agreement, under which the US Government proposed that if NATO adopted the new Raytheon AIM-120 advanced medium-range air-to-air missile (AMRAAM), and dropped its own medium-range missile programmes, the US would reciprocally procure the then Anglo-German ASRAAM as the AIM-132.

The original ASRAAM programme fell apart as the US prioritised the indigenous Sidewinder, while Germany was unhappy with its 'share' of the programme, was suffering funding difficulties, and was coming under pressure from the Luftwaffe to prioritise agility over range.

### **National programme**

In late 1989, the UK decided to continue with ASRAAM as a national programme, designing a new version of the missile to meet the Royal Air Force's operational specification, with no operational or technical compromises required to satisfy the requirements of other customers.

The resulting weapon was much more than just another short-range missile.

The revolutionary focal plane array (FPA) seeker allowed targets to be acquired at significant beyond-visual-range (BVR) distances, while the high-energy motor gave range performance that was comparable with the last generation of radar-guided BVR missiles, out to as far as 15-30 miles.

ASRAAM was very quick off the rail, with significantly greater range and higher manoeuvrability than the AIM-9L, and it proved very hard to see as the rocket motor produced little smoke and had a reduced infrared signature.

ASRAAM frequently defeated targets that tried to break off an engagement, as they were unable to achieve sufficient separation to avoid being shot down.

On the Typhoon, with a full digital integration, including the use of a helmet-mounted sight, ASRAAM demonstrated unmatched high off-bore sight capabilities, able to engage targets behind the launch aircraft, and with unmatched end-game performance.

Unfortunately, BAE Systems Dynamics (now MBDA) had selected a US-manufactured missile seeker, though this had actually been designed by BAE and transferred to the US as part of the transatlantic workshare agreement.

### **Preventing potential exports**

Despite its UK origins, this is understood to have made the seeker subject to US international traffic in arms regulations (ITAR), preventing many potential exports.

The US refused to allow ASRAAM to be exported to Saudi Arabia, for example, and Saudi Eurofighter Typhoons, therefore, used the German IRIS-T missile.

A new block 6 ASRAAM was developed to meet UK requirements, and this incorporated new and updated sub-systems, including a new-generation seeker of increased pixel density, and a built-in cryogenic cooling system.

This new seeker is manufactured in Bolton, England, and is entirely ITAR-free. Consequently, it has broken the export log jam, and the new variant has already been ordered by Oman and Qatar for their Typhoons, and by India.

There have also been reports that Saudi Arabia will order the block 6 missile as part of its much-anticipated follow-on 48-aircraft Typhoon buy.

Saudi Arabian Military Industries (SAMI) has agreements in place with MBDA, which could facilitate local support.

The new model should improve upon ASRAAM's already world-leading performance in acquisition range, responsiveness, accuracy, agility, counter-measures resistance, and end-game performance, as well as system availability. It ought to provide a transformational capability for its customers. ■

## NEW MIDDLE EAST TYPHOONS COULD BE A GAME-CHANGER

The Eurofighter Typhoons that will soon be delivered to Kuwait and Qatar will be the most advanced examples of the type produced to date, with phase three enhancement (P3Eb) software and the new Captor-E active electronically scanned array (AESA) radar.

AESA radar is a game-changer for combat aircraft, producing highly accurate weapons-quality tracks at long range, and allowing simultaneous air-to-air and air-to-ground capabilities.

Traditional AESA radars use a fixed antenna, consisting of hundreds of individual transmit/receive modules (TRMs) and 'steer' the radar beam by 'phase shifting'. Scan patterns can be interrupted, and several beams can be transmitted simultaneously, though this naturally reduces radar range, compared to focusing all available power into a single beam.

However, AESA radars using a fixed plate antenna experience reductions in power and sensitivity whenever the radar beam is steered far from the aircraft's extended centreline or 'boresight'. Typically, transmitted power will be reduced by around 25% at 40° off the nose, and by 50% at 60° off the centreline, with a commensurate reduction in range. Nor can the beam normally be steered much further off the nose than 60°.

Captor-E does not suffer from this disadvantage, since a simple two-axis repositioner (consisting of two rotating wedge-shaped rings) can actually steer the AESA array to point the antenna physically, so that the radar can 'look' at angles beyond 90° off-boresight, and power losses at extreme azimuth angles are minimised.

This means that, after firing a beyond-visual-range

(BVR) missile, the Typhoon can support it in flight, with mid-course updates, even if it turns perpendicular to the target. Doing this will cause the Typhoon to virtually disappear from the screen of an opponent's pulse doppler radar (this is known as being 'in the notch'), and will allow the Typhoon to stay supersonic.

With other radars, the fighter launching a missile could only 'crank' to a smaller 'angle off', and would have to slow down to delay entering the enemy aircraft's opponent launch success zone (OLSZ), while waiting for its own missile to reach a position where it could 'go pitbull' (become autonomous using its own radar seeker).

□□□□□

The new ECRS.Mk 0 version of Captor-E is flying in a two-seat Italian Eurofighter test aircraft (CSX 55169, known as ISPA 6), which is also flying with the latest iteration of the P3Eb software.

ISPA 6 made its first flight at Turin-Caselle in December 2019, and began the so-called 'E-SCAN XCR#1' flight-test campaign. The pilots were Mario Mutti, chief test pilot combat aircraft and standardization for Leonardo Aircraft's flight operations division, and Captain Enrico Scarabotto.

"The operational advantage of Captor-E has been clear since the early stages of development," said Mutti. "E-Scan is a very sharp tool, fast in detection and track formation, already robust and consistent in and out of the track memory mode due to the instantaneous agility that the electronically steered beam provides when controlled by smart algorithms."

"The antenna repositioner allows the radar to almost instantly cover a significantly larger volume of space than a fixed plate AESA. The pilot interface is intuitive and workload is reduced by a large degree of smart automation."



Top-of-the-range: The most capable Typhoon flying today is this two-seat test aircraft, ISPA 6. It is fully representative of the configuration that will be delivered to the Kuwait Air Force, including the ECRS.Mk 0 version of the Captor-E radar.

PICTURE: ALESSANDRO MAGGIA.

## TUNISIA EYES UP LATEST WOLVERINE

Tunisia was watching closely as the United States Air Force (USAF) quietly received the first of two Beechcraft AT-6E (Wolverine) light attack aircraft.

Following the low-key ceremony formally recognising that handover in Wichita, Kansas, in February, the USAF and Textron Aviation Defense will now be working together over the next six months to obtain airworthiness certifications for the AT-6E.

Once it has a US military type certificate, it will then be available for export under the direct commercial sales process, or via the foreign military sales (FMS) procedure.

□□□□□

Both Tunisia and Thailand have received congressional approval to acquire the type, and other nations are also understood to be interested in the AT-6E.

The US State Department approved a potential sale of 12 T-6 Texan trainer aircraft to Tunisia in October 2019, and added an approval for four AT-6C Wolverines on February 27 2020.

The USAF, itself, has currently no plans to acquire more than two aircraft, which will be used to support Air Combat Command's (ACC) continued light attack experiment (CLAE), exploring the use of such aircraft in countering violent extremist organisations (C-VEO),



Approved for sale: Tunisia has received congressional approval to acquire the Wolverine.

PICTURE: TEXTRON.

developing operational tactics, and drawing up standards for exportable, tactical data-sharing networks.

The Wolverine is an armed derivative of the Beechcraft T-6B Texan, optimised for primary weapons training or light attack roles. The T-6 Texan (also known as the Model 3000) is, itself, a US-built derivative of the Pilatus PC-9, extensively modified by Beechcraft to meet the US joint primary aircraft training system (JPATS) requirement in the 1990s.

The aircraft has been built in a number of versions, including the T-6A Texan II for the USAF, US Navy, and

Hellenic Air Force, and the armed T-6A NTA with rocket pods, gun pods, and external fuel tanks, for the Hellenic Air Force.

The T-6B for the US Navy incorporated a digital glass cockpit including a head-up display (HUD), six multi-function displays, and hands on throttle and stick (HOTAS) technology, while the T-6C was an upgraded version of the T-6B with underwing hard points, primarily designed for export.

The type has been exported to 11 nations, including Iraq, Israel and Morocco.

NH  
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# SAVING LIVES

## PROTECTING HEROES

Photo NFH : Sgt. Jan Dijkstra/Mediacentrum Defensie . Photo TTH : Anthony Pecchi

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LEONARDO





Busy: The show featured more than 900 exhibitors from 59 nations, with 35 national pavilions.

PICTURE: BILLYPIX.

