



Dubai Civil Aviation Authority president, Dubai Airports chairman, and Emirates Airline chairman and CEO Sheikh Ahmed bin Saeed Al Maktoum leads the royal tour on the opening day of MEBAA 2022.

DAVID MCINTOSH

# Gulf region buys into advanced air mobility

by Charles Alcock

Ambitious, future-obsessed Dubai is just the sort of place you might expect to be an early adopter of so-called advanced air mobility (AAM), including new hybrid- and all-electric eVTOL and eSTOL aircraft used for air taxi services, cargo deliveries, emergency medical support, and other public-service applications. After some early flight demonstrations a few years ago by eVTOL pioneers Volocopter and EHang, the trail appeared to

go cold, until June when helicopter and business jet operator Falcon Aviation announced plans to launch eVTOL air-taxi services from the luxury resort Atlantis the Palm in 2026.

Under a partnership with Eve Urban Air Mobility, the operator signed a letter of intent to buy 35 of the manufacturer's planned four-passenger eVTOL aircraft. Falcon believes its track record as a launch operator for several new helicopter types makes it well qualified

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DAVID MCINTOSH

Up to four of these Global 7500s will fit into Bombardier's new Abu Dhabi service center, which will be the company's first such facility in the United Arab Emirates.

# Bombardier building its first UAE service center

by Kerry Lynch

Bombardier (Static A19) held a ground-breaking ceremony for a service center at Abu Dhabi International Airport, marking its expansion into the United Arab Emirates, the Canadian business jet manufacturer announced on

opening day of the MEBAA Show.

To open in 2025, the nearly 100,000-sq-ft facility will serve as a key hub for Bombardier service activities in the Middle East and add more than 100 jobs. With capabilities to service the breadth of Bombardier's Learjet, Challenger, and Global families, the facility

will have capacity to fit up to four Global 7500s simultaneously.

In addition to the large hangar, the facility will include a parts depot and provide scheduled and unscheduled heavy maintenance, aircraft modifications, paint modification, aircraft-on-ground capabilities, and aircraft parking services.

"The Middle East is an important market for Bombardier with more than 150 aircraft, and we are pleased to be establishing a highly efficient facility in the UAE for our customers in the market—and for those visiting from around the world," said Bombardier president and CEO Éric Martel. "Abu Dhabi is a dynamic financial hub for business and commerce in the UAE, and this service facility will provide significant benefits, quick aircraft turnarounds, and OEM peace of mind to our growing customer base."

Jamal Salem Al Dhaheri, managing director and CEO of Abu Dhabi Airports, added, "The presence of Bombardier underlines Abu Dhabi Airport's commitment to general aviation and is a major step forward to make Abu Dhabi the hub for general aviation in the region."

While it is Bombardier's first MRO in the UAE, the Abu Dhabi service center is part of a multi-year global expansion of the company's service capabilities that is more than doubling its footprint by nearly one million sq ft. ■

## Celebrating 20 years, Emirates-CAE adding Global 6500 simulator

CAE (Stand 175) is adding a new Global 6500 full-flight simulator (FFS) at the Emirates-CAE Flight Training (ECFT) Al Garhoud center in May, the training specialist announced on the opening day of MEBAA 2022. The addition builds on the breadth of the center's business aviation reach as CAE and Emirates celebrate the 20th anniversary of their ECFT partnership in Dubai.

"ECFT's success is a testament to the strong partnership Emirates and CAE have developed over the past 20 years," said CAE civil aviation group president Nick Leontidis. "With the deployment of the new Global 6500 FFS, we are securing ECFT's reputation for delivering the most advanced business aviation training in the region."

The relationship between Emirates and CAE actually spans 30 years, when the international operator acquired its first simulator, an Airbus A310-300/A300-600R, from the Montreal-based training specialist in 1992. By the end of that decade, Emirates had acquired six more simulators, including a custom emergency evacuation trainer, as the airline was rapidly growing.

With that foundation for their relationship, Emirates and CAE formed a training partnership in 2002 to establish ECFT and opened a 12-bay

center the following year. This turned into a formal joint venture in 2006 with the center providing training to Emirates, as well as a growing number of airlines and business aviation operations in the region.

Since then, the joint venture has continued to expand as CAE and Emirates opened a second five-bay center in 2013. Today, the two centers house 19 simulators and train more than 12,000 pilots annually.

"Our consistent investment in infrastructure demonstrates our commitment to providing world-class aviation training in Dubai," said Steve Allen, executive v-p at Emirates Group. **K.L.**



Celebrating Emirates-CAE Flight Training's 20th year are (l-r): CAE's Camille Mariamo, Emirates training v-p Bader Al Marzooqi, ECFT MD Nimrod Meuleman, and Nick Leontidis, CAE group president.



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# Bizav panel adds focus to net-zero emissions targets

by Kerry Lynch

While progress continues to be made in sustainable aviation fuel (SAF) availability, carbon offsets are still the first and perhaps easiest means toward sustainability, said Trine Braathen, senior manager of sustainability-carbon markets for World Kinect Energy. But Braathen and other panelists speaking yesterday at a MEBA A Show panel on strategies for business aviation sustainability agree SAF is key toward meeting the industry's goals.

Braathen pointed out means for business aviation organizations to become more efficient but said the biggest step towards net-zero



L-R: Doug Carr, NBAA senior v-p; Alexandre Geahchan, Air bp Mena commercial, GA, and military account manager; Trine Braathen, World Kinect senior manager; and analyst Rolland Vincent.

is addressing fuel. That is what makes SAF so important, she said. But given its limited availability, organizations should look at other means, such as offsets, until SAF is more accessible.

Carbon offsets can help enable local organizations address their own footprints until SAF is readily available. Offsets further can provide an opportunity under which a financial system could be created for organizations to own and trade them, she maintained.

However, demand for offsets has spiked, pushing up prices. In early 2021, the cheapest offset projects cost less than one euro per

tonne. Later that year, the same projects were costing more than nine euros. New players had come into the market to buy up the offsets and sell them back into the market. She cautioned that organizations ensure they select projects by quality rather than quantity of availability.

Meanwhile, SAF is a growing element. Alexandre Geahchan—Air bp's MENA commercial, general, and military account aviation manager—emphasized, “Its chemistry is quite similar to the fossil jet fuel that it replaces. That's why it makes a promising solution.”

JetNet iQ managing director Rolland Vincent said regardless of the means, demand for sustainable options is there. Aircraft owners and operators are interested in good governance, he noted, and aircraft manufacturers have been nothing but interested in becoming more sustainable.

Vincent added that he believes regulators will push that along with incentives and taxes and noted these initiatives are already beginning. While there are several paths currently in the offing, he added, “We love our technology and we're going to get there with technology that we still don't even know about.”

Moderating the panel was NBAA senior v-p of safety, security, sustainability, and international ops Doug Carr. “It's difficult today for us to have a day go by where aviation and sustainability don't intersect in some way,” he said. “The entire aviation industry is under a lot of pressure right now from a variety of sectors...to decarbonize. But I believe the spotlight should not be something for us to fear. In fact, it's going to give us an opportunity to highlight all the great work that we are doing to lead the industry towards the goal...of net-zero carbon emissions by 2050.”

## IBAC's Edwards sets tone for MEBA A Show

International Business Aviation Council director general Kurt Edwards welcomed attendees to the MEBA A Show yesterday, expressing enthusiasm about the return of the three-day event after a four-year, Covid-induced hiatus and stressing that it was time for “setting the record straight.”

