



SHOW BUSINESS



FANGS OUT! FIRST BELL AH-1Z MAKES PUBLIC DEBUT AT SHOW

VIPER ADDS BITE TO BAHRAIN AIR FORCE

Making its public debut in the static display is the first Royal Bahraini Air Force Bell AH-1Z Viper. The aircraft is also the first delivery to a US Foreign Military Sales (FMS) customer.

It comes just four years after Bell and the Royal Bahraini Air Force announced a \$912 million deal for 12 AH-1Zs, at the last BIAS in 2018.

Six have so far been delivered,

with the remaining six arriving soon. Mike Deslatte, Bell H-1 vice president and program director, said: "The AH-1Z brings a lot of benefits, largely due to the number of different missions it can complete – close air support, anti-armour and, in US Marine Corps configuration, anti-air, so it's quite a versatile aircraft."

The latest generation of the Viper has a Lockheed Martin target sight system along with avionics that Bell rates as world

class with Deslatte adding: "Employing that type of capability is a game-changer."

The aircraft is protected against the kind of corrosion that the Bahrain climate will bring. "It was fully marinated from the point of manufacture all the way down to detailed level parts," explained Deslatte.

"This provides resistance to the likes of salt, spray, sand and dust, while working in an austere environment. You can encounter

all these kind of elements when deploying forward with the units that you support on the ground."

At the time of the purchase in November 2018, the RBAF commander, Major General Sheikh Hamad bin Abdullah Al Khalia, said: "These new helicopters will work alongside the current Cobra fleet [which has now been upgraded] and will help to improve our share of the responsibility in the growth and security of the Gulf region." ▲

Game-changer: ▶
Mike Deslatte, Bell H-1 vice president and program director at the show with the Viper – which boasts Lockheed Martin target sight system along with world-class avionics



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Discover More



RJ powers on with \$1.5bn engine deal

Left: P&W's Mark Cryan with Royal Jordanian Airline's vice-chairman and CEO, Samer Majali

Royal Jordanian Airlines (RJ) has chosen Pratt & Whitney GTF engines to power up to 30 new aircraft, as it plans a complete replacement of its narrow-body and regional jet fleets over the next five years.

RJ will acquire 15 A320neos, plus five of the larger-capacity A321neo models, as well as up to 10 Embraer E2 regional jets, "most likely four E195s and six E190s", said the airline's vice-chairman and CEO, Samer Majali, at the show yesterday.

Majali also revealed that the airline is planning to replace its relatively modern Boeing 787-8 long-haul fleet with the larger -9, or possibly -10 models this decade.

Combined, the replacement programme will take the fleet to their current size of 26 aircraft to between 40-45 over the next five to six years.

P&W's GTF engines will allow the airline to significantly cut emissions from its aircraft – fuel consumption and resulting CO₂ emissions will drop by 16% to 20%, while NOx levels will drop by 50% and noise footprint by 75%, said P&W VP, customer business, India, Middle East and Africa, Mark Cryan.

The engine deal will include a long-term maintenance power-by-the-hour arrangement.

Majali said that the purchase cost of the powerplants would be around \$500 million at list prices, while the maintenance deal could eventually amount to \$1 billion,

again at list prices.

Majali detailed the planned narrow-body buy, saying that a dozen of the A320neos would have 12 business-class and 138 economy-class seats, while three would be in an all-economy 180-seat layout.

The A321neo will have 12 fully lie-flat business-class seats as part of its two-class configuration.

The CEO added that, while he would have preferred to buy direct from Airbus, the manufacturer was unable to offer delivery slots before 2028, "so we have to go to the leasing market".



Show's royal seal of approval

The Bahrain International Airshow was given the royal seal of approval as HRH Prince Salman bin Hamad Al Khalifa, crown prince, deputy supreme commander and prime minister, showed his appreciation at the official opening of the event yesterday morning. Prince Salman was clearly delighted as he

drove along the flight line with other VIPs and saw exhibitors, delegates and visitors enjoying the celebrations of more than a decade of excellence since the show first opened its doors in 2010. There are more than 180 companies participating, seven country pavilions, and more than 200 official delegations.