# Meeting people face-to-face – now that’s a real Ex

*The combined International Defence Exhibition and Naval Defence Exhibition (IDEX and NAVDEX 2021), held in Abu Dhabi, was one of the first major in-person events since the coronavirus outbreak.*

**Jay Menon was there.**

**W**hile countries across the globe continued to pull the plug on trade shows amid fears of Covid-19, the UAE showed the world how an international defence exhibition could be organised amid the challenges of the pandemic era.

IDEX and NAVDEX, the biennial trade fair, held in Abu Dhabi in February, was one of the first major in-person events since the outbreak of the virus.

The show featured more than 900 exhibitors from 59 nations, with 35 national pavilions. However, the much-anticipated participation by Israeli companies, which would have been a first since it normalised relations with the UAE last year, was thinned after Israel extended a closure of its Ben-Gurion International Airport, essentially banning flights to the UAE and other countries.

But Israel’s new envoy to the UAE, Eitan Na’eh, tried to make up by hard-selling his country’s interest in creating strategic partnerships in the region.

Besides the Israeli contingent, conspicuous by their absence were the high-level US official delegations – a possible indication that relations between Abu Dhabi and Washington have taken

a backseat against the backdrop of the new Biden administration’s decision to review the arms exports to the UAE.

The main takeaway from this year’s event was that, despite the UAE’s budget constraints, inflicted by the economic impact of the pandemic, there was no drop in total arms purchases.

## Importance of the defence industry

Amid all the Covid protocols being followed, the five-day event brought about \$5.7 billion in deals, demonstrating the importance of the defence industry for the UAE as a major customer and as an emerging and credible player within the global arms trade.

Major General Staff Pilot Faris Khalaf Al Mazrouei, chairman of the higher organising committee, said: “The 15th edition of the IDEX and NAVDEX exhibitions has been nothing short of exceptional. 2021 is the golden jubilee year of the foundation of the UAE. That union has enabled our nation to cultivate and expand our defence infrastructure and technological systems, using them to ensure security and peace across the Middle East.”

Continued  
on Page 40

CONTINUED FROM PAGE 39

The UAE has been cultivating indigenous capabilities through a number of holding companies that serve as umbrella organisations for local firms, as well as providing the platform for international companies to offer their capabilities via contracts, joint ventures and other partnerships.

More traditional capabilities were also on display, with the organisers confirming an increased focus on intelligence, surveillance, and reconnaissance capabilities, as well as missile defence.

Much like the biennial Dubai Airshow, IDEX has become a chosen venue for big announcements for global companies.

South Africa's Paramount Group announced the launching of its new swarming unmanned air vehicle (UAV) technology, based on the firm's new N-Raven UAV.

Each UAV can be deployed into a scalable swarm, with the company claiming that these can be launched from land, sea, and airborne platforms, adding to the systems' long-range strike capabilities.

#### Excitement in the run-up

There was excitement in the run-up to the event that global defence companies not only declared their participation, but also announced details of their products developed locally in the UAE and possible joint ventures, a week before the show.

Days before the event, Swedish firm, Saab, delivered the third GlobalEye airborne early warning and control (AEW&C) aircraft to the UAE Air Force and Air Defence (UAEAF&AD). The company also unveiled a UAE-developed rugged camera module – infrared (RCAM-IR) on the eve of the show.

And to top it, Saab bagged the biggest deal of the day, worth AED3.7 billion (\$1 billion) on the second day – a follow-on contract connected to the sale of two GlobalEye systems.

On the same day, the UAE also signed AED2.61 billion deal with US-based Raytheon to buy Patriot missiles.

At IDEX 2019, foreign companies accounted for 65% of UAE purchases, while 35% were landed by UAE contractors, which, arguably, showed the ongoing dependency of the UAE on imported military-grade hardware. At IDEX 2021, however, local companies accounted for about 50% of UAE purchases.

Interestingly, figures showed the overwhelming ratio of contracts were awarded to local companies (78% on Day 1, 79% on Day 3, and 66% on Day 4). However, on Day 2, when the highest amounts were announced, 95% of the deals went to international companies.

“Regardless, a jump from 35% to 50% in local contracts in just two years is evidence that things are starting to shift when it comes to arms sales in – and from – the UAE,” noted Emma Soubrier, a visiting scholar at the Arab Gulf States Institute in Washington. ■

## HOW EDGE HAS PROVED ITS POINT IN QUICK TIME

*Just over a year old, the UAE's defence conglomerate, Edge, was at IDEX clearly demonstrating that the whole is greater than the sum of the parts.*

**Alan Peaford reports.**



Centre of attention: Edge launches the QX family of loitering munitions – four drones, both fixed-wing and VTOL rotorcraft.

PICTURE: AETOS WIRE.

Faisal Al Bannai, the chief executive of Edge, walked into a meeting room at the back of the largest exhibit at the IDEX show, sat and relaxed.

Minutes earlier, members of UAE royal families had visited the stand – defence ministers from various countries had been along in the hour before – all interested on how this flagship project was faring.

Fifteen months earlier, the UAE Government had created Edge to bring together various Emirati defence companies under a single umbrella; the plan was for the consolidated businesses to work closer together and, with international participation, reduce the dependence on imported equipment and partners for export.

The announcement made a huge splash at the Dubai Airshow. But now, in Abu Dhabi, Edge was no longer just a marketing dream; it was reality with real hardware and equipment.

“I think it's been an interesting 15 months for sure,” Bannai laughed. “When we announced the launch of Edge in November 2019, we had just put the companies together under one roof from a brand and structure point of view. But we had a big journey to start building the capabilities.

“We said at that time, we want to be a company that is a giant, a company that can move very fast, a company that's also going to lead with autonomous capabilities when it comes to electronic warfare, and when it comes to smart weapons.

“I think what has been achieved within the 15 months, while 12 of these have been affected by Covid, has been nothing short than amazing. The autonomous products that you see on the stand outside range from ground vehicles, to tactical drones, to longer-range drones that are going to be delivered to our customers this year.”

The transformation has been nothing short of amazing, with Edge now having claimed a place among the top 25 defence manufacturers in the world.

“The reason we were able to move so far and

so fast is that we are a very practical company that is picking stuff from off-the-shelf commercial technology and combining it with military knowhow, really accelerating from concept to launch of products such as drones and solutions that you see on the ground today,” Bannai said.

Outside on the show floor, the ballroom-sized stand was packed as visitors checked out the new hardware.

Top of the list was the QX family of loitering munitions. These four drones – both fixed-wing and VTOL rotorcraft – were the centre of attention.

Miles Chambers, director of business development for Edge platforms and systems, explained why they were such a hit.

“I think what we've seen in the market space over the years is development of the kamikaze drones, with the idea that these are munitions that can loiter over the battlespace and then, when they detect a target, you can deploy them, diving them on to the target, which, of course, means that they are destroyed in the process.

“The concept behind this QX family, excluding the micro, is that they are reusable, carrying a payload to the area of operation, being able to loiter over a target, deploying a payload, and then being able to return to base to be reloaded and reused. So, obviously, they can greatly reduce the cost of ownership.” ■



Faisal Al Bannai: “I think what has been achieved within the 15 months, while 12 of these have been affected by Covid, has been nothing short than amazing.”

PICTURE: AETOS WIRE.

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# LIEBHERR

*Optimism underpins the planning for next month's MRO Middle East exhibition, with quality, not quantity, the order of the day. MRO editor **Chuck Grieve** reports.*



**Royal backing:** HH Sheikh Ahmed bin Saeed Al Maktoum, president of the Dubai Civil Aviation Authority, studies a model of Mohammed Bin Rashid Aerospace Hub at the 2020 show.

PICTURE: AVIATION WEEK/TARSUS.

## Safety first as the show goes on

Organisers of the MRO Middle East exhibition are hopeful that their gamble to push the event back three months from its normal February/March slot will pay off. Sadly, the co-located aircraft interiors event, AIME, will not be happening this year, although it will be back in 2022. However, MRO Middle East is very much on.

With Covid-19 restrictions still in place all over the world, it stands to reason foreign exhibitor and visitor numbers at the event on June 15-16 will be down on pre-pandemic shows.

However, if anyone needs reassurance before boarding an aircraft to Dubai, they need only consider the success of IDEX, the international defence exhibition held in neighbouring Abu Dhabi in February, where a strict testing regime and social distancing helped keep attendees safe.

### Face-to-face interactions

Dubai authorities are no less rigorous, and promise as safe an environment as possible for the face-to-face interactions so important for this community, especially when preparing for the recovery in MRO and the wider aftermarket expected in the next three-to-four years.

The event, at the Dubai World Trade Centre, will adhere strictly to measures laid down by the local authorities, which include now-familiar aspects of social distancing and face covering.

Visitors can expect to meet exhibitors from key domestic and international companies, including IAI Aviation Group, the first Israeli participant, whose attendance was made possible by the Abraham Accords peace agreement.