“It is so exciting to be back here after four years and I'm really glad to see this turnout. I'm glad to see the number of exhibitors here,” Edwards said kicking off the series of panel sessions MEBA A is hosting on the show floor.

The show is providing a forum for the industry to discuss challenges, opportunities business models, financing, regulations, and a range of other pressing issues, he said.

Edwards said one such key issue is

sustainability, adding, “[The industry has] been getting a lot of [negative] press in this area recently” and it's an issue “we are going to face one way or another.”

Business aviation needs to change the prevailing perception because it “has been striving for sustainability for years. We all want to be more fuel efficient. We all want to use less fuel. We all want to burn less fuel. We've been doing that now for decades. Our industry is very innovative.”

He pointed to innovations specific to business aviation, as well as efforts such as commitments to net-zero carbon emissions, and noted that the International Civil Aviation Organization largely adopted a roadmap led by industry. **K.L.**

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# Lufthansa Technik set for ACJ320 interior job

by Kerry Lynch

Lufthansa Technik landed a contract from an unnamed private customer to install a VIP interior on a new Airbus ACJ320neo. The German completions and MRO specialist anticipates that the ACJ will arrive at its facility in Hamburg in late 2023 with interior work to be completed in the first half of 2024.

Conceptualized by Lufthansa Technik in concert with the customer, the design is flexible so that it can accommodate an owner traveling with a family or a travel group charter with up to 19 passengers. This is reflected in the choice of luxurious but durable materials. At the same time, the cabin is designed within narrow weight limits to ensure that full range can be achieved with four auxiliary fuel tanks and Pratt & Whitney PW1100 geared turbofans, the company said.

Lufthansa Technik described the layout as linear but with privacy in mind—from an open



With seating for up to 19 passengers, the interior on a Lufthansa Technik customer's new Airbus ACJ320neo will feature a grand entrance, offices, and a master bedroom in the aft cabin. Other features will include a cabin humidification system, as well as in-flight entertainment and communications.

grand entrance behind the flight deck to lounge and office areas and an aft master bedroom.

Planned features include a cabin air humidification system and an in-flight entertainment and communications system that focuses on passengers' personal devices and only a few large screens. Lufthansa Technik said this will be similar to a smart home with the ability to transfer personal content to built-in displays at any time. Some of the displays will be retractable.

"With its flexible interior and a top-notch entertainment system, the aircraft will set completely new standards for narrowbody VIP

cabins," said Michael von Puttkamer, v-p of special aircraft services. "But what pleases me even more is that we were able to convince the customer not only with our design, engineering, and cabin completion expertise, but with a complete package of tailor-made services."

In addition to the interior installation, the contract calls for Lufthansa Technik to provide an aircraft production inspection program, continuing airworthiness management organization services, and aircraft maintenance and component support initially for five years after delivery. ■

## Tamarack Aero targets airliners for active winglet modification

Having successfully developed a market for its active-winglet technology for Cessna Citation business jets, Tamarack Aerospace is pursuing modification opportunities for other aircraft types, including Beech King Air 200 and 350 turboprops and single-aisle airliners. This week at MEBA 2022, Tamarack founder and CEO Nick Guida is meeting with airliner manufacturing organizations, air carriers, lessors, and maintenance companies to highlight the benefits of its SmartWing active winglets.

Tamarack's active winglets improve efficiency over traditional winglets by alleviating loads encountered during maneuvering and loads caused by gusts. In the CitationJet series, the SmartWing devices have demonstrated fuel savings of as much as 30 percent with consequent range improvements. In the A320 family (A318,

A319, A320, A321), Tamarack projects a fuel burn reduction of 10 to 15 percent, which is two to three times more than the improved efficiency of traditional winglets.

With the increased aspect ratio provided by the winglets, the modified airplane can climb to more efficient altitudes much faster, thus being able to burn less fuel earlier in the flight profile. The active winglets also improve takeoff and landing performance, especially in hot-and-high conditions, and moderate the effects of turbulence in cruise flight.

The improved efficiency makes the Tamarack winglets a useful tool in meeting sustainability targets, according to Guida.

The A320 winglet program "is really gelling," he said. "This market is huge," referring to the 7,400 in-service A320s. **M.T.**

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# Tupan's turbofan VTOL sidesteps battery limits

by Matt Thurber

Battery energy density is still a problem for designers who want to create electric aerial vehicles that can carry a decent payload for a useful distance, but the team at Tupan Aircraft believes it has come up with a reasonable solution. Tupan's family of high-speed, vertical take-off and landing (HSVTOL) drones combines electric propulsion with tiny jet-A fueled turbine engines to deliver speed, payload capacity, and redundancy in a compact and capable package.

Tupan is a new company founded by a group of Brazilian engineers with years of experience in propulsion system design, flight testing, aerodynamics, and autonomous flight. The company, based in Jacarei near São Paulo, is working with Turbomachine in São José dos Campos on development of the small turbine engines that are key to the design of the Tupan-1000, -2000, and -3000 vehicles.

Tupan CEO Alberto Pereira founded Turbomachine to develop a small stationary

turbogenerator for Petrobras then co-developed a 1 MW turbine engine then the TJ1000 turbojet engine for the Brazilian Army's MTC300 cruise missile.

Weighing just 16 kg (35 pounds), Tupan's turbofan engine will deliver 180 kg of thrust with a bypass ratio of 2.5:1. With low noise levels an important goal, the engine features an axial fan, centrifugal compressor, and two-stage turbine—all Fadic controlled.

The Tupan aircraft is configured with four turbine engines on short wings at each corner of a flattish fuselage. Each engine can rotate to vertical or horizontal positions. Jet-A is stored in tanks in the fuselage. The largest Tupan will be able to carry up to 600 kg and fly at 850 km/h (528 mph) and have a maximum range of 1,200 km (746 miles). "We're trying to overcome the challenges of high-speed VTOL flight," Pereira said.

The carbon-fiber fuselage also contains batteries for four electric motor/ducted fan propulsion units that provide vertical lift to supplement

the turbofan engines. The design will allow for a safe landing using electric power in case of failure of all four engines, according to Pereira. The benefit of having both types of powerplant is that the electric motors respond much faster than turbofans to power demands so the combination is more flexible for certain maneuvers.

In addition to battery power for the electric propulsion, the turbine engines will drive generators to keep the battery system topped up. Each engine can feed one motor and the batteries that serve it, but not all motors at once.

So far Tupan has flown an electrically powered radio-control model—the Tupan-RC 300—and is building a five-meter version. A mockup of the RC 300 is located at the Tupan exhibit (Stand 875). The RC 300 can carry a 2.5-kg payload at up to 150 km/h, while the Tupan-1000 will carry 140 kg; 280 kg for the Tupan-2000; and 600 kg for the Tupan-3000.

Although the Tupan aircraft is designed to carry cargo and for other unmanned applications—including firefighting, agricultural spraying, and military—the company plans on eventually developing passenger-carrying vehicles.

The design is somewhat modular, in that the turbofan engines could be swapped with electric propulsors for applications where the turbine engines aren't needed. An example of this might be for agricultural spraying, where short-distance, heavy-payload flights are the norm. ■

## Charter operator Alpha Star selects UAS as preferred partner

Saudi government and VIP private charter operator Alpha Star has selected global trip support solutions provider UAS International Trip Support (UAS; Stand 125) as a preferred partner

"Under the strategy partnership, UAS will ensure Alpha Star receives priority international trip planning, handling, and pricing at all global destinations and take care of its fleet of 19 aircraft," UAS said. According to Alpha Star's website, its fleet includes Airbus, Gulfstream, Hawker, and ATR models.