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SAEI CLINCHES NEW MRO DEAL WITH FLYADEAL



Maintenance repair and overhaul (MRO) organisation, Saudia Aerospace Engineering Industries (SAEI), yesterday signed a new, three-year maintenance services agreement with another Saudia subsidiary, low-cost carrier Flyadeal.

The agreement, signed at the show, builds on the award to SAEI earlier this year of two heavy maintenance checks performed in Q4

2022. The signatories were SAEI CEO, Captain Fahd Cynndy, and Flyadeal CEO, Con Korfiatis.

Undertaking aircraft maintenance within Saudi Arabia will allow Flyadeal to realise future cost savings and drive efficiencies.

For SAEI, the agreement provided an opportunity to compete with foreign MROs, demonstrating its ability to offer a winning service portfolio.

“While SAEI is one of the longest established MROs in the region, its growth strategy is firmly future-focused and centred on seizing opportunities driven by innovation,” said Cynndy.

“This agreement is an indication of the positive momentum that we are seeing across multiple aspects of the Saudi aviation eco-system.”

Bahrain eyes up exciting new future in space

Bahrain’s National Space Science Agency (NSSA) is working hard to bring the kingdom’s vision of a sustainable space economy to reality.

As the host of the first meeting of the Arab Space Cooperation Group to be held outside of the UAE, and with a number of MoUs signed with countries in the MENA region, Bahrain is making giant strides.

Senior engineer Yaqoob Al Qassab said: “Our vision is to put Bahrain at the top of the developed countries in the space sector, and our strategic goal is to develop a sustainable space economy that can stand alone economically, having national capabilities and revenue streams to support itself.”

The NSSA has developed several revenue streams providing space images and data to government and non-government organisation, and studies and analysis of data for organisations involved with sustainable energy, agriculture, and the environment.

Al Qassab added: “We have completed around 21 studies over the last two years. We have excellent national capabilities in Bahrain to develop satellite projects and innovate in the space sector.

“We recently won an international competition, recognised by the UN Office for Outer Space Affairs, with the Mohammed Bin Rashid Space Centre in Dubai. It was an open competition – with around 533 entities able to com-



Out of this world: Senior engineer Yaqoob Al Qassab – Our vision is to put Bahrain at the top of the developed countries in the space sector

pete – and we won.

“We submitted a proposal for the Aman payload, which is designed to protect the security of data from the satellite. The payload will focus on having optimised encryption algorithms that can be used to secure the data of the MBR satellite that will be on board.”

The developed payload is a part of the NSSA’s future plans. Al Qassab said: “We are currently building Bahrain’s first fully Bahraini satellite.

“We previously enjoyed a collaboration with the UAE, but we aim to nationalise our satellite technologies.”

▲ NEWS IN BRIEF

Mena Aerospace celebrates Singapore alliance

Bahrain-based Mena Aerospace and its cargo airline, Mena Cargo, will reap benefits that could total around \$100 million as a result of signing its strategic alliance with Singapore’s Asia Cargo Network (ACN) yesterday.

“It’s important to note in aviation that these deals are often not all in cash,” said Dr Mohammed Juman, Mena Aerospace’s founder and MD. Benefits will come through a combination of various factors including cash, growth, and assets, he said.

ACN will initially base three freighters (a 737-300F, a -800 and a 767-300F) in Bahrain. Juman sees considerable future growth in Asia, Africa and the Middle East – particularly in Saudi, where the cargo market “is in its infancy”.

Texel lands new alliance deal

Bahrain’s Texel Air and Sierra Nevada Corporation (SNC) are to form a special purpose vehicle (SPV financial arrangement) to create a strategic alliance to develop Middle East and international aviation opportunities. This SPV will secure financing for Texel’s fleet and facilities expansion in Bahrain. It will have special provision to grow the Texel brand and AOCs into other identified areas of interest and allow SNC to continue its expansion into commercial aviation for its already vibrant ACMI business.

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Saudi is open for business, says Alpha Star executive

Saudi Arabia is a very different place in which to do business compared to just five years ago, according to an executive from specialist charter operator, Alpha Star Aviation Services.

“In the last five years, Saudi Arabia has become much more open for business opportunities; a lot of people are coming to the country to see what’s happening,” said director of flight operations, Mutlaq Al Assmi.

The country is undergoing a major diversification of its economy, moving away from its

previous focus on oil and gas. It is building an aviation eco-system, with new airports appearing, the country’s first aircraft lessor unveiled earlier this year, and a huge MRO ‘village’ under construction.