Lydia Janow, managing director for the organiser, Aviation Week Network, said: "Exploring innovation initiatives, and the digital strategies put in place by airlines and MROs for their recovery, will be a key part of the event this year."

New for 2021 is the Go Live! Theatre and its enhanced

programme of presentations, keynote addresses and panel discussions, in place of the one-day conference normally held the day before the exhibition opens. Among speakers planning to take part is Nicole Noack, managing director of the Independent Aircraft Modifier Alliance (IAMA). She spoke for many when she said exhibitions and conferences "are essential to our industry" for the personal connections and insights the visitors gain into the actual and upcoming challenges across the industry.

For IAMA, she said, live meetings are also important for sharing the knowledge and educational material with the industry for which it has been developed.

Prominent among exhibitors will be Sanad Aerotech, Mohammed bin Rashid Aerospace Hub, Etihad Airways Engineering, Joramco, Liebherr-Aerospace and Safari Aviation.

Fraser Currie, chief commercial officer of Joramco, said the "uncharted waters" of the last 12 months had been "challenging" for the aftermarket sector. Thanks to effective business continuity and crisis management planning, the Amman-based MRO quickly found its feet "in what has commonly been referred to as 'the new norm'."

### Bond of trust

Looking forward to MRO Middle East, he added: "We have all become expert at video conferencing, but nothing can replace a face-to-face interaction when you can look someone in the eye, shake their hand, and form a bond of trust through personal interaction."

Also returning are Saudia Aerospace and Engineering Industries (SAEI), and Air Works, India's largest independent MRO.

The official French delegation will be missing this year, although a small number of French companies are expected to exhibit independently.

A spokesman for regular sponsor, Heico, said the company had simply decided not to exhibit at any events until 2022, although Jim O'Sullivan, vice-president sales & business development, EMEA, did not rule out attending the show.

Of the same mind were representatives of Magnetic MRO and EngineStands24.

One regular exhibitor that will be at this year's show is MTU Maintenance. The company formally opened its Dubai office on the fringes of last year's exhibition in what has proved to be an astute move.

Sami Ben Kraiem, vice-president for marketing and sales in the Middle East and Southeast Asia, said he expects MTU's pre-pandemic global strategy of getting closer to its customers to pay dividends when airlines resume flying. "The first moves will start to happen at the local and regional level," he said, "so we'll be very near our customers when they need us."

The Middle East has always been "a very important market" for MTU Maintenance, he added. With the company's wide portfolio covering 30 engine variants, whether the new emphasis is on narrow-body or wide-body operations, "we are prepared for either option".

Exploring innovation initiatives, and the digital strategies put in place by airlines and MROs for their recovery, will be a key part of the event this year.

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# Making a splash by brushing



## JET SET THAT WASHES YOUR FLEET

*Tough engine cleaning jobs used to be tackled with ground up walnut shells and apricot pits. Not unreasonably, a foaming agent that does the same job is particularly welcome. Chuck Grieve reports.*

**G**E Aviation and Etihad Airways enhanced their ‘green’ credentials with the introduction in February of GE’s ground-breaking waterless 360 Foam Wash jet engine cleaning system.

By deploying the system to optimise performance on its GE90 and GENx-1B engines, Etihad stands to reduce the CO2 emissions of its Boeing 777 and 787 fleets by 7,000 metric tonnes in 2021.

The new foam wash initiative – the first joint GE and Etihad project under the Etihad Greenliner programme – has far-reaching implications. Paul Kear, Etihad’s senior vice-president technical, called it “a prime example of industry collaboration that will have a significant impact on Etihad’s efficiencies and provide a case study for the broader industry”.

The 360 Foam Wash system is a proprietary solution and process approved and licensed for use on engines including the GE90, GENx, CF34, CF6 and GP7200.

Etihad Airways is the first airline licensed for

GE90 engines, and the first licensed for multiple GE engine programmes.

Etihad’s collaboration in the trial process was important to the product’s development. Jean Lydon-Rodgers, vice-president and general manager of GE Aviation’s after-market strategic solutions, said: “We are learning more than ever before about how our engines operate and how they respond in hot and harsh environments. Our longstanding relationship with Etihad has been integral to that process.”

### **Trials in Doha**

Earlier, Qatar Airways (QA) became the first airline licensed to use the 360 Foam Wash on the GENx engine, following trials in Doha. It currently uses the system on both the GENx-1B, powering its Boeing 787 fleet, and the smaller GENx-2B on its Boeing 747s.

A spokesman said QA is trialling the technology on other parts of its fleet.

Emirates is also licensed to use the technology on its GE90 engines.

GE’s 360 Foam Wash involves injecting a specially formulated, proprietary solution into the engine to remove dust and dirt particles. Engine performance benefits from a reduction of deposits, lower exhaust temperatures, and improved engine compressor efficiency. The result is lower fuel consumption and increased engine time on wing.

The system is self-contained, allowing it to be used inside maintenance hangars or outdoors.

Meanwhile, Lufthansa Technik (LHT) recently introduced an upgrade of its “revolutionary” Cyclean Engine Wash procedure for the Pratt & Whitney PW1100G family of engines.

It adds to the list of common engine types covered by Cyclean, including CFM56, V2500 and CF6, as well as latest-generation engines such as LEAP-1A/-1B, GE90, GENx and the Rolls-Royce Trent family.

An LHT spokesman said engines operated in the Middle East often need to be washed more frequently than in other regions due to the salty and sandy operating conditions. This puts a premium on the reliability and speed of turnaround of engine washing systems.

LHT says the Cyclean procedure is designed to wash an engine in just under 45 minutes, even directly at the gate.

It uses just half the water, or less, needed by other methods. A waste water collection system,



# up on cleaning techniques...



Wash this space: Etihad Airways engineers deploy GE's 360 Foam Wash system on aircraft on the apron at Abu Dhabi International Airport.

PICTURE: ETIHAD AIRWAYS.

specified for each engine type, captures all the water used, to comply with environmental standards.

Benefits of the system include an increased exhaust gas temperature (EGT) margin and a reduction in fuel flow, longer average on-wing time, and lower maintenance costs throughout the entire life cycle of an engine.

Fixed and mobile units are in operation throughout the MRO's network, including Middle East stations.

Elsewhere, researchers are studying other novel, environmentally responsible methods to keep engines running efficiently. One such is Safran's Maclean project, funded under the European Commission's life programme, which hopes to industrialise two complementary cleaning processes, cryogenics and laser, starting with helicopter engines.

Cryogenic cleaning involves projecting dry ice (solid-state CO<sub>2</sub>) on to a surface using a high-pressure air system, similar to sandblasting. During the process, the CO<sub>2</sub> disperses through sublimation.

Laser stripping uses powerful light energy to clean parts without changing the underlying material and its coating.

Safran says both technologies are already used in other industries, including marine and automotive, but need the appropriate approvals before they can be used in aerospace. ■

## AIRLINES SEE THE LIGHT WITH SANITIZING TECHNOLOGY

Aviation is taking its lead from medical science with the introduction of sanitizing technologies designed and tested against viral and bacterial pathogens. **Chuck Grieve** reviews developments.

The application of hospital-grade technology to the job of disinfecting aircraft highlights how the Covid-19 crisis is shifting the focus back to safety and hygiene from 'passenger experience' considerations, such as speed of connectivity and in-flight entertainment.

It was only a matter of time, said a Middle East aerospace industry observer, before ultraviolet (UV) cleaning migrated from operating theatres to aircraft cabins, many of which already have equal, if not superior, airflow filtration systems.

He added: "I have more confidence in a robotic UV system than a couple of people quickly wiping seats down."

Qatar Airways claimed a first when it added Honeywell's UV cabin system to the enhanced on-board hygiene measures that it credits with keeping its aircraft in the air.

The Doha-based flag-carrier initially took six systems from Honeywell, and was expected to acquire additional units to treat all its aircraft as part of their turnaround servicing.

Akbar Al Baker, Qatar Airways Group chief executive, said: "Since the start of the pandemic, we have been regularly introducing new and effective safety and hygiene measures on board our aircraft. During these unprecedented times, the health and safety of our crew and passengers continues to be of the utmost importance."

Qatar Airways deploys the system at Hamad International Airport (HIA), itself no stranger to UV technology: it has introduced disinfectant robots – fully autonomous mobile devices emitting concentrated UV-C (or deep ultraviolet) light – to treat areas of high passenger flow to reduce the spread of pathogens.

Among other regional carriers, Saudia was also quick off the mark. It introduced UV-C technology, in cooperation with the Saudi Company for Ground Services, to sanitize its aircraft before and after every flight. It takes 10 minutes to fully treat a medium-sized cabin, the airline said.