Based in Riyadh, Alpha Star operates domestic and international scheduled and charter services, as well as turnkey solutions in aircraft management, air ambulance, and airport management.

"Alpha Star's attention to detail, commitment to quality, and unrivaled optimization match our own," said UAS co-owner, co-founder, and CEO Omar Hosari. "We are delighted to be working with them and this will undoubtedly be beneficial for both our organizations."

"It is a proud moment for Alpha Star to collaborate with UAS, a regional business partner in the Middle East. This will enable us to perfect our flight planning with peace of mind that we can solicit

industry-trusted support services through UAS to carry out our operations to sustain our VIP customers' satisfaction and trust," said Alpha Star CEO Abdunnasser Alkheraif. **P.S.-S.**



L-R: Alpha Star CEO Abdunnasser Alkheraif and UAS CEO Omar Hosari.

DAVID MCINTOSH





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# Cryptocurrency comes to the charter market

by James Wynbrandt

Its reputation may be tarnished in the financial and investment worlds, but cryptocurrency remains well-suited for charter transactions, according to a legion of boosters, as the digital coins' quick, low-fee transfers and blockchain traceability make it ideal for such payments.

Many of these advocates note that despite charter's "ready when you are" ethos, airplanes don't move until operators get paid. And crypto transactions can be the best solution for transferring tens or hundreds of thousands of dollars after banking hours or avoiding high bank transfer or credit card fees.

The demand is reportedly driven by a younger, crypto-savvy clientele and facilitated by payment processors that support the transactions.

"A growing number of individuals are holding cryptocurrencies and are willing to spend it, and they are ignored by many [charter] companies," said Simona Moosar, business development manager at Ecommpay (Stand 376), a European e-payment processor that handles such payments for some two dozen charter firms among its clients. The biggest advantage for providers accepting crypto payments for charter, according to Moosar: "You can actually attract a completely new clientele."

Recent data indicates between 23.3 million and 27 million Americans own Bitcoin, the first and still dominant cryptocurrency, but data on the extent of its and other cryptocurrencies' use for charter payments is sparse. This is because payment processors don't make the information public, while some providers cite only rough uptake percentages. But growth reportedly continues, despite this spring's dramatic collapse of cryptocurrency values.

"We are aware of the skepticism toward buying crypto," said Mauro De Rosa, CEO of Italy's Fast Private Jet, which claims the currency accounts for 30 percent of its business. "But paying with crypto is another story."

At the time of the currency crash, Eymeric Segard, CEO of Switzerland's crypto-friendly



LunaJets, wrote in the company's EBACE newsletter, "The crypto wealth effect may disappear as fast as it stormed our industry." But his doubts have since subsided: "We have seen no effect on CRY[coin]-paid charter following the recent loss of value of CRY," Segard recently told *AIN*. Some of his customers, he noted, "could still be making a profit when spending [cryptocurrency]."

Crypto transactions first came to air charter in 2014, five years after the digital currency's introduction. That's when UK-based retail booking platform PrivateFly, now part of Directional Aviation's OneSky portfolio, enabled charter payments in Bitcoin.

Fee-wise, cryptocurrency transfers typically cost about 1 percent of the amount transferred versus credit card fees that can range from about 3 to 6 percent. Bank wire transfer fees vary, and transfers can take several hours or business days when sent internationally.

As for transacting with a currency subject to dramatic volatility, customers can typically transfer and send the requisite amount of cryptocurrency from their digital wallets in 20 to 30 minutes. Processors say it arrives in the fiat currency dictated by the charter contract, eliminating any devaluation risk to the providers.

Meanwhile, the long-term appetite for crypto charter payments remains unclear. At LunaJets, the payments currently "account for less than 10 percent of our revenue, but [they're] growing every quarter," said Segard. Conversely, while first adopter PrivateFly previously reported crypto transactions accounted for up to 20 percent of bookings, "payments made in this way currently account for less than 10 percent of transactions," PrivateFly European managing director Marine Eugène told *AIN*. ■

## CAE opens new Gulfstream flight simulator training locations in U.S. and Singapore

CAE (Stand 175) is ramping up its Gulfstream training in facilities at Las Vegas; Savannah, Georgia; and Singapore.

CAE Las Vegas began training G650 customers in a full-flight simulator (FFS) on October 14. Other training operations ramping up in Las Vegas include FFS training in the G550 followed by the Bombardier Global 7500, Embraer ERJ-145, and Phenom 300 by year-end and a Gulfstream IV by spring 2023.

Maintenance training for the Gulfstream G650, G600, and G500 has begun at Savannah Technical College facilities, while construction continues on the new CAE Savannah campus. CAE Savannah will open for training in mid-2023 and feature



four FFSs, including those for the G280.

Meanwhile, a G650 FFS will begin hosting students at CAE Singapore in November.

CAE employs more than 13,000 in 200 sites across 40 countries, training pilots, technicians, defense and security forces, and healthcare workers. **M.H.**





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# Krimson Aviation plans new FBO in Northern Africa

by Peter Shaw-Smith

Ethiopian trip support firm Krimson Aviation plans to set up an FBO, likely in East Africa, as it completes an investment round before the end of the year. The company intends to break ground on this new facility in January.

“It won’t be in Ethiopia,” Krimson founder and CEO Dawit Lemma told AIN. “We’re signing documents, and we’re investing. It takes six months to a year to build. In January, we’re hoping to finish the process of identifying a location, going ahead, and then starting the regulatory procedures.”

Ethiopia’s civil war has dragged on for two years, although hopes rose with the November 2 signing of a truce between the two sides in Pretoria, South Africa. “I’d have to say that the last year has been a rollercoaster, a hurricane, and a tornado, all in one,” he said. “Good and bad, but progression, too.”

And the emergence of the Ukraine crisis hot on the heels of Covid was causing huge issues. “Inflation is a major problem,” he said. “Fuel prices are a major problem. Interestingly enough, airplanes are still flying, but we definitely saw a dip in requests from April. Of course, in the natural summer months, there’s always a dip. As of September, we’re back to full speed ahead in terms of number of operations.”

“To be perfectly honest, for us, for our business, conflict—and I hate to say this—generates business for Krimson. It increases the number of military operations—military flights, a lot of military cargo flights, delivery of goods—the humanitarian situation drives the scope of humanitarian operations.”

Meanwhile, Lemma said business aviation was changing in Africa as the continent shook off the Covid pandemic. “It’s actually doing well,” he said. “Africa is resilient. We just keep getting hit with one crisis after another and we just take it, to be honest.”

He regards the business today as a pan-African, rather than simply Ethiopian, concern. “We’re definitely pan-African,” he said. “We have crossed a threshold where we actually have an equal number of operations outside of Ethiopia, compared to inside the country.”

He said the company’s focus today is the Horn of Africa. “We do get ad hoc requests for random countries like Gabon or Liberia,” he said. “Our core market is the Horn of Africa.”

Krimson’s competencies and market strength lie in Eritrea, Ethiopia, Somalia, Djibouti, South Sudan, and part of Sudan. It also has agents on the ground in Mogadishu, Hargeisa, Juba, and Asmara. “There’s just a lot of growth happening,” he said. “Regardless of the conflict in Ethiopia, this region of Africa is probably the least developed compared to other areas. Development is exponential.” ■



Krimson Aviation CEO Dawit Lemma is preparing for business aviation growth opportunities in East Africa, including plans for a new FBO.