A new national airline is also expected to be announced imminently, although sources have told *Show Business* that current flag-carrier, Saudia, will not be downgraded as a result.

Alpha Star has an extensive fleet of executive jets, ranging from Hawker 900XP business jets to

Airbus A340-600 ultra long-haul airliners. The company’s A330-200 made a record-breaking 18-hour flight from Hawaii to Riyadh in 2018, although that record has since been surpassed.

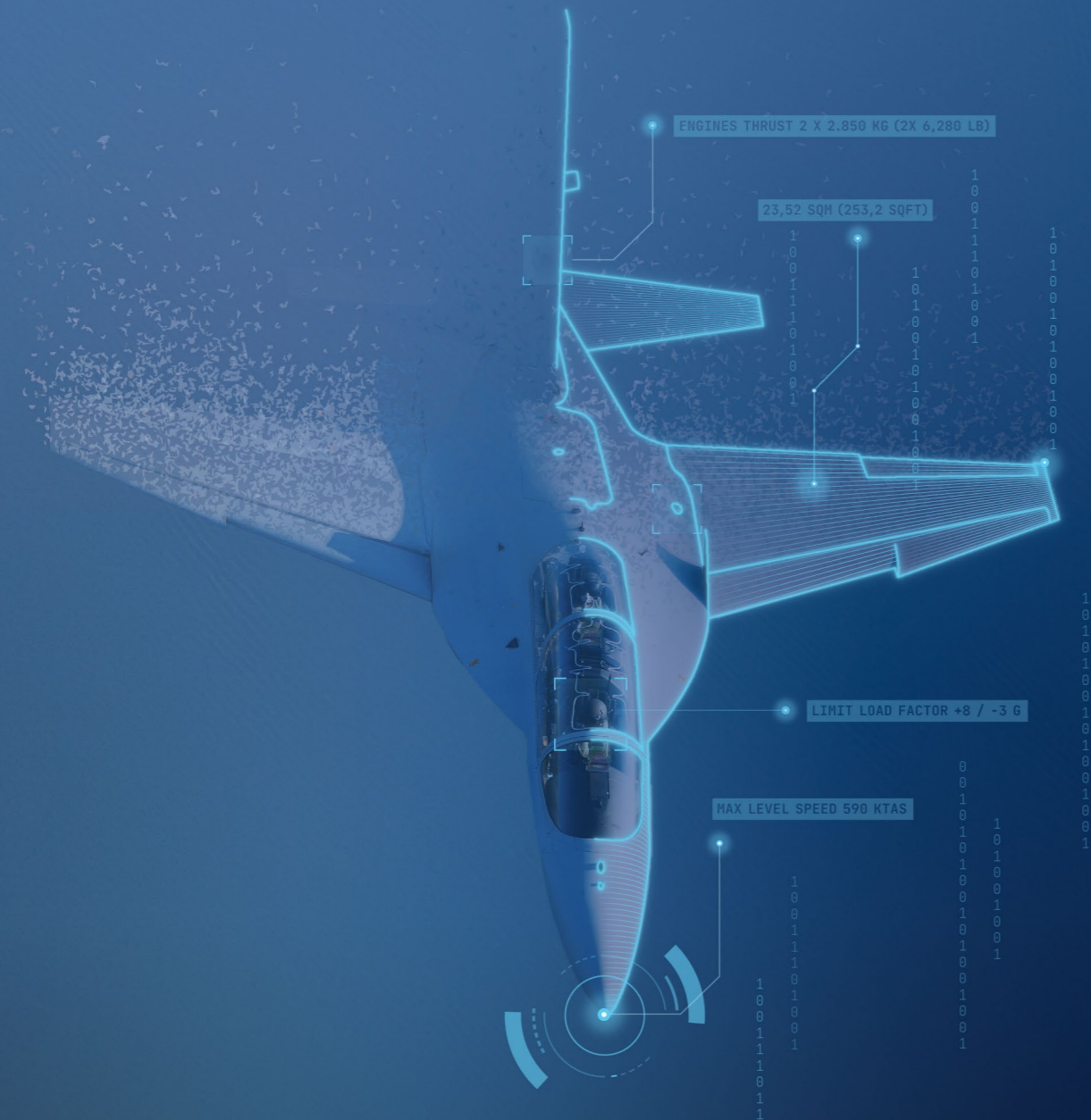
A major component of the Riyadh-based company’s business is flying government ministers and officials, not only from the Saudi Government but from a wide range of countries throughout regions such as Africa.