The Honeywell system is roughly the size of a standard drinks trolley, and is designed to neutralise viruses and bacteria with UV-C light – a process with a long record of use in hospitals. In the confined space of an aircraft cabin, the system uses extendable arms

to reach seats and surfaces, row by row. No cleaning chemicals are used.

Honeywell quickly recognised its customers' needed another option that was more portable and easier to use in small spaces. It responded with the Honeywell UV treatment wand, which it has just rolled out.

Brian Wenig, Honeywell Aerospace vice-president, mechanical systems and components, said: "With this new system, smaller aircraft and other vehicles, like trains and buses, can benefit from the same proven UV-C technology shown to reduce various viruses and bacteria."

A UV-C wand has also been introduced by Boeing, after successful tests in its latest ecoDemonstrator programme aboard an Etihad Airways B787-10. It was the first airline evaluation of the device, and showed that the 787 flight deck could be disinfected in less

than 15 minutes.

The self-contained apparatus, which resembles a carry-on suitcase, is particularly suited for confined spaces, such as cockpits, where passing the UV light over high-touch surfaces leaves them sanitised everywhere the light reaches. Research confirms the effectiveness of the 222 nanometre UV-C light that it uses.

The wand is manufactured for Boeing by US sanitisation technology company, Healthe.

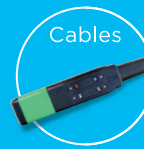
Another option for airlines is bipolar ionisation. Unlike UV-C light, which does not occur naturally, ionisation is "a fundamental part of the ecosystem" and has been used in home and medical environments to neutralise pathogens.

Satair, the Airbus component and service company, says it has had "concrete enquiries" from the Middle East about the system from Aviation Clean Air (ACA) that it markets as "the only proactive system that immediately decontaminates interior air and neutralises pathogens throughout the aircraft".

Recent tests conducted by independent laboratories found that ACA's needlepoint bipolar ionisation (NPBI) technology is effective against both airborne and surface spread of bacterial contaminants and viral strains, including Covid-19. It reaches all parts of the cabin that a manually operated UV-C light source might not. ■



Portable: Honeywell developed its UV treatment wand for greater portability and ease of use in small spaces. PICTURE: HONEYWELL.



# Simply Smarter Ground Support

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Plenty of space: The new terminal will comfortably handle 14 million people.

PICTURE: BILLYPIX.

# ONE IN A BILLION

*Less than five years after its launch, a new billion dollar terminal at Bahrain International Airport is open for business. Alan Peaford took a tour and met the men behind the state-of-the-art facility.*



**Kamal bin Ahmed Mohammed:** This is the "dawn of a new era".

PICTURE: BILLYPIX.

**K**amal bin Ahmed Mohammed is not a man given to exaggeration. As minister of transportation and telecommunication for Bahrain, when he describes the \$1 billion terminal at Bahrain International Airport as the "dawn of a new era" for the country's aviation sector, you know this is serious.

And, one step inside the spacious kilometre-long terminal building, it is clear that there is no hyperbole here.

The terminal project is the largest investment in Bahrain's aviation sector to date and one of the most important national projects in the kingdom's history, according to the minister.

The project also includes car parks for 5,500 vehicles, two world-class hospitality lounges for premium passengers, future-proofed contactless check-in kiosks, latest technology security, e-gates, and an expanded duty-free area surrounding a safe, impressive children's games and play area to relax all travellers. There's even a hotel.

Both the minister and the CEO of the Bahrain Airport Company (BAC), Mohamed Yousif Al Binfalal, are clearly excited to be leading a walkaround of the new facility.

Continued  
on Page 50



**Mohamed Yousif Al Binfalal:** "All of the pressures that used to be put on us have gone."

PICTURE: BILLYPIX.

CONTINUED FROM PAGE 49

Ironically, the new terminal would have been complete and opened a year earlier, were it not for the Covid pandemic. The extra year has allowed the BAC project team – 90% Bahraini thanks to a positive graduate recruitment effort when the project was first mooted – to check and check again that the terminal was ready, first for its soft opening in February and then the inauguration later in the year.

“It was a fast-track project. We have a leader who is chasing us on every detail,” the minister said. “I think that was good to make sure that we delivered the project on time and to budget.

“I think this is the shortest period [we could have taken] to build such a facility, especially when, with airports, you have multidisciplinary systems – the mechanical system, the electrical system, the IT systems.

“The integration was amazing. At the old terminal there were, maybe, two systems. Here there are 25. It is so sophisticated.”

#### Aviation activities

The new terminal is vital for the island of Muharraq. It has housed aviation activities since the flying boats would tie up on their way to India and Australia from Europe; it was an RAF base and the first real commercial airport in the Gulf.

The historic original terminal building, most recently the headquarters of Bahrain’s Civil Aviation Authority, is now being restored to its former glory, with all extensions demolished. It will become the VIP terminal for Bahrain’s growing private aviation requirement.

In the middle of the growing Muharraq urban area was the airport’s fuel farm.

“It was one of the government objectives to relocate the existing fuel farm, which happened to have housing developments around it,” said

Binfalah. “We entered a partnership with the oil and gas holding company and, through that joint venture, we have built a new fuel farm, which is in the very late stages of testing and commissioning.”

The old terminal was built to handle four million passengers a year – by the time Covid hit, Bahrain was seeing just short of 10 million. The new terminal will comfortably handle 14 million but the country’s transportation masterplan still has proposals for a new airport in the future.

“The plot of land is allocated for the future airport. But I think, with everything that we’ve done on this platform, we have debottlenecked. All of the pressures that used to be put on us have gone and it allows everybody on the government side to take time to plan the future airport in a much more relaxed manner,” Binfalah said.

With the opening of the new terminal, Covid was still having an impact. Having remained open throughout the pandemic, BAA was well drilled in implementing the Bahrain Government protocols for PCR testing on arrival.

The huge baggage hall gave up a large section for the makeshift testing centre, which worked like clockwork to get passengers through the system quickly and efficiently. “From day one, we decided that this airport would be business-friendly,” the minister said. “We said it would be hassle-free and would enhance the experience of our passengers.

“Not only is the airport four times bigger than the old one and operating the latest technology, it also has our local touch to make sure that the whole experience is clear, sweet, easy to navigate and quick.”

With national flag-carrier, Gulf Air, already now based in the new terminal, passengers are beginning to pass through in growing numbers.

But the leadership team can’t wait until the international carriers start returning in force.

For their premium passengers, probably one of the most impressive lounges in the world awaits. It is more like a VIP club in a five-star hotel with its different sections, each with its own charm and purpose.

“We’re not exaggerating when we say that we wanted this to be the best lounge, not only with its furniture and looks and feeling, but with the service and everything. It’s designed completely differently to other commercial lounges,” the minister explained.

With live cooking stations and areas with baby foods, the lounge has a huge number of options.

The five-star feel is complemented by the artwork on the walls. Each is an original piece produced by leading Bahraini artists.

#### Grand piano

Throughout the lounge there is always something different – including a pool table and foosball table. The highlight is a grand piano. “In peak times, we will have a pianist here,” the minister said.

A lift from the lounge heads to the hotel, with 60 rooms for relaxing transit passengers. There is a gym and, on either side, there are rooftop terraces – one with a view of Manama, Bahrain’s capital just a few minutes’ taxi ride from the airport, and the other with a view of the runway. Both views can be enjoyed with a traditional shisha pipe.

“You wouldn’t want to leave here,” I suggested to the CEO.

“That’s what we say. We think we are a destination on the way to your destination,” he replied.

It may be a boutique setting but it is certainly grand. Bahrain is back on the map. ■

## NEW ONDA BOSS FACING MAJOR CHALLENGES

*King Mohammed VI appointed Habiba Laklalech as CEO of the Moroccan Airports Authority (ONDA) in February, at a time when Covid-19 was affecting airports everywhere. Vincent Chappard reports.*

Habiba Laklalech undoubtedly faces a challenging task in helping Moroccan airports to stave off the Covid-19 crisis and set them on the path of recovery.

The former Royal Air Maroc (RAM) deputy CEO is now heading up airport infrastructure development, air navigation management, and security, for a network of 26 airports, including 19 international facilities across Morocco.

Her number one task is to come up with policy responses to the pandemic and prepare for a return to growth when the skies get clearer.

According to the latest forecast, after a record year in terms of air traffic in 2019, ONDA’s turnover will drop drastically and its debt could reach a record high.

Yet, Morocco has been implementing an efficient development policy for decades to increase airport capacity, particularly at the start of 2019.