## IBAC makes governing board appointments

The International Business Aviation Council (IBAC) has confirmed the latest appointments to its governing board of executive directors during a recent board meeting in Orlando, Florida. Ali Alnaqbi, founder and chairman of the Middle East and North Africa Business Aviation Association, will serve as chairman of the IBAC governing board for a second term; Juergen Wiese,

chairman of the European Business Aviation Association, will serve for a second term as vice chairman; and Cynthia De Oliveira, managing operations director at Lider Aviação and member of the Brazilian Association of General Aviation, will assume the role as treasurer from Sudhir Nayak of the Business Aircraft Operators Association of India.

“We continue IBAC governance with board executives that represent the global business aviation industry,” said IBAC director general Kurt Edwards. “I appreciate Ali Alnaqbi and Juergen Wiese for continuing their leadership roles on the governing board. Many thanks to Sudhir Nayak for his contributions over the last several years and his dedication to business aviation. IBAC welcomes Cynthia De Oliveira as the incoming treasurer and looks forward to working with her and the entire board over the next three-year term to meet the needs of a vibrant and growing industry.”

IBAC was established in 1981 and serves as an international voice for the business aviation community. Its governing board includes representatives from each of its 15 member associations across the globe. **K.W**



The International Business Aviation Council appointed MEBAA founder and chairman Ali Alnaqbi to its governing board of executive directors for a second term.





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# JSSI sees growing bizjet market in Middle East

by Peter Shaw-Smith

Jet Support Services Inc. (JSSI, Stand 250) believes the Middle East is an important region and a growing market as it supports increased demand for aircraft ownership and charter, officials in the region told AIN.

“This regional growth [mirrors] what we’re seeing globally, as the business aviation industry benefits from waves of first-time users and buyers,” said Pascale Barhouch, the company’s director of business development for the Middle East. “We saw this trend emerge during Covid-19 and the phenomenon has continued, spurred on by the ongoing struggles of commercial aviation. We anticipate this growth will continue into 2023.”



Pascale Barhouch, Middle East director of business development

JSSI’s OEM-agnostic business model is the same worldwide, with dedicated local support in each region. “Across our products and services, we support approximately 20 percent of the global business aviation fleet, have visibility into more than 5,000 aircraft on JSSI programs and software, and oversee in excess of 10,000 maintenance events annually,” she said.

“This means that, regardless of aircraft type or operation size, we can bring customers an unmatched combination of objective information, dedicated maintenance support, and technical experience, combined with a neutral vantage point and global scale that others simply can’t match,” according to Barhouch.

## Full Suite

From maintenance programs to maintenance software and independent technical advice, JSSI offers a full suite of products and services to drive cost savings and provide impartial and transparent handling of business aircraft maintenance events.

“As an all-OEM aircraft parts provider, we are also able to support customers with strategically located parts across virtually all makes and models of business aircraft. It means

customers are increasingly seeing JSSI as their maintenance partner, not just another third-party supplier,” she said.

The MRO build-out at Dubai Al Maktoum International Airport (OMDW), particularly in the former Aviation District now known as the Mohammed bin Rashid Aerospace Hub

(MBRAH), is gaining momentum, according to Fabrice Roger, JSSI’s senior v-p of business development for Europe, Middle East, Africa, and Asia-Pacific. “There is no doubt that there is a need to enhance maintenance infrastructure in the UAE. And with Dubai’s central location, the developments at the MBRAH are clearly positive for business aviation,” he said.

“As more aircraft enter the region, it is inevitable that the demand for MRO services will also increase accordingly. JSSI is well positioned to help those MRO businesses grow not only through the maintenance requirements of our customers, but also with maintenance software to provide full visibility into their operation and help them build more efficient businesses,” Roger noted.

Today, JSSI claims to work with the widest MRO network in the industry to ensure availability on behalf of customers. He said it will continue to proactively work with these new MROs as it anticipates market trends and supply-chain constraints to help its customers keep a step ahead of competitors.

While concurring that Saudi Arabia has recently experienced a lull in business aviation flying, Roger said JSSI still found plenty of activity in the kingdom. “Despite a slowdown in business aviation flying in Saudi Arabia, we are still seeing requests for maintenance support and our customers are still seeing high levels of demand,” he said.

As to the prevalence of new versus

preowned aircraft in the Middle East market today, and the implications for engine management, Roger said new-production aircraft remained a strong feature of the market.

With new deliveries continuing in the Middle East, predominantly from pre-existing orders, he has not noticed a slowdown in this aircraft market. However, a significant increase in demand for the limited inventory of preowned aircraft has been observed in the region, aligning with wider global trends.

## Growing Demand

“As the regional fleet grows, demand for managing any type of maintenance event and sourcing the required materials will also increase. With visibility into maintenance requirements through our maintenance software, we can work with customers on planning these events in advance, alleviating the last-minute scramble for scheduled events,” he said.

“Ongoing supply chain constraints mean aircraft owners will need an independent advocate working on their behalf now more than ever to minimize downtime, improve turn times, and maximize value and efficiency throughout each maintenance event,” Roger noted. “We are in the process of adding another strategically located technical advisor in Dubai to ensure our customers in the region get the support when and where they need it.”



Fabrice Roger, svp business development EMEA and Asia-Pacific

Roger said current infrastructure in the region was unlikely to grow at the pace required to meet the trajectory of aircraft coming into the Middle East. With major global events such as the now-underway 2022 FIFA World Cup in Qatar, the region will see a rapid rise in business aviation traffic, requiring a strong presence of maintenance support to sustain it.

“This makes JSSI an increasingly vital partner to customers operating in the Middle East,” he said.

“Our customers can not only benefit from JSSI’s scale, but also from our industry knowledge, anticipation of market trends, and enhanced MRO availability. We will continue to work across product and industry siloes to ensure our customers are always empowered to make informed decisions and perform maintenance on their terms,” Roger concluded. ■





A cabin mockup of Supernal's planned five-seat eVTOL aircraft.

# Supernal eVTOL to feature Honeywell Anthem avionics

by Charles Alcock

Honeywell will provide its Anthem integrated avionics suite for Supernal's five-seat eVTOL. On October 17, the advanced air mobility division of Korean car maker Hyundai confirmed it will use the always-on cloud-based avionics suite that Honeywell introduced in 2021 as a versatile platform that can be adapted for multiple aircraft types.

Supernal expects the Anthem system to deliver the connectivity it needs to integrate an array of complex technology it will be using for the SA-1 eVTOL vehicle that it wants to get into commercial service in 2028. Anthem will also underpin the company's efforts to achieve high degrees of autonomy in the way the aircraft is operated.

The SA-1 is the third application for the Anthem suite, which has already been selected by rival eVTOL aircraft developers Lilium and Vertical Aerospace. Honeywell said the system can be readily adapted to support a wide variety of business aircraft and airliners.

Anthem will allow pilots to share data via the internet and also to access software while online inflight. Before departure, pilots can plan flights and configure the avionics suite offline by accessing the Honeywell Forge platform on any smart device. A secure server stores information about the aircraft, and the flight crew can access this remotely.

In the future, the Anthem system will

enable so-called simplified vehicle operations that will reduce the level of experience required for eVTOL aircraft pilots. Honeywell (Stand 951) said this transition will be a first step toward fully autonomous operations in which eVTOL operators would manage their aircraft remotely.