Since 2018, the company has been owned by Saudi Arabia’s Public Investment Fund; Al Assmi

describes the company as “semi-owned” by the government, with Alpha Star continuing to pursue a commercial business model.

He added that expansion is planned for the near future, with more aircraft on the horizon. Full details have not yet been finalised, although two Cessna Citation Latitude business jets are expected to be delivered by mid-2023.

At present, around 75-80% of Alpha Star’s business comes from its home country, although this figure may drop as the company expands.



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Saudi flight academy makes show debut

OxfordSaudia Flight Academy is at the show for the first time highlighting its training abilities in Saudi Arabia.

The authorised centre, funded by the Saudi National Company of Aviation (SNCA), with CAE providing all the training elements, started up in 2018 for cadet training to individuals with no flying experience who wanted to become airline pilots.

The aviation academy, operating from Dammam International Airport, is the first of its kind in the kingdom, to train both men and women of Saudi and non-Saudi origin.

“I don’t think it is recognised in the region, but there is a shortage of pilots, and certainly there is a huge pilot demand worldwide,” said Captain Larry Wade, chief executive officer. “Welcoming female pilots is also something we are proud to do, and we want to bring our quality of training to



There is a shortage of pilots, and a huge pilot demand worldwide—
Captain Larry Wade,
chief executive officer
OxfordSaudia Flight Academy

Saudi Arabia in line with the country’s 2030 vision.”

The academy sponsors the qualifying course on A320 aircraft, which is presented through a full-motion flight simulator.

Its fleet is made up of Diamond DA40 NG and Diamond DA42 aircraft.


What also makes the academy special is that its training leads

into an employment programme for three years that enables graduates to gain career opportunities as flight instructors after completing their CPL course, which is approved under GACAR 141.

The company has quickly expanded, with facilities now in Jeddah and Riyadh, and is also looking to open schools in other parts of the world.

At the air show it is also highlighting its new helicopter training course, with two Robinson R44s being delivered next year.

“Our vision is to bring the best training providers in aviation to the kingdom,” said Wade. “We are also expanding with ground handling training, as well as operations management training and ticket agent training.”



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Inzpiring a new way to train from BAE

BAE Systems and training specialist, Inzpire, agreed an MoU at the Bahrain show yesterday.

The companies will work together exploring the development of next-generation military training, bringing Inzpire's expertise into BAE Systems' future operational training services.

Inzpire joins distributed computing specialists, Hadean, and virtual reality simulation company, VRAI, to work with BAE Systems to develop the technology which will enable air, land, sea, space and cyber forces to plug in and train collectively.

Inzpire has been involved in live and synthetic training across air, maritime and land for almost 15 years, designing and delivering immersive training experiences for both British and international armed forces.

Its experts will work with BAE Systems on the creation of a single synthetic environment, which can allow military forces to securely train using real world mission software and tactics, delivering high-fidelity, immersive training.

The initial proof of concept, to be delivered by BAE Systems, will integrate multi-domain synthetic environments to enable complex collective training scenarios in a secure environment.

Sir Stuart Atha, BAE's director of training and support transformation, said: "The modern battlespace is constantly evolving and the way we train our military forces has to change with it. That is why we are working with Inzpire and other cutting-edge technology providers like Hadean and VRAI to help us deliver the training advantage our customers need."

Inzpire has grown from an award-winning SME to a major force in the defence training industry.

The company's business development and marketing manager, Simon Gilbert, said: "Since the formation in 2005, Inzpire has developed a great reputation for delivering

superb training solutions for our customers.

"As experts in providing training design, development, and delivery alongside a number of technical solutions, Inzpire has developed a training track-record which is, perhaps, unparalleled. We look forward to combining our skillsets and capabilities as part of this initiative."



Tim Colebrooke, training strategy manager, BAE systems, and Alistair Howard, business development, Inzpire

ENCOURAGING WOMEN TO REALISE THEIR DREAMS

The Arabian section of the female pilots' organisation, the Ninety-Nines, is here at the show hoping to encourage the future generation of female pilots in the region. The Ninety-Nines is a non-profit international organisation for female pilots.