During that booming period, the country completed major state-of-the-art projects, including the extension and modernisation of Terminal 1 at Casablanca International Airport (2019), the construction of a new terminal at Fez Saïss (2017) and at Marrakech-Menara International Airport (2016). New terminals in Guelmim,

Zagora and Errachidia airports also entered into service in 2019.

The new CEO will have to assess development projects currently under way, especially at Nador and Rabat airports.

Measures recommended by the World Health Organisation (WHO), Airports Council International (ACI), the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO), which were implemented at Moroccan airports in mid-2020, have been rewarded. ONDA has certified eight airports under the ACI health accreditation programme (AHA), including Casablanca Mohammed V, Agadir Al-Massira, Oujda Angads, Marrakech-Menara, Rabat Salé, Tangier Ibn Battuta, Ouarzazate, and Fès Saïss.

ACI Africa announced in February that 42 African airports had obtained this accreditation.

Furthermore, ONDA and RAM have been heavily involved in the delivery of vaccines within the country since the launch of the vaccination campaign at the end of January.

Laklalech’s main challenge in the near future will be to ensure the revival of airport operations and air transport by capitalising on the oncoming summer season. But, this will also depend on how the pandemic and vaccination campaigns evolve. ■



**Habiba Laklalech:** Preparing Moroccan airports for a return to growth.

PICTURE ONDA.

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*Hassan El-Houry, head of Kuwait-based National Aviation Services (NAS), wants to make up for lost time and resume the growth story of this privately owned airport services group.*

**Mark Pilling met him.**



# EL-HOURY: CEO WITH

It was in August last year, four months after the onset of the pandemic, that Hassan El-Houry knew his team's efforts to stabilise NAS were paying off.

The Kuwaiti-based firm, with ground-handling and airport service operations across some 50 stations in the Middle East and Africa, had started 2020 phenomenally. "January and February 2020 were the best months in the history of NAS. I thought I had a great life," joked El-Houry, the urbane and ambitious group chief executive of NAS.

By the end of March, every NAS airport operation had closed as travel shut down with the rise of the pandemic. The business switched within days into survival mode. The first priority was cash.

#### Collect cash owed to us

"We worked for two months to collect cash owed to us by airlines," said El-Houry. "NAS was really flexible with our customers, treating each one differently and, in some cases, getting our customers on a payment plan. As a privately owned company, we had to be strict. We might waive interest on delayed payments, but the message was clear – don't go quiet on me and we'll remain friends."

With most customers it worked.

The NAS management team also moved fast to bring strict cost controls to bear. "I realised very quickly that it was going to be a three-year issue," said El-Houry.

For three months it was 'no mercy' on costs at NAS, with the focus on head office and support

functions. "We wanted to retain as much of our operational muscle as possible. We did not close any stations. My eye is on two years' time when there is a recovery. We will grow at three times the rate of our competition," said El-Houry.

Did he ever worry that NAS might not make it? "There was a part of me that said: 'This is life and death, it's a major global challenge'. But I think a little bit of insecurity is healthy generally in life."

The cash focus, cost controls, and a workforce slimmed down by around a third, meant NAS was back at break-even by August. The battle to survive was won and the management team turned to 'what next'?

"We asked, how are we going to make up for lost time and what is aviation going to look like?"

The answer lies in a return to adding new airports and concessions to the NAS portfolio, as it has consistently done over the past decade, and in new digital technologies that the company is already pioneering.

NAS is already back to bringing more airports into its network. It has just begun operations in Baghdad, having won the licence to provide exclusive passenger services at the Iraqi capital's international airport.

This year, NAS ground-handling operations will also start at airports in Guinea-Bissau, the Central African Republic, and the Democratic Republic of Congo. "My goal is to be in all 54 African countries," said El-Houry. These new additions will mean NAS having operations in 15 of them.

The move into Africa began a decade ago. When El-Houry took up the reins at NAS in

2008, the growth focus was India, but it was not a profitable excursion. The company retains a presence in India, but the loss-making stations were closed.

El-Houry's gaze turned west. "Our big bet, 10 years ago, was that Africa would be our growth engine. It's our backyard," he said. The thinking was simple; the air travel scene was growing fast, it was a fragmented marketplace, culturally similar to the Middle East, and where business gets done with strong relationships.

The first NAS foray into Africa was Rwanda, with operations in Cote d'Ivoire, Liberia, Uganda and Mozambique following. "Our big leap forward came in Cote d'Ivoire, where we won in a tender bidding against the French. They didn't think a Kuwaiti company would be a serious competitor," said El-Houry.

"We built good relationships, we did very well in the technical and in the financial propositions," he added.

For El-Houry, who is Lebanese by birth and brought up from a young age in Kuwait, the responsibility to continue the upward trajectory of NAS drives him on.

#### Profitable brand

The NAS board asked El-Houry, at just 28 years old, to join as CEO. The mission was to turn this small, loss-making, aviation firm around and build a profitable brand that shareholders and employees would be proud of.

El-Houry thought he would be at NAS for three years. The early days were tough. "We



**Hassan El-Houry:**  
 “We wanted to retain as much of our operational muscle as possible. We did not close any stations.”

Right: In Marrakech, Morocco, NAS provides the Pearl Assist traveller service.

PICTURES: NAS.



# A LICENCE TO GROW

“As a privately owned company, we had to be strict. We might waive interest on delayed payments, but the message was clear – don’t go quiet on me and we’ll remain friends.”

HASSAN EL-HOURY

weren’t able to invest at our own will. Just buying a bus or a hi-loader was a painstaking process to justify,” he said. But NAS slowly came out of the cycle of constantly needing cash and investment, and became completely self-reliant.

Although NAS does not disclose any financial information, El-Houry said it has pre-tax profit margins higher than 25%, which compares favourably with its competitors. This is achieved with a business culture where “we strive to behave like a start-up; being agile, being innovative”, he said. “In high-growth markets, like MEA, you need quick decision-making.”

El-Houry is careful to keep NAS independent – it is not affiliated with any airline – ensuring all decisions are commercially and operationally driven.

The commercial mindset is increasingly coupled with a technology focus to help set NAS apart, especially with the advent of the pandemic. NAS has worked closely with the Kuwait Ministry of Health, and many national organisations, to develop solutions to digitize health data and facilitate safe travel.

“Three inter-linked solutions paved the way,

making Kuwait one of the safest airports in the world,” explained El-Houry.

There is the medical utility network accreditor, a patented blockchain technology connecting labs in more than 40 cities (all considered high-risk) with direct flights to Kuwait.

Then, there is BelSalamah, a web application that allows migrant workers a safe and direct passage to return to Kuwait. Almost 100,000 people registered less than two weeks after its launch.

And, finally, there is KuwaitMosafer, a web platform for passengers travelling through Kuwait International Airport to facilitate quick and contactless travel.

NAS has partnered with the World Economic Forum (WEF) to use the KuwaitMosafer platform to share Kuwait’s vaccine records with countries and airlines across the globe.

The common trust network, launched by the WEF and the Commons Project Foundation, enables the safe, secure sharing of verifiable lab results and vaccination records to advance cross-border travel and commerce.

El-Houry said: “Countries are keen to

collaborate with us to revive passenger travel generally and to make it possible for high-spending Kuwaitis to safely resume business and leisure travel in greater numbers. Through platforms like KuwaitMosafer, we are focused on safer and simpler digital solutions that can aid both local and global recovery of travel.”

El-Houry is excited that NAS can aid Kuwait’s recovery and that technology is coming to the fore. “Going forward, digital services will play a big part in our business,” he said.

While the NAS focus has been on Africa, the Middle East, south-east Asia and digital developments, El-Houry is alive to acquisition opportunities. “I see a lot of companies that are distressed. We are open to look at any opportunity, but we are particularly interested in companies in emerging markets. And many companies are turning to us now because we are seen as good partners,” he said.

## Player at the global level

It is a testament to the progress of NAS that it believes it can be, and is seen as, a player at the global level. “We are serious investors, with professional management,” he said.

Turning NAS into a profitable, expansive, company that continues to deliver value to its stakeholders has kept El-Houry fixated on his task for more than a decade. Work to get over the impact of the pandemic is well under way and now it is all about looking forward.

“What I’m focused on is the recovery,” said El-Houry. “I want to make up for lost time.” ■

*The new generation of commercial aircraft will need to be largely carbon-free in the coming decades.*

*Anuradha Deenapanray Chappard looks at how the industry's big players are working to meet these targets.*

# A breath of fresh aircraft

**T**he aviation industry was the first in the world to make a long-term collective commitment to reduce its carbon footprint.

It is investing heavily in research and innovation to find new, lighter, materials, more appropriate engine architecture, and biofuels.

In September last year, the Air Transport Action Group (ATAG), an independent coalition of member organisations and companies throughout the global air transport industry, announced its roadmap, enabling the industry to cut its CO<sub>2</sub> emissions in half by 2050.