"Supernal is leveraging synergies between [the] automotive [industry's] high-rate manufacturing capabilities and aerospace's high certification standards to build the foundation for everyday air vehicle transportation," said Jaiwon Shin, CEO of Supernal and president of Hyundai Motor Group. "We are pleased to work with aerospace leader Honeywell to mature advanced air mobility avionics systems and certify our eVTOL aircraft to the highest commercial aviation safety standards."

Last year, Honeywell set up its new Urban Air Mobility and Unmanned Aerial Systems business unit to focus on the needs of new aircraft developers. Stéphane Fymat, the new division's v-p and general manager, said Anthem will "change the way aircraft are piloted."

The company said it expects to start the FAA's type certification process for the SA-1 in 2024. And earlier this year, it announced plans to introduce a hydrogen-powered eSTOL aircraft.

Initially, the SA-1 will be flown by a pilot and will seat four passengers, although the company plans to eventually switch over to autonomous flights with a six-passenger version of the vehicle. It will be designed to cruise at up to 180 mph and an altitude of 1,000 to 2,000 feet, with a range of about 60 miles on a single charge, with a recharge expected to take no more than five to seven minutes. ■

## Honeywell's TFE731 turbofan engine turns 50

Honeywell Aerospace (Stand 951) is marking a major milestone with its first purpose-built business jet engine, the TFE731, which turned 50 years old this year. The turbofan engine, 13,000 of which have been produced to date, continues to power jet types such as the Dassault Falcon 900, Bombardier Learjet 70/75, and Gulfstream G150.

According to Honeywell, 9,400 of the engines remain in service today and in total have accumulated 108 million flight hours. The engine was designed to meet the specific needs of business jets while other engines from the era were adapted from existing military jet engines. Honeywell predecessor Garrett (and later AlliedSignal) developed the TFE731 in the late 1960s to provide the nascent business jet market

with an engine that would fly coast-to-coast without refueling and that was reliable. The engine also led to the development of Honeywell's HTF7000 family that powers some current-production super-midsize jets.

Besides being the company's first turbofan, the TFE731 also was the first geared turbofan engine with a dual-spool design to improve fuel efficiency and range. Dassault and Learjet were the engine's launch customers, later to be followed by other OEMs such as Cessna, Lockheed, Israel Aerospace Industries, and Raytheon Aircraft/Hawker Beechcraft. Later adopted in military training aircraft such as the CASA 101 and AIDC AT-3, the TFE731 has received 34 type certifications and was produced in 80 configurations. **J.S.**

# Jetcraft: used market to normalize after 2021

by Kerry Lynch

Aircraft broker Jetcraft is predicting that preowned business jet transactions will dip slightly this year and then rise at a 3.6 percent compound annual rate until year-end 2026, according to its latest Five-Year Pre-Owned Business Jet Market Forecast, released in September.

“This year’s report predicts that, after stabilizing in the wake of a post-Covid surge, preowned transactions should maintain their new higher base and growth rates, reaching 10,921 transactions valued at \$66.6 [billion] over the forecast period,” said Jetcraft CEO Chad Anderson.

Last year’s preowned jet transactions reached a record value of \$14.5 billion, a nearly 40 percent increase from 2020, primarily driven by midsize and large-cabin jet purchases, the company said. Despite an equally strong performance earlier this year, Jetcraft expects the market to soften,

with normal depreciation levels resuming in 2023.

Jahid Fazal-Karim, owner and chairman of Jetcraft, said in the report that the market has not yet returned to pre-pandemic norms and the industry is still “in an opportunistic position.” However, it is trending more toward “normality,” Fazal-Karim added.

“When compared to 2020, it might feel as though prices are rising at an unstable rate,” he said. “Our data, however, indicates this is a rational market, with value

growth expected to return to pre-pandemic levels.”

Unlike the time between 2004 and 2007 when the preowned market experienced 50 percent average price increases, the current period has pricing that reflects short-term world events and remains “far more rational” with average prices returning to pre-pandemic levels, according to Jetcraft.

North America has led growth in demand for preowned aircraft, with its market share growing

**“This year’s report predicts that, after stabilizing in the wake of a post-Covid surge, preowned transactions should maintain their new higher base and growth rates.”**

*Jetcraft CEO Chad Anderson*

from 53 percent in 2010 to 73 percent in 2021. Even so, Jetcraft identified international growth areas in the report, noting that the ultra-high-net-worth population in Asia-Pacific—a region that prefers large-cabin jets—is set to increase 33 percent over the next five years.

The study reports that the share of preowned jet buyers under age 45 has risen 20 percent since 2017 and notes that the younger age group is trending toward larger aircraft with an average transaction price of \$25 million. This is 31 percent more than the over-45 demographic.

“Shifts in buyer behavior continue to fuel this upward trajectory with more and younger first-time buyers entering the market, greater demand for larger jets, and a growing ultra-high-net-worth population. And we’re now entering a post-pandemic business cycle from a new, higher starting point,” Fazal-Karim added.

By model segment, preowned transactions for large aircraft are expected to dip from 419 aircraft in 2021 to 368 this year. However, they will grow steadily each year thereafter, exceeding 2021 levels by 2024, and reaching 483 by 2026.

Midsize aircraft transactions will experience a similar year-over-year slide, from 573 in 2021 to 507 this year, but grow at a slower rate, exceeding 2021 levels in 2026. Light aircraft, however, are forecast for the biggest drop from 1,427 preowned transactions last year to 1,119 this year. They are not expected to return to 2021 levels over the forecast period, ebbing upward to 1,240 by 2026.

Market value is projected to have peaked in 2021, dipping to \$13.7 billion this year and then \$13 billion next year. Growth in pricing is anticipated to be uneven and slower after that, but not to return to 2021 levels before 2027. ■



DAVID MCINTOSH

Jetcraft’s latest forecast calls for 10,921 business jet transactions worth \$66.6 billion from 2022 to year-end 2026. These higher values will be driven by midsize and large-cabin jets, aircraft like this Gulfstream G280.



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A VIP airliner refurbishment is the result of careful timing and coordination of all elements of the project, a process that Citadel Completions calls “dynamic project management.”

# Citadel gears up to meet ‘hot’ refurb, MRO demand

by James Wynbrandt

With an influx of first-time buyers and demand for upgrade projects from current owners, the market for VIP airliner refurbishment and MRO services “is hot right now, and we don’t see that tapering off anytime soon,” said Noel Christen, v-p of operations at Citadel Completions (Chalet A10) of Lake Charles, Louisiana.

“You’re seeing lots of new aircraft owners, especially in the narrowbody market, buying up the BBJs and ACJ319s,” he said. “I have three aircraft we’re doing large-scale refurbishments on right now that are for first-time owners.”

This week at MEBA 2022, Citadel is presenting examples of its work and capabilities in a multimedia display environment hosted by key executives at its chalet. “We are showcasing our talents and accentuating the incredible team that we have for putting together aircraft completions and refurbishments,” said Christen.

The chalet has two private conference rooms for meetings and presentations, and

visitors can also take iPad-based “tours” of interiors and don Oculus 3D goggles for virtual cabin walkthroughs. Its virtual demos are complemented by actual fine interior items on display. And, as marketing director Michelle Savoy noted, “It’s a nice space for people to come in from the sun, relax, and have some refreshments.”