It was established in 1929 and today has more than 5,300 members around the world – in the Middle East there are now more than 90 members and it is the fastest growing region.

Waad Aldoseri, from Bahrain,

is the vice governor of the Arabian section. "I used to work for Bahrain Airport Services but I was really drawn to flying and realised that my dream was to become a pilot, so, in 2007, I started the training course," she said.

"My dad was not at all supportive – mainly as I was a woman and also because I had two children."

Aldoseri said she was determined, though, and in 2009 she qualified as a pilot. She went on to work for Gulf Air for seven years and Kuwait Airways for five, flying

the Airbus A320 family aircraft.

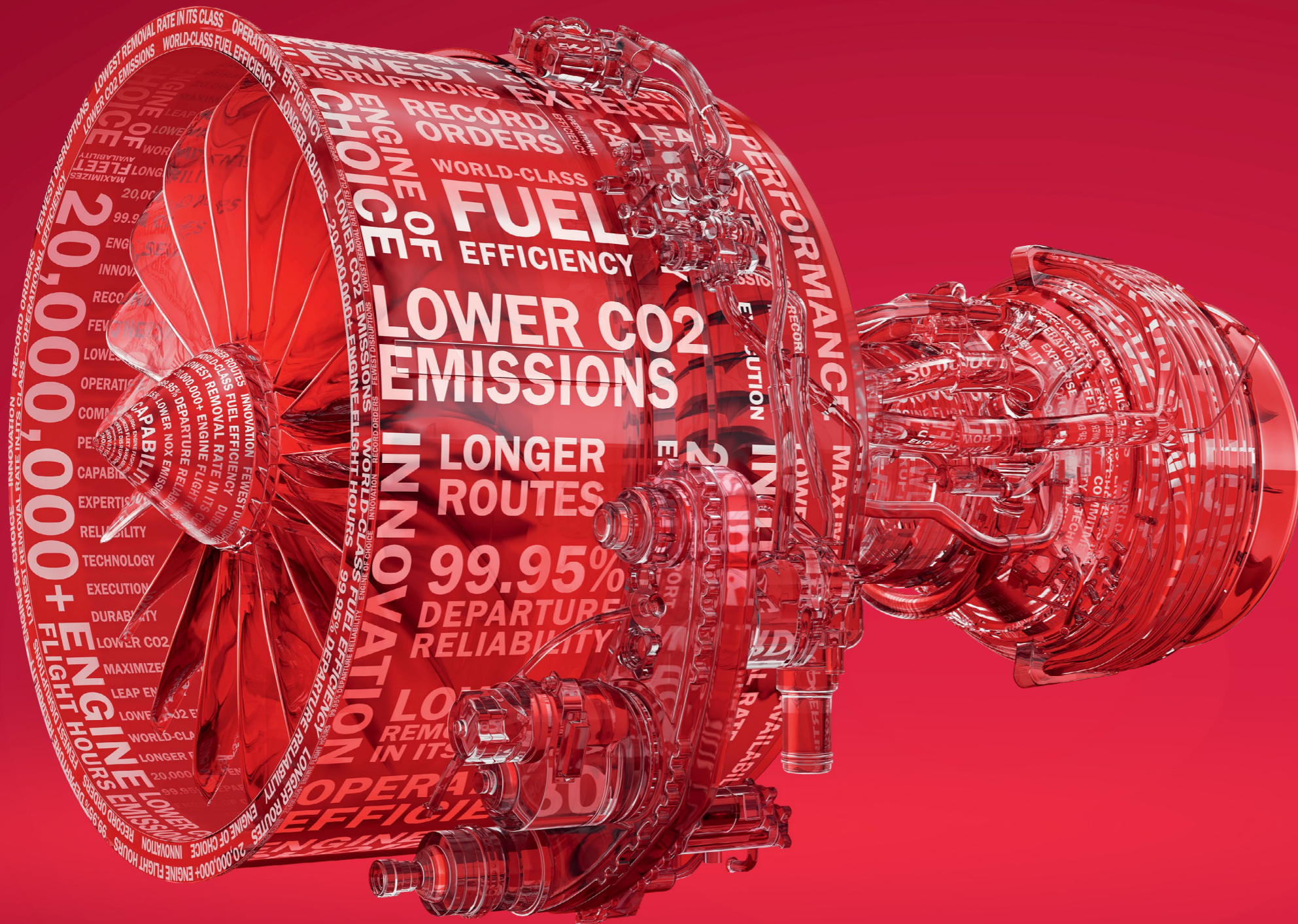
She stepped back from flying only two months ago but is now happy to encourage future female pilots in the region.