With the support of governments, the energy sector and researchers believe they can achieve the zero emission target by 2060-65.



To achieve the goal, it is clear that regulations, infrastructure and the logistics sector will have to keep pace with technological innovation.

Partners and subcontractors are unanimous – the entire aviation ecosystem must work together in a coherent approach to meet the challenges, underpin the constraints and build a low-carbon aircraft that guarantees safety, performance, and long-term competitiveness.

With innovation and excellence an historic part of the aviation industry's DNA, there is considerable hope of having both economical and sustainable flights in the next decades.

Aircraft and engine manufacturers, supported by their partners and start-ups, are investing massively in research, development and technology, exploring several avenues to improve the environmental and energy efficiency of air transport. Here's what some of them are doing:

## ■ AIRCRAFT MANUFACTURERS

### Airbus

The European aircraft manufacturer has announced the launch of the first low-carbon commercial aircraft by 2035.

According to CEO, Guillaume Faury, this is a "strategic priority for Airbus".

The development of a low-carbon aircraft does not require "major technological breakthrough" as Airbus already uses hydrogen propulsion for the Ariane rocket and its satellites.

Airbus has unveiled three concepts grouped under the code ZEROe (for zero emission) brand.

The first is a conventional looking turbofan aircraft able to carry 120 to 200 passengers on routes of up to 3,500km.

The second is a turboprop aircraft with a capacity of 100 passengers for short-haul routes. These models, featuring modified gas turbines for propulsion, complemented by hybrid electrical motors run by fuel cells, don't require investment in completely new technologies.

However, that can't be said of the third disruptive concept, the hydrogen-powered blended wing design.



Faury pointed out that the third concept is "more disruptive and allows us to study a completely different configuration for hydrogen storage and propulsion".

This concept, which is similar to the Maveric demonstrator presented by Airbus at the last Singapore Airshow, allows more solutions.

"Hydrogen is one of the most promising technology breakthroughs because it can be obtained from renewable energy and does not produce emissions," explained Jean-Brice Dumont, Airbus executive VP engineering.

According to Dumont, hydrogen is the only scalable energy-storage system capable of stabilising electricity networks fed by wind turbines and solar panels.

He added that safety remains an essential component for integrating hydrogen, which has

about four times the volume for the same amount of energy of kerosene based jet-fuel.

The main challenge will be to certify the demonstrators to airworthiness standards. Over the next five-six years, much progress will be needed regarding a full-scale prototype.

### Boeing

For more than 10 years, Boeing "has positioned itself as a leader in making aircraft fuel sustainable". This fuel is used every day around the world on more than 250,000 flights. It can reduce emissions by up to 80% throughout the fuel lifecycle, and is fully compatible with aircraft currently in service and those that will fly tomorrow.

According to Jean-Marc Fron, managing director of Boeing France, three-quarters of investments in research and development – more than 50 billion Euros (\$60.37bn) since 2003 – have been dedicated to improving in-flight efficiency.



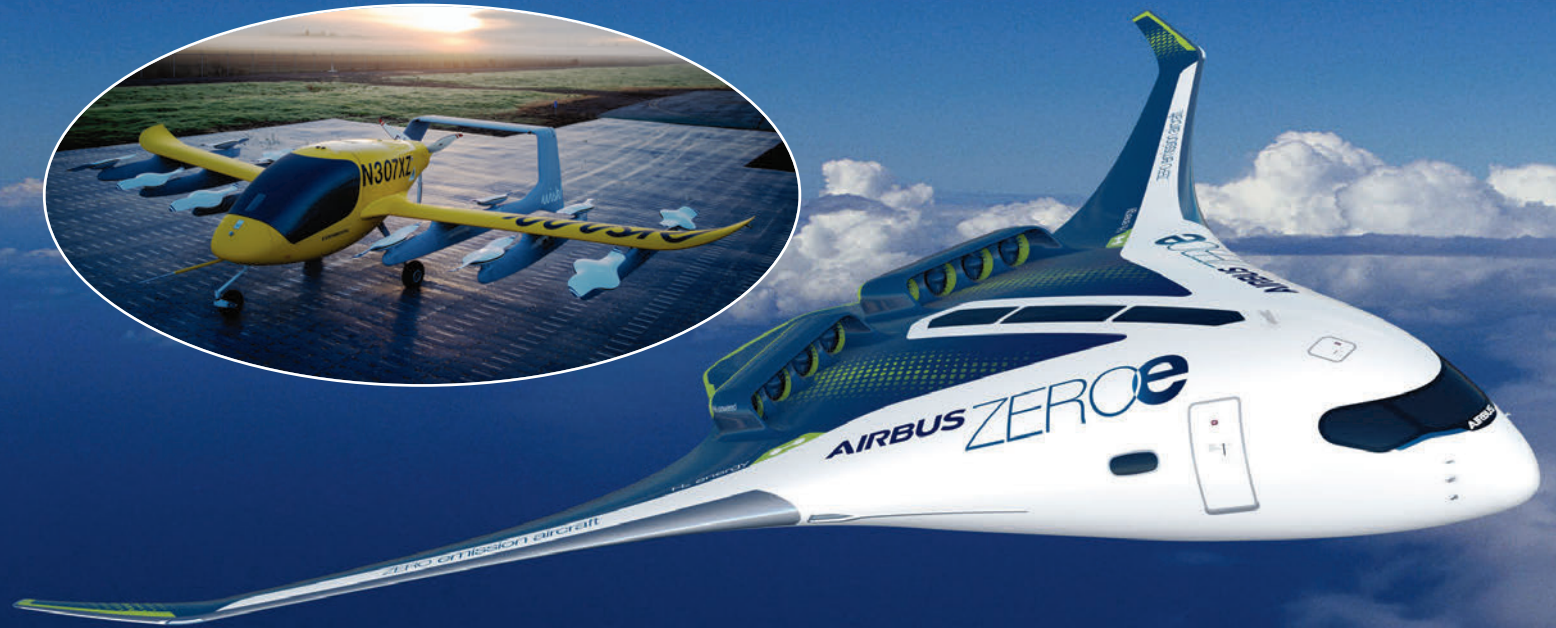
Launched in 2012, the ecoDemonstrator programme has evaluated more than 160 projects on seven aircraft. The American aircraft manufacturer is pursuing extensive research in the field of hydrogen.

It is also working on the transonic truss braced wing (TTBW) concept with NASA. This innovative technology aims to improve energy efficiency.

Boeing believes that electric propulsion holds promise for urban air vehicles, as well as small fixed-wing aircraft that serve regional routes, and will require renewable energy grids to sustainably recharge and fly emission-free.

The aircraft manufacturer has also launched a hybrid propulsion aircraft project with the start-up Zunum Aero and Jet-Blue Ventures Services. The partners are developing hybrid-electric regional aircraft, delivering unmatched door-to-door speeds and reduced costs for flights from 700 miles at launch to more than 1,000 miles by 2030.





More disruptive: Airbus' blended wing body design allows the company to study a completely different configuration for hydrogen storage and propulsion. PICTURE: AIRBUS  
Inset: Boeing's experimental Wisk Cora. PICTURE: BOEING

■ ENGINE MANUFACTURERS

**Safran**

For many years, Safran Group has devoted 75% of its research and technology (R&T) investments to limiting the environmental impact of air transport.

For Safran R&T director, Stéphane Cueille, three pillars are needed to reach the expected targets. These include:

- Developing lighter aircraft equipped with ultra-efficient engines in terms of energy;
- Progress in alternative fuels, including biofuels, synthetic fuels and hydrogen; and
- Optimisation of flight operations.

It will also be necessary to replace kerosene with a “low or zero carbon” fuel.

Safran is aiming to capitalise on the achievements of the ‘open rotor’ demonstrator – a key component of its plan to develop a propulsion system to meet aircraft manufacturers’ future needs towards 2030. It would provide at least 50% of the gain targeted for the aircraft.

“These projects help prepare technologies compatible with the goal of developing ultra-efficient aircraft using ‘green’ fuels instead of kerosene,” said Cueille. “A huge effort is being made to come up with future disruptive engines, but we are also working on hydrogen for the Hyperion 2.1 aircraft – the NASA/Boeing X48B-inspired blended wing body aircraft.

**Rolls-Royce**

Rolls-Royce aims to play a leading role in pioneering a resilient, inclusive, net zero carbon future.