Additional Citadel team members at the show this week include the company’s new UAE-based business development director Vanessa Roberts, whose 30 years of experience



The capabilities of Citadel Completions’s talented carpenters are on prominent display in this elegant four-place table.

in the region include positions with Presidential Flight Group and Royal Jet Group; director of MRO sales Paul Kosik; and director of IT Taylor Simpson.

Founded in 2017, Citadel is something of a newcomer to the VIP completions arena. However, the predecessor facility had long experience in aftermarket work on transport category aircraft, while the lineage of Citadel’s ownership—the Adelson and Dumont families—have long ties to the Middle East. Citadel made its aviation world debut at MEBA 2018 and exhibited at last year’s Dubai Air Show.

Based at Chennault International Airport, which has a 10,700-foot primary runway, Citadel has more than 260,000 sq ft (24,150 sq m) of hangar space, which has been busy over the past year.

“From a topline perspective, this year we did double what we did last year, and we expect even greater growth going into 2023,” Christen said. “We’ve had about 49 projects to date, a good mix of refurbishments and MRO.”

Indications are that the projects included the recent refurbishment of former U.S. President Donald Trump’s Boeing 757. The project made news as it was viewed as a portent of potential campaign activity; reports cited the aircraft’s return-to-service test flights around Lake Charles, Louisiana—home of Citadel Completions—in the third quarter. Queried about the reports, Christen said the project was “tremendously successful,” but when asked to verify that Citadel had performed the work on the Trump aircraft, he said, “I cannot confirm nor deny” the company’s involvement.

For all projects, he said, Citadel applies what it calls “dynamic project management.”

“Quality is our mainstay, and that starts at the onset with project management,” he said, involving timing and coordination of all aspects of the work, “Ensuring that every single thing we do is done with meticulous attention to detail, and everything is accountable.”

Clients are kept closely in the loop throughout the process, able to share project milestones remotely through interactive technology.

Citadel has no green completion projects in its hangar or under its belt to date, but Christen noted the company is a Boeing-authorized completion center for the 777, as well as an authorized Boeing service center, and it was recently named an Airbus authorized service Center and plans to seek Airbus authorized completion center approval. ■

# Bizav movements climb at SEA Prime's Italy FBOs

by Peter Shaw-Smith

Milan, Italy-based SEA Prime's FBO facilities at Linate and Malpensa airports saw a 42 percent year-over-year increase in business aircraft movements in the first eight months. This also represents 154 and 29 percent increases from the same periods in 2020 and 2019, respectively.

"Last year, we saw more than 27,000 movements at the two airports combined and we expect to reach over 30,000 movements this year," said SEA Prime CEO Chiara Dorigotti. The company operates these airports under its Milano Prime brand.

"January to August is looking extremely good and [we saw] a good September because of all the events happening in Milan," Dorigotti said. "At the Formula 1 Grand Prix on September 9 to 12, reported increases in the number of race spectators over the weekend—336,000, compared with 200,000 in record-year 2019—were accompanied by an increase in movements managed by SEA Prime of 54 percent compared with 2019, while 75 percent of managed air traffic was international."

Dorigotti also expressed pleasure with the turnout at EBACE 2022. "It was well attended," she commented. "We were happy to meet in person as we did in the U.S. in April at the NBAA Schedulers and Dispatchers event in San Diego. This was our first business aviation-related event in some time. In fact, we were also in Dubai in November 2021 for the airshow, which attracted a lot of business aviation exhibitors."

Milano Prime (Stand 432) claims to be an important gateway to



Sea Prime's Hangar at Linate Airport in Milan, Italy.

international and sporting events in Milan, which include soccer's Champions and Nations Leagues and basketball's EuroLeague.

"Even though fuel prices and economic and political uncertainties may have a potential impact, we expect to close this year with solid double-digit growth," Dorigotti said. "We are looking very carefully at higher fuel prices and war-related uncertainty. In terms of traffic trends, in 2021 we have seen a slight change, in the sense that, versus last year, we have had more international and less domestic traffic."

"We've been seeing more intercontinental traffic," she continued. "Flights from and to North America are up 200 percent versus last year."

## Personnel Shortages

Regarding airport operations, a shortage of personnel has impacted business in general in Italy. Regulations on employee subsidies meant people were, for the most part, not actually laid off but frozen in furlough schemes. However, handlers have managed to get their personnel back.

"As a result, we have not seen

meaningful operational challenges," Dorigotti remarked. "We can manage traffic well, and fuel is available. The fact that business has recovered has not impacted numbers, but it's impacted the mix. Domestic flights have decreased because more people are traveling abroad due to easing restrictions on international travel."

SEA Prime's growth remains higher than Europe's, overall. Citing WingX data, Dorigotti said Europe had been growing at 18 percent this year through July. "In comparison, we have been growing at 35 percent," she noted. "Milan is still the key business aviation airport for traffic in Italy today. In July, Italy was Europe's third-largest market. Inland represents a significant share. Of course, in August, we saw a lot of traffic in holiday locations, like the islands or the south."

Linate has higher traffic volumes; Malpensa Prime has fewer flights, but bigger aircraft sizes. Malpensa is more of an inbound airport, typically for traffic from North America and the Middle East, being close to Lake Como and Lake Maggiore.

"We also see bigger aircraft around Malpensa Prime because

they have two runways that can accommodate BBJs and ACJs," Dorigotti said. "When we designed it, we targeted a different type of traffic. It's also close to Switzerland and Lugano [Italy] and to a number of winter sports destinations in northern Italy. In Malpensa Prime, we also host a number of flights, particularly for sports teams, and music bands."

The sole FBO operator in Milan, SEA Prime's ownership is a public-private mix. It is held 100 percent by the commercial airport manager at Linate and Malpensa, SEA, the second-largest commercial aviation operator in Italy. In turn, SEA is 51 percent owned by the municipality of Milan, with the balance being held by two private equity funds.

Immediate expansion plans put infrastructure at the focus of development. SEA Prime (Stand 432) runs 10 hangars in Linate Prime and a large one at Malpensa Prime. It is adding an 11th at Linate, a maintenance hangar consolidating and expanding the Bombardier authorized service facility managed by Directional Aviation Group's Sirio.

Longer term, Dorigotti said, operators required a concession from the government to be eligible to be airport managers in Italy. Its indirect shareholder owns other Italian airports, including Naples, Olbia, and Turin. "In my view, it could be interesting to develop a network of business aviation airport managers exploiting commercial and operational synergies," she said.

"There is definitely organic growth potential where we are, in Milan, our focus today," Dorigotti concluded. "However, if new opportunities materialize, and if tenders are issued, we will look at them. Our shareholders will ultimately decide growth strategy and capital allocation but we will be potentially active if opportunities arise in Italy and, potentially, abroad." ■



# Honeywell sees strong growth ahead for bizav

by Curt Epstein

Business jet operators in the Middle East and Africa plan to replace 4 percent of the installed fleet over the next five years according to the recently-released results from Honeywell Aerospace's 31st annual Global Business Aviation Outlook. Based on the result of its yearly survey of worldwide operators combined with the company's market analysis, Honeywell predicts the business aviation market could see as many as 8,500 new jet deliveries worth \$274 billion over the next decade. It also calls for 700 business jet deliveries this year, and a 17 percent increase next year, along with a 20 percent boost over 2022 billings.