"These days in the Middle East the attitude to a female pilot is very different and I am proof of that," said Aldoseri.

"At the Ninety-Nines, we can explain the nature of being a pilot and the beauty of it. Once a member, we can offer a scholarship for women in the section to enhance their aviation careers."



INSPIRATIONAL
Waad Aldoseri, from Bahrain, is the vice governor of the Arabian section of the Ninety-Nines



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Some of GAA's product offerings...



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Simulation Training

GAA provides training on simulators for Pilots, Cabin Crew, Air Traffic Controllers as well as Airside Vehicle Operators for a realistic and immersive training experience.



E-learning Courses

GAA offers E-learning courses where participants would have un-restricted access to learn core concepts and study on their own. It gives participants the sense of responsibility to learn by themselves and provides a platform to excel beyond their expectations.



AR / VR Development and Training

When it comes to strictly regulated activities where speed and safety are top priorities, AR / VR stands out as a perfect technology to train operators in a nearly real-life environment. GAA uses AR / VR training to bridge between the theoretical learning and the field practice thereby increasing speed and quality of the training.

Stay tuned for tomorrow's post

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'Boutique' Bahrain steps out of the shade...

What a difference a few years have made as the small 'boutique' Bahrain International Airshow has transformed itself into a major player on the aviation calendar.

The concept of a Bahrain show was first made public as far back as 2008, when Farnborough International Limited (FIL) announced that it was planning a biennial international civil and military air show called the Royal Bahrain Airshow, in conjunction with the Civil Aviation Affairs (CAA) of the Kingdom of Bahrain.

The idea was to provide a totally new concept to the global aerospace community, and to stage one of the most influential and prestigious aerospace hospitality events in the region.

The inaugural Bahrain International Airshow (BIAS) subsequently took place at the new Sakhir Airbase from January 21-23 2010. Back then, Sakhir had to undergo a number of changes to bring it up to standard for the event. It is reported that 200 tonnes of steel was used to create 40 purpose-built chalets.

A large area was constructed to house the static park and two



THEN
Cramming them in: This picture pretty much captures the whole of the show as was

NOW
Major player: The show now has more than 140 exhibitors

hangers were built, both big enough to house an A380 aircraft.

Before building work could commence 600, 000 cubic metres of earth had to be excavated, of which 425,000 cubic metres was solid rock.

A hint of the success to come came when all 40 chalets were sold out well in advance of the show, with high-profile companies queuing up to take part, including Airbus, BAE Systems, Boeing, Cessna, DHL, Gulf Air, Lockheed Martin, and Rolls-Royce, to name but a few. The BIAS's opening

day saw more than \$1bn worth of deals struck. The Bahrain Air Force finalised the details to their order for nine UH-60M Blackhawk helicopters, while Yemenia, Yemen's national airline, placed an order for 10 Airbus A320 aircraft.

Gulf Air also signed a preliminary contract to lease two Embraer 170 aircraft and Selex won a \$15 million contract from the Bahrain Civil Aviation Authority for primary surveillance radar and 2 Mode-S secondary surveillance radars for Bahrain

International Airport.

Fast forward to 2022 and the investment in the show over the past 12 years has really paid off.

With more than 140 companies now exhibiting across the defence, space, business and aviation sectors, a conference programme boasting top speakers from across the world, and trade visitors running into the tens of thousands, 'boutique' Bahrain has really come of age.

The only question now is: How big might the show become over the next 10 years?

WHY THE GULF STAYS FIRMLY ON LEONARDO'S RADAR

Leonardo has a long history of partnership in the Gulf and in Bahrain in particular. The Italian aerospace giant is at the show to promote its multi-domain surveillance and defence technologies to the region's governments.