**Type of energy needed**

**From a technological point of view, the most accessible solution lies in fuels that can be mixed with kerosene and used directly in existing aircraft.**

**The engine technologies currently in service can already incorporate up to 50% of biofuels (made from sustainable biomass not in competition with food).**

**The next generation of ultra-efficient engine will incorporate up to 100% of these biomass fuels.**

**Another option involves synthetic fuels, resulting from a virtuous electrosynthesis process, which extracts carbon from the atmosphere or from industrial fumes, and which thus opens up the prospect of a fuel that is completely emission neutral.**

**Other issues that must be tackled include:**

- The availability of decarbonised hydrogen in sufficient quantity and at an acceptable cost;
- The supply of liquid hydrogen in airports; and
- Fuelling technologies for aircraft.

**A global transition to hydrogen means that there’s a need to rethink several components of the aviation ecosystem.** ■

Alan Newby, the company’s director aerospace technology and future programmes said: “Our civil aerospace sustainability strategy is built around three pillars – improve the gas turbine; promote sustainable aviation fuels (SAFs); and be at the forefront of developing innovative propulsion technologies.”

The UK engine manufacturer is working on a range of technologies to meet the demands of different missions, ranging from major improvements to gas turbines beyond the current Trent family, through more radial electric and

hybrid electric solutions, to alternative energy sources, such as sustainable aviation fuels and hydrogen.

“On the-Fan X programme, we have created a hybrid-electric power generation system at a scale never previously seen in our industry,” said Newby. “It comprises an embedded AE2100 gas turbine driving a 2.5MW generator and 3000V power electronics, and an electric propulsion unit.”

UltraFan is another key element of Roll-Royce’s sustainability strategy. According to Newby, it will redefine the world of engines and set new standards in efficiency and sustainability, offering a 25% reduction in emissions.



In addition, Rolls-Royce has announced a ground-test campaign with a Trent 1000 engine powered 100% by SAF. This biofuel is produced by World Energy, supplied by Shell Aviation and delivered by SkyNRG.

According to Newby, this unblended fuel could reduce net engine life-cycle CO2 emissions by more than 75%.

Rolls-Royce has been working on a 100% electric aircraft concept since early 2019. This initiative – accelerating the electrification of flight (ACCEL) – aims to develop technology and supply chain knowledge to generate the development of future flight concepts.

“Rolls-Royce’s ultimate goal is to launch certified systems for all three market segments (small propeller planes, urban air mobility, and commuters) within three to five years,” explained Newby. ■

*Arab airlines are among those helping carry Covid-19 vaccines all over the globe as part of a United Nations initiative. Alan Dron reports.*



**Mercy missions: Qatar Airways will be one of the airlines using both its dedicated freighters and the underfloor holds on passenger aircraft to help move vital vaccines around the world.**

PICTURE: QATAR AIRWAYS

## Shot in the arm for vaccine supplies

**M**iddle East carriers are prominent in a list of the world's major airlines that have agreed to get vital supplies to where they are most needed to fight the coronavirus pandemic.

Under a United Nations Children's Fund (UNICEF) initiative, 12 airlines have signed agreements to prioritise the delivery of Covid-19 vaccines and related medical supplies. While North America, Europe, and parts of Asia have forged ahead with inoculating their residents, many poorer countries, notably in Africa, have not been able to vaccinate such large percentages of their populations.

Emirates SkyCargo, Etihad Airways, Qatar Airways and Saudia have joined the initiative, together with two African airlines – Astral Aviation and Ethiopian Airlines – and some of the world's leading passenger and cargo operators, to support UNICEF's COVAX facility.

### Fair access to vaccines

This ensures participating countries have fair access to vaccines, regardless of their income level.

COVAX aims to have two billion doses of vaccine available by the end of 2021.

Transporting vaccines requires, not only careful handling, but also specialised storage and in-flight conditions. Airlines have to ensure measures such as temperature control and security for the sensitive and valuable consignments.

The COVAX initiative also means that the participating airlines will add freighting capacity to routes where necessary.

In a wider context, COVAX will also act as a global logistics preparedness mechanism for other humanitarian and health crises in the longer term.

"Every single day counts in the fight against Covid-19 and

the sooner that communities can have access to vaccines, the sooner they can curb the spread of the virus and get back on their feet," said Emirates divisional senior vice-president, cargo, Nabil Sultan.

Last October, Emirates SkyCargo announced that it was creating the world's largest certified airside distribution hub dedicated to the storage of vaccines for the pandemic, with more than 15,000sqm of storage space. It will then regularly fly smaller quantities into markets with limited 'cold chain' infrastructure. Refrigeration right through the distribution channel until the vaccine is given to a patient is necessary to ensure that the medication remains in optimum condition.

### Sheer size of the effort

The sheer size of the effort to vaccinate the population poses particular challenges.

"Vaccine is not a new product for our industry. The quantity and scale, however, is new and immense," noted Qatar Airways' chief officer, cargo, Guillaume Halleux.

"From our side, we have invested much time and effort to create a proper plan around the logistics of vaccines. UNICEF's shipments are being transported via its appointed freight forwarders like Kuehne & Nagel, Scan Global Logistics, DHL and Agility – to name a few.

"We move these vaccines on our regular scheduled freighters, passenger freighters, mini-freighters and belly-hold flights. Charter services are also offered to destinations not part of our scheduled services or to destinations where we require more capacity to transport the vaccines.

"We recently surpassed a milestone with 10 million Covid-19 vaccines transported to more than 20 countries. This includes vaccines for UNICEF as part of the five-year memorandum of understanding (MoU) to support its humanitarian airfreight initiative."

Qatar Airways anticipates handling more shipments in the coming months, as UNICEF sets up new arrangements with countries and the logistics at the various destinations are created.

"With our global reach and mix of different aircraft, we are able to support the transport of vaccines by offering a seamless cool chain and dedicated monitoring, intervention and servicing, as well as proactive re-icing at our Doha hub when required," said Halleux.

■ The other airlines involved in the UNICEF initiative are AirBridgeCargo, Air France/KLM, Brussels Airlines, Cargolux, Cathay Pacific, IAG Cargo, Korean Air, Lufthansa Cargo, Singapore Airlines and United Airlines. ■

# TUNISIA BEAMING WITH BOOSTED RADAR COVERAGE

The installation of a new monopulse secondary surveillance radar (MSSR) at Akouda, near Sousse, represents a significant enhancement of radar coverage over and around Tunisia.

Alan Dron reports.

The new radar system, produced by Spanish company, Indra, implements many improvements when compared to the previous system, including a Mode S surveillance capability that allows air traffic controllers to have a more precise overview.

Mode S allows a radar system to interrogate one aircraft at a time if several are simultaneously within the radar beam. It also gives greater directional accuracy.

The new MSSR allows each aircraft to be unambiguously and automatically identified and also provides more accurate altitude and positioning information.

These improvements allow an increase in the number of aircraft and the frequency of operations in a given area, allowing the distance between flights to be decreased, while maintaining safety levels.

The system has a range of 250 nautical miles (460km), providing coverage over almost all of Tunisia at high level, and out as far as Malta.



Continuous improvement: Indra has been a long-time supplier of air traffic control equipment to Tunisia, such as this radar installation at Sidi Zid. PICTURE: INDR.

The new radar can be used as a back-up for radar systems located at Tunis Airport and on Djerba Island, as well as for approaches to Sousse Airport.

It is planned to have the system fully operational and integrated into the country's air traffic control system by next month.

The new radar at Akouda is the latest project that Indra has provided for Tunisia's Civil Aviation and Airports Authority (OACA), having worked with OACA for the past decade. Tunisia's air traffic management capacity and safety statistics are now some of the most advanced in Africa, according to Indra.

Among the projects implemented by Indra in Tunisia in past years are:

- Control centres (en-route or approach) at Djerba, Monastir, Enfidha and Tunis;
- Instrument landing systems and navigation aids for Djerba, Monastir, Enfidha, Tunis, Sidi Ali Ben Aoun, and Gafsa;
- Voice communication systems at several locations; and
- Radars (primary, secondary or both) at Tunis Carthage International Airport, Sidi Zid, and Bor Jelij.



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*The UAE's Hope space probe has now successfully entered orbit around Mars and has sent some stunning pictures of the planet back to Earth. Steve Nichols reports.*

## HOPE IMAGES RAISE THE MARS BAR

**H**ope entered its Mars orbit insertion phase on February 9, initially in a highly elliptical orbit. This meant, at its closest approach, it was just 1,000km above the Martian surface, and at its furthest point it was nearly 50,000km away.

The Hope probe began the first of two planned transition to science manoeuvres (TSMs) on March 22, with a second on April 6. This 'science orbit' is flatter, with its closest point at 20,000km and the furthest 43,000km, with one complete orbit taking 55 hours.

One of Hope's first tasks, just a day after arriving in orbit, was to use its Emirates eXploration Imager (EXI) camera to photograph the Martian surface from an altitude of 24,700km. The colour photograph was created from a composite of three red, green, and blue EXI images.