According to the results of this year's survey and airframer backlogs, that increasing trend will continue through the next decade. "I would say the most surprising thing was the 15 percent jump

in the 10-year forecast, not just in terms of units, but also in terms of expenditures," said Javier Jimenez Serrano, strategy and market research manager at Honeywell Aerospace (Stand 951). Each year the company surveys a pool of respondents that is representative of the world fleet in terms of where they operate and what type of aircraft, what size category, and also what type of operator, whether it is charter or VIP/corporate.

New jet deliveries and expenditures are projected to grow at a 2 percent annual average rate, keeping pace with worldwide economic growth. The forecast extrapolates direct results from the annual survey of operators chosen from the global pool based on market segment, geographic area, and type of aircraft used for the first half of the 10-year forecast window, and then distills econometric data for the remaining five years.

Operator five-year purchase plans are up by three percentage points compared with last year's survey results, reaching pre-Covid 2019 levels and equaling a 17 percent replacement of the current fleet. "Demand for new business jets is as high as we've seen since 2015, and we expect high levels of demand and expenditures for new aircraft for several more years," said Heath Patrick, president of Honeywell Aerospace's Americas aftermarket division.

Based on the results of the survey, operators are expressing strong optimism in 2022, with an overwhelming 96 percent believing they will fly as much or more next year. "The business aviation industry is greatly benefitting from a wave of first-time users and buyers due in part to changing habits brought on by the Covid-19 pandemic," explained Patrick. "The business aviation sector is expected to recover to 2019 delivery and expenditure levels by 2023, which is much sooner than previously expected."

Those first-time users helped buoy the industry at times this year to flight utilization rates not seen since 2007, the high water mark for business aviation. In response to industry concerns about whether those

new customers will remain, 74 percent of new users surveyed said they expect to keep the same level of flying in 2023 as they did in 2022.

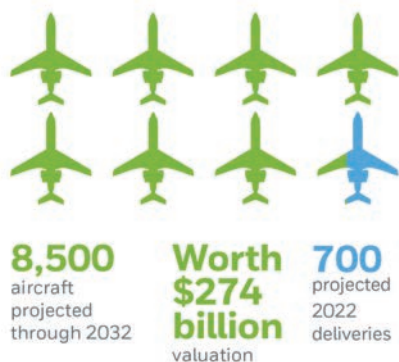
Over the next five years, Honeywell expects the large and long-range jet categories will account for 70 percent of all new jet expenditures and will total 38 percent of all unit purchases, compared with 26 percent for the medium cabin and 36 percent for the light jet categories.

"That is driven by the clean sheet new offerings entering service there: the [Gulfstream] G700 and G800, [Dassault] Falcon 10x, and the recently announced [Bombardier] Global 8000," Serrano told AIN. "We also see growth in the large-cabin category that is currently where the Challenger 650 and Falcon 2000 are. It's an area that has been neglected frankly, those designs are from the 1990s. We saw that area of the market starting to grow with the G400, but we expect that there will be more clean sheet refreshes in that area, and the market will support them."

Among its survey questions, Honeywell also queried respondents about their sustainability efforts, with half indicating they are implementing at least one method to reduce their carbon footprint, a rate 30 percent higher than last year. Among the methods cited, the use of sustainable aviation fuel (SAF) ranked third behind "fewer or slower private jet trips," and "increasing passenger capacity," with many operators noting challenges in SAF availability. Yet, 37 percent of respondents say they believe SAF will be the most common way for them to operate in a more environmentally friendly manner in the future.

Based on the results of this year's survey, more than 60 percent of operators plan to either adopt or increase their sustainability efforts. ■

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Honeywell's 31st Global Business Aviation Outlook projects significant growth in the valuation and deliveries of long-range, large-cabin business jets over the next decade.



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## PILOT REPORT

# Flying Dassault's Falcon 6X

by Matt Thurber

Flight test activity on the Falcon 6X fleet has reached the stage where it's now a matter of proving the jet's reliability and assuring the cabin features meet the demanding requirements of a \$57 million jet.

In the meantime, the 6X has matured to the point where Dassault invited *AIN* to sample its flying qualities and performance ahead of certification and entry into service early next year. Per the usual process, I traveled to Dassault's Istres Flight Test Center near Marseille, France, to fly the 6X.

The first step was a briefing with test pilots Bruno Ferry and Tom Valette, and flight test engineer Flora Corsia at Istres. We would be flying the first 6X, serial number 1, the same airplane which Ferry and Valette flew on March 10, 2021, marking the beginning of the 6X flight test program. As the original prototype, this 6X is not equipped with a production interior and carries a cabin full of test equipment including water tanks used to quickly adjust weight and balance.

In preparation for that first flight, Ferry, Valette, and other Dassault test pilots spent time learning about the new jet's

systems and operating characteristics in the systems integration test station (SITS) simulator, which is located at Istres. This also was my introduction to the 6X. The SITS doesn't exactly replicate the 6X as it isn't a full-motion simulator and it doesn't have flight control actuators, which the bench test facility at Dassault's headquarters in Paris does. But the SITS does duplicate the 6X's systems and avionics, which is now the EASy IV suite based on Honeywell Primus Epic avionics.

Each new Falcon jet improves upon the last, and the 6X is no exception. Now the largest Falcon with the widest and tallest cabin of any purpose-built business jet, the 6X incorporates unique design features that should appeal to owner and pilot alike.

Originally launched as the 5X, the 6X came about after the 5X

was canceled because of insurmountable problems during the development of the 5X's Safran Silvercrest engine. A fuselage stretch matched the airframe to larger engines—Pratt & Whitney PW812Ds—and the result was serendipitous, a longer-range, wide- and large-cabin jet that probably was a better fit for the market shift toward ultra-long-range and large-cabin business jets.

With years of experience designing and manufacturing digital flight control systems in-house, Dassault engineers have maximum flexibility when it comes to expanding its franchise in the large-cabin market. Dassault's fighter jets were its first aircraft to feature fly-by-wire flight controls, then the Falcon 7X business jet was so equipped, entering service in 2007. The 7X

and 8X proved that it is possible to make large Falcon business jets with the pleasant handling characteristics of their conventionally controlled predecessors. The 6X continues that philosophy, but with full digital control of all flight control surfaces. This includes integration of flaperons, giving designers even broader options for fine-tuning the flight controls to optimize performance and handling.

## Systems Changes

Dassault aims to make it easy for pilots to transition between models, and the 6X has just two operating techniques that are different from the 8X, according to Ferry. "For us," he explained, "it's important that the family of Falcons, especially for normal procedures, has to be the same."

But that doesn't mean that Dassault engineers didn't take the opportunity when designing the 6X to make it even easier to operate compared to the 8X.

Preparing for engine start is much faster with a redesigned overhead control panel (OCP) that has many fewer buttons and a dark-cockpit philosophy. A dark button now signifies what Ferry said is called "dark auto," and this means that the system could be on or off. What each button indicates, according to Ferry, is "not the status of the system, it is the status of the command. In the procedures, when you have to check a specific position of a button, we say: 'dark auto' because the system chooses between off or on; and a lighted [button] is on or off depending on the status of the command."

Bringing the 6X to life starts with one switch moved to the "on" position, then the aircraft runs through an automatic systems initialization process. Once that is done, the APU is started so bleeds can be switched on for engine start. Another 6X change is that both engines are started with one knob; just move the power levers



The Falcon 6X cabin is 6.5 feet tall and 8.5 feet wide, with a volume of 1,863 cu ft.



to the idle position, turn the knob to “start,” and first engine 2 starts followed by engine 1, with no pilot action required other than monitoring the engine gauges. “The less actions, the better,” said flight test engineer Corsia.