The company has supplied two primary surveillance radars and three Mode-S secondary surveillance radars for Bahrain's civil aviation organisation and Royal Bahraini Air Force. These radars enhance the safety and efficiency of national air-space management.

This year, Leonardo concluded the delivery of the sixth and last naval unit 'Al Taweelah', which is

part of an agreement for the upgrade of six Royal Bahrain Naval Force ships. Leonardo's advanced technologies and expertise in the naval domain were an important focus during the recent visit of the Italian Navy's 'Thaon di Revel' multipurpose offshore patrol in Bahrain.



To meet the current needs, which involves constant airspace monitoring, Leonardo proposes the RAT 31DL three-dimensional surveillance radar (left). For the detection, classification, and tracking of small- and fast-moving aerial threats, such as mini and micro systems uncrewed tactical, the

company is offering the multi-domain and dual use tactical multi-mission radar (TMMR) sensor.

The latest, completely digitised and in C-band, together with NERIO ULR electro-optical camera, is an effective solution for anti-drone and counter rocket, artillery and mortar (C-RAM) scenarios, which require mobility and rapid deployment, and for short-range air defence, surveillance and protection of platforms and vehicles, borders, territories and critical infrastructures.

Leonardo is able to support the missions of air forces via the provision of a variety of radar and self-protection systems. One leading product is the BriteCloud countermeasure, which has already entered service with the UK's RAF.

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Easy as 1,2,3: GAA trains in on a show hat-trick

Bahrain-based Gulf Aviation Academy (GAA) is launching and promoting three training solutions during the show, demonstrating its new augmented reality, virtual reality, and e-learning capabilities.

The company is providing a progressive VR solution, currently with a focus on ground training, but with plans to expand to other training segments.

Salama Ali, head of marketing and business development, said: "Our modules are ready for ground training, but our teams are working on other functions, such as cabin crew and pilot training, due to start next year.

"We have worked with subject matter experts to ensure that our offerings meet the regulatory requirements, so whatever people used to do in physical and theoretical training is done, monitored and examined through VR.

"Once a session is completed people will get a score. And, with that score, the training department can understand if they are entitled to continue their jobs or if they need further examination."

However, GAA is not just selling the training solution; it is selling the entire platform.

Ali added: "Training academies, airline or airport management companies can buy the platform, and either have the ready content, or open the floor for programmers within the company to develop their own content, and upload it in the platform, which they can then resell if they wish."

Another reveal at the show



GAA's Salama Ali—Modules are ready for ground training, and we are working on other functions, such as cabin crew and pilot training

is the move into e-learning. Ali explained: "We have another platform for training management systems and learning management systems, through which the HR or training department of any company can mandate the training for every employee through different levels.

"As people pass each assessment level the system automatically schedules the next session, until they reach a certain score that is acceptable to HR.

"This can be done at any time, even when travelling, as people simply log in and do their assessment.

"We currently only cover the aviation industry, but will expand to cover other sectors. It is part of our vision to grow our

training globally."

The third reveal is the addition of a maintenance engineering type rating course for the Airbus A320.

Ramla Abdulrasool, manager quality assurance, said: "We are the first vocational training centre in aviation in Bahrain that has eight of our programmes approved as per the national education and training quality authority qualification framework at level 8, which is equivalent to bachelor's degree.

"We have now launched the A320 programme and expect the first cohort in the first quarter of the new year." She added: "Most of our programmes are approved by Bahrain civil aviation and EASA, which attracts candidates from around the world."

▲ NEWS IN BRIEF

Forward-thinking key to Yahsat's success

In the regional space race, UAE dominance is due to forward thinking by the country's leadership – and Yahsat is a prime example. The company offers multi-mission satellite services in more than 150 countries across Europe, the Middle East, Africa, South America, Asia and Australasia, and its five satellites reach more than 80% of the world's population

Saif Al Khateri, VP business units, Yahsat, (below) part of the UAE pavilion explained: "We have government customers in the region and across almost two thirds of the world. Our advantage is that we started a long time ago.

"With the telecommunications industry, the UAE has the right to use a certain frequency, which has been reserved for many years. And it is the only solution for two or three companies worldwide.

"Even the slot that we have launched our satellite on has been reserved for almost 30 years. This was incredible forward thinking. It was the vision of our leaders."