The image shows sunlight creeping over the giant volcanoes of the Tharsis region.

### Answer key questions

The probe will now use other instruments to help answer key questions about the global Martian atmosphere and the loss of hydrogen and oxygen gases into space over the span of one Martian year.

It will use its three scientific instruments, which include visible, infrared and ultraviolet spectrometers, to map and understand the lower atmosphere of Mars and the weather systems that exist.

Scientists think Mars did have an atmosphere at some stage, as other missions have spotted hydrogen and oxygen near Mars, which now orbits the planet in a giant cloud.

Hope will also provide a complete picture of the Martian atmosphere for the first time, studying daily and seasonal changes.

The contact period with the mission operation centre (MOC) is limited to six-to-eight hours, twice a week. In the two years that the probe will be operational, it will capture

data about Mars, its atmosphere and dynamics. The collected data will be made available to the scientific community through the Emirates Mars mission's data centre.

Sarah bint Yousef Al Amiri, minister of state for advanced technology and chairwoman of the UAE Space Agency, said: "Hope's success underscored the country's vision to develop the skills of the future, and to invest in young national talent to further strengthen their capabilities in the fields of advanced science, technology, engineering, and scientific research."

Speaking at the recent World Government Summit Dialogues, she added: "Space exploration research and space missions enable us to expand the breadth of our knowledge, and better understand the neighbouring planets and the solar system, as well as the myriad cosmic phenomena surrounding us."

"The insights gained through such initiatives simultaneously serve as a window on the past and as a vision for the future, and contribute to improving our daily lives through space industry innovations." ■

## DHABISAT SET FOR DEPLOYMENT FROM THE ISS

**A tiny CubeSat, designed and developed by students from Abu Dhabi's Khalifa University of Science and Technology, with support from industry partners, lifted off on its journey to the International Space Station (ISS) from Virginia, USA, in late February.**

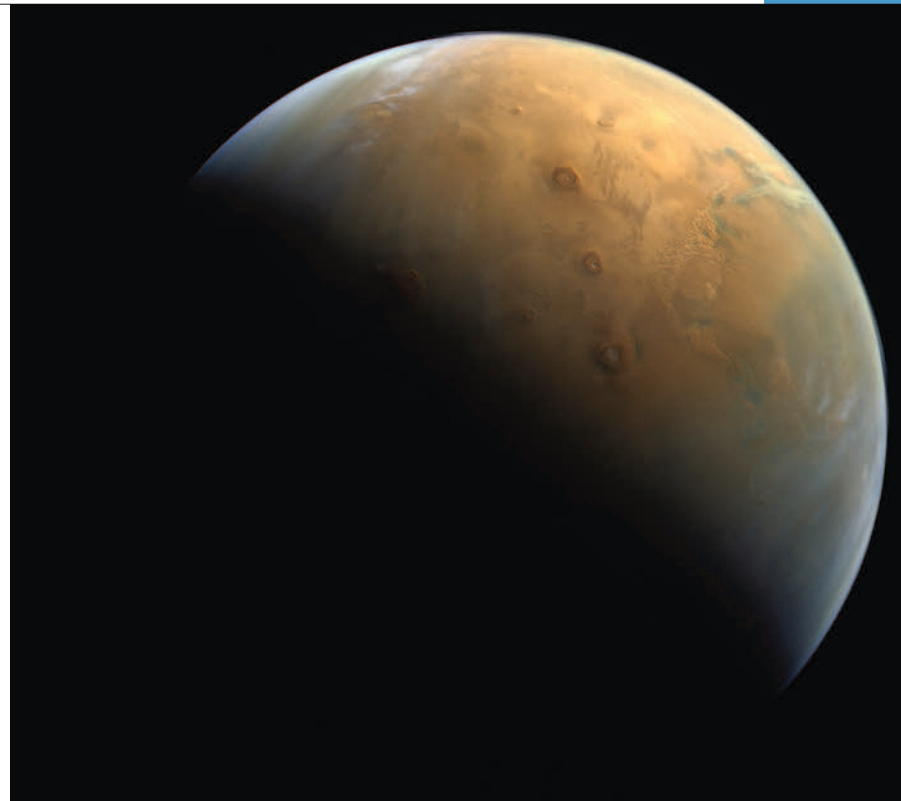
**DhabiSat was aboard the Cygnus NG-15 resupply spacecraft, and will be deployed from the ISS in approximately three months' time.**

**Developed by 27 graduate students at Yabsat Space Lab, which is part of the Khalifa University Space Technology and Innovation Center (KUSTIC), the project is helping train people to become qualified engineers to support the space sector in the UAE.**

**Once deployed, DhabiSat will enable students to test custom software modules, developed in-house by the students, for the attitude determination and control subsystem (ADCS).**

**The high-resolution camera on DhabiSat will also capture images at 12.6 metres per pixel spatial resolution on the ground, from an altitude of 450km, official news agency WAM reported.**

**KUSTIC continues to facilitate the development and deployment of satellites, including the MeznSat project, developed by students from Khalifa University and the American University of Ras Al Khaimah, as well as the Light-1 CubeSat being developed at Khalifa University** ■



**View from the top: Mars, as seen from the orbiting Hope spacecraft.**

PICTURE: MOHAMMED BIN RASHID SPACE CENTRE/UAE SPACE AGENCY

# Lars Barsoe

Marcelle Nethersole *speaks to the VP sales and marketing at Vestergaard Company.*

# 1

### ■ What does Vestergaard Company do?

Vestergaard Company is a Danish family owned 60-year-old business that designs and manufactures high-quality, innovative, ground-support equipment.

Our products are world-wide, where a strong focus in colder areas of the world is on aircraft de-icing. There are Vestergaard de-icers from close to the North Pole to as far south as New Zealand and everywhere in between.

Vestergaard has recently launched the world's first electrically operated de-icer and units are already operating in North America and Europe, with more on the way to the Far East.

Electrification is a key focus area for the company, and we also have a series of electric water and lavatory service vehicles.

# 2

### ■ What work do you do in the MENA region?

Vestergaard has been active in the Middle East and north Africa for about 20 years.

We have aircraft washers across the region and a lot of customers with lavatory and water service vehicles.

The UAE has traditionally been a strong market and, in recent years, we have added Saudi Arabia and Oman as well.

In Morocco, we have delivered our first de-icer to the African continent. In the Middle East there are de-icers in Jordan and in Turkey.

# 3

### ■ Do you produce equipment for all weather elements?

Yes. In the Middle East, heat and sand are the typical challenges. We have modified our equipment for each area, so that, for example, hydraulic oil coolers and air condition are standard in the Middle East, and cabin heaters are standard in the colder areas.

We are now bringing all-electric units, and also, with battery technology, we modify according to the expected temperatures in each location. Aircraft washers play an essential role in optimising operations in the Middle East, where sand concentration is higher than most other parts of the world. With residue and dirt on aircraft surfaces, the drag is increased, so keeping the aircraft clean can reduce fuel consumption by up to 2%, while maintaining an image of cleanliness and professionalism.

# 4

### ■ What difference has Covid-19 made to your services?

The pandemic has not changed the requirements of our customers per se. Their demands have eased as their traffic and business has dropped, but their basic needs are the same. We see a trend where the pressure to re-open in a greener way is increasing. In some countries, government help for airlines and airports have come with requirements that the reopening be greener.

Some short domestic routes have been shut down to be replaced by electric train routes, and aircraft with the highest fuel consumption have been retired. In the ground-support equipment world there is also demand for cleaner and greener equipment, and we believe that our customers can tap into that trend with electric equipment.

# 5

### ■ Is there anything new in the pipeline for the company?

We have just launched the first electrically operated Elephant BETA de-icer, the largest of our de-icers. Soon we will have a small de-icer fully electric vehicle and our aircraft washers will be available in sustainable versions as well.

We are further developing our water and lavatory series of electric vehicles. They now come in self-propelled winter and summer versions, and we have small towed water and lavatory units, fully electric, and in both winter and summer versions.

Vestergaard also wants to be a part of the airports' solution to the climate challenges, and we aim to deliver green versions of all our equipment (electrical or in another sustainable form) by 2030, so that our customers may perform CO2-neutral ground-handling operations.

# 6

### ■ What does a typical day involve for you?

Most of my time is spent on dialogue with customers and potential customers. In normal times, I would be travelling about half of the year, jetting around the world.

During the pandemic, we have all learned it is possible to keep in touch with existing customers via electronic channels, but we have also learned it is very challenging to start new relationships without face-to-face meetings. So it is way too early to talk about the end of business travel and the demise of our airline customers.

Marketing has thrived during the pandemic, as it has been a way to stay in touch for both customers and manufacturers.



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