The company has a portable solution on display, but the emphasis at BIAS is on fixed communications for aircraft.



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Alan Warnes
▼
Air Marshal Sammy Sampson, UK Defence Advisor to the Middle East and North Africa, spoke at MAPS about the needs and safety issues of direct energy weapons

Countering UAVs by laser – but it's no silver bullet

The RAF's Air Marshal Martin 'Sammy' Sampson, UK Defence Advisor to the Middle East and North Africa, spoke of the differing approaches needed to counter drones that have struck targets in the region and are now wreaking havoc in Ukraine.

At this week's Manama Air Power Symposium (MAPS), he said: "Swarming is a major concern, and we need to act very

quickly to detect, recognise, track and defeat them.

"Direct energy weapons (DEW) have a place in counter-UAS systems; there are definitely advantages with having such systems in a layered and integrated approach. However, they are not a silver bullet."

There are normally two counter-UAV solutions, he said. Laser, with multiple beams of light can destroy platforms or render them useless, and then the radio frequency option – operating in the electro-magnetic spectrum to break down and disrupt a drone's on-board systems, perhaps even stopping the engine.

"The DEW ranges can be huge and can also be very effective at short range. They don't need time to lock, they don't need to have wait time for a warhead to arm itself," he continued.

"However, there are some significant challenges that we need to address; we also need to design these systems to become part of our overall capability."

One big challenge is safety. Targeting unmanned air systems at range is highly advantageous but, in some scenarios, very complex airspace management is required to ensure the safety of other airspace users.

"Particularly when we look at airspace beyond the target set, which might be used by the military and other civilian uses, deconfliction in time and space will be increasingly important," said Sampson.

"There are ethical challenges, too, and some laser weapons are already considered unacceptable. DEW could even extend into populated areas, so we need to be very careful."



▼
Licenced to thrill! Show visitors have the chance to climb into the F-16 cockpit demonstrator with instructor pilot John Franklin

This simulator is a real stimulator...

Visitors to the Lockheed Martin stand will have the chance to experience the thrill of flying the new F-16 Block 70/Block 72.

F-16 cockpit demonstrator instructor pilot John Franklin is on hand to help ensure a safe flight. He said: "It is a great first step for pilots, or those continuing training."

Visitors climbing into the simulator cockpit have found the aircraft surprisingly easy to fly, and so far every budding (or experienced) pilot has managed to take off, fly a mission and land without mishap.

Franklin said: "It is all fly-by-wire, so little movements are all that is required. It is an excellent

and cost-effective way to conduct training missions without putting hours on the aircraft. By the time the pilot gets into the real F-16 he or she is more proficient and, therefore, safer.

"This is the latest version of the F-16, an excellent aircraft that will fly for many years," he added.



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Global Stars come out at night to add sparkle to show display

Usually when darkness falls over an air show site, exhibitors dash off to receptions and networking events – but not at Bahrain.

Instead, the skies over the Sakhir Airbase are lit up thanks to The Global Stars, the world's first four and then five-ship pyro formation team.

Led by experienced champion aerobatic pilot, Mark Jefferies, the team and their Extra 330SC aircraft perform at special events around the world.

Visitors at the last Bahrain show in 2018 were wowed by the British display team and organisers were keen to get them back.

After a two-year hiatus away from aerobatic flying, the Stars were keen to dust off their passports and logbooks and head for Bahrain.

The aircraft themselves were packed in containers and flown to Bahrain by DHL. When they arrived, each was assembled by its engineer and pilot.

According to Jefferies, it's not just a case of being current on paper, they'll need to feel

Star quality: After a two-year hiatus away from aerobatic flying, the Stars were on fine form - making sparks fly - quite literally...

current too after a 10-week break from their last UK show. So, since arriving at Sakhir, the team have practised their routine again and again.

Jefferies said The Extra 330SC is fitted with the Lycoming AE10-580 engine, specifically developed for high-performance aerobatic aircraft.

"The engine produces an impressive 320hp (580 cubic inches but only turning at 2,700rpm) which, when you consider there is no ground resistance, is quite incredible," he said. "Its maximum diving speed is 418 km/h and it has an incredibly fast roll rate of 420 degrees per second.

"If the weather conditions are right, the aircraft can be seen to hover and, in the right hands, it really does perform manoeuvres that should not be possible."



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