With dual FalconEye combined vision system head-up displays, both of the 6X’s sidestick controls have switches to turn on and off HUD imagery.

EASy IV avionics improvements include 2D and 3D airport moving maps, ADS-B In display of airborne and surface traffic, SiriusXM weather, and runway overrun awareness and alerting system.

### Electrical Improvements

Breaking new ground in Falcon design, the 6X’s electrical system is an AC-based design, unlike previous models’ DC heritage. “In the 6X,” Ferry said, “we’ve got some DC busses and AC busses. It’s more complicated for the crew to configure or reconfigure the systems, so in this aircraft, in maybe 95 percent of the failures the reconfiguration is completely automatic.”

The 6X carries 33,790 pounds of fuel, giving it a maximum range of 5,500 nm at Mach .80 carrying eight passengers and three crew. At Mach .85, range drops to 5,100 nm. Maximum speed is Mach .90.

### Flight Controls

A significant new feature in the 6X is the flight control system, which incorporates a flaperon (flaps that double as ailerons) on each wing, eliminating the spoilers used on the 8X and 7X. The flaperons move in the same direction as ailerons to enhance roll control. “It’s very precise,” said Ferry. “All the pilots say that it’s a huge difference between the 8X and the 6X.”

Four airbrakes (two on each wing) increase drag, but only at the maximum setting AB-2. In the AB-1 setting, flaperons move

down to increase drag. This configuration reduces vibration for both airbrake settings, to a significant degree compared to the spoiler-equipped 8X.

Roll control is still fully available because the opposite side aileron can move down. “Because the airbrake position for aileron/flaperon is like a new reference or new zero [point],” Corsia said, “and if you control through all the roll, it will come off the new zero position.” While this all sounds complicated, she acknowledged, “It’s easy to use.”

Flaperons serve one more purpose, and that is aiding in pitch control in case of an elevator control failure.

Flying a steep approach will be slightly different in the 6X. For airports like London City with its 5.5-degree path, pilots will use the AB-1 setting at Vref. This increases drag but doesn’t change the angle-of-attack (AOA) so the view from the flight deck will look like a normal landing, according to Ferry. For 6 degrees or steeper, AB-2 will be required at Vref +5. This is because above 6 degrees at AB-1 or AB-0, the 6X would accelerate, he said, “even if you are in the landing configuration.”

For 6X pilots, Ferry said, “The aircraft is very easy to land. You’ve got sufficient precision of the touchdown.” Airfield performance is close to that of the 8X, but the new flight-control system results in much smoother touchdowns, a “kiss landing” every time, he said.

### Flying the 6X

In the SITS, we went through the start-up procedure and then some of the profiles and maneuvers that I would be flying in the real 6X.

On the day we flew, the wind at Istres Air Base was nearly calm and the temperature 68 degrees F, with a few wispy high clouds in an almost clear sky. Takeoff weight was 57,900 pounds with



Briefing for the 6X demo flight in the systems integration test station simulator.

12,040 pounds of fuel, well under the 77,460-pound mtow. For our flight, Vr and V1 were 115 knots and V2 120 knots. Ferry was in the right seat and I was in the left seat, while Valette flew in the jump seat. Corsia kept tabs on us from the salle d’ecoute, the telemetry monitoring center at Istres, where she maintained direct radio contact with us during the flight.

After waking up the 6X and starting the APU, I twisted the start knob and watched engine 2 and then 1 run through their start-up process. We would be staying in the vicinity of Istres and Marseille, so no complicated flight planning was necessary.

I released the parking brake and started taxiing toward Runway 15, which is 12,303 feet long. At first, I overcontrolled the nose-wheel steering; it is somewhat sensitive but as I soon figured out, precise and easy to operate smoothly.

With slats/flaps set at SF2, Ferry had me hold the brakes on the runway and then apply full power before releasing the brakes.

Takeoff didn’t feel too different from the 8X in terms of handling, but we did get a hefty push from the two 13,500-pound thrust PW812D engines, which easily exceed the total 20,175 pounds from the 8X’s three PW307Ds. I gave the sidestick a gentle nudge at Vr and the 6X launched

smoothly into the air.

When flying a fly-by-wire Falcon, I enjoy the simplicity of the flight control system, at least in terms of pilot interface, and the 6X is no exception, needing just a tiny nudge of the sidestick to set the climb flight path to 10 degrees. We soon sped up to 250 knots for the climb to 15,000 feet.

Flying out of Istres is a pleasure because there is hardly any other traffic, perhaps another Falcon doing flight test work or some Dassault Rafale fighters in the traffic pattern. But we pretty much have the airport to ourselves, along with a dedicated controller and Corsia in the salle d’ecoute.

The 6X felt tight, responding instantly to my control inputs and flying precisely as I wished. Dassault’s flight path-stable fly-by-wire design is familiar enough by now that I found it natural to select the desired flight path and then barely touch the sidestick until I needed to change the flight path.

On the way to 15,000 feet, I turned while climbing to try out the controls, then once leveled off, flew some 30-degree then 60-degree banked turns. This 6X has only one HUD for the left-seater, and I took full advantage of it, putting the flight path marker on the zero-pitch line to maintain altitude during the turns.



I pulled the power back to idle for a Vmin demonstration and watched on the HUD and PFD as an AOA symbol moved down toward the flight path vector, indicating that we were nearing a stall. Before that could happen, however, the flight control protections lowered the AOA to prevent the stall, which would have happened at 120 knots. With the landing gear up but slats/flaps 2 selected, I held the sidestick all the way back and we slowed to 110 knots while I banked from side to side. There was quite a bit of pressure on the stick while I pulled it back, but that is the protection trying to counter the pilot's action and prevent a stall.

After cleaning up the airplane, I moved the power levers to the maximum climb power detent and headed for FL400 at 260 knots and then Mach .78. Climbing through FL300, rate of climb was 2,400 fpm and at FL350 1,700 fpm.

At FL400, I replicated the 30-degree turns and slow flight that I had just done at 15,000 feet, and the flight control system faithfully gave me the same experience. I didn't have to change the way I flew the airplane just because we were higher and closer to corners of the flight envelope where you have to be more careful. The 6X behaved admirably and just as responsively as at the lower altitude.

After pulling the power to idle, I pushed the nose down to descend, remaining within a flight test limitation of Mach .90 or 350 knots. I reached to the center console to apply AB-1 and then -2 to feel the reduction in vibration compared to the 8X. With AB-2, there was a gentle rumble but other than the faster descent rate, hardly any feeling that the airbrakes were deployed.

Leveling off below FL150, I did some maneuvering with various airbrake settings then a Vmin demo with SF3 and landing gear down so I could feel the handling in landing configuration. Again, I

pulled the sidestick to the aft stop and held it there and the 6X got quite slow, not too much above 100 knots, while banked from side to side.

One of the flight control system's degraded modes is direct law, and Ferry switched to that so I could feel how the handling changes. In this mode, there are no protections and the controls feel more like a conventional non-fly-by-wire airplane. I tried various maneuvers, using gentle control inputs, then Ferry reset the controls back to normal.



Final assembly of the 6X at Dassault's Bordeaux-Mérignac factory in France.

For our first landing with SF3 set, I set up an approach to Runway 15 at Istres, and on final, Ferry had me align the 6X with the taxiway and then at 500 feet agl slide over to line up with the runway, so I could assess controllability while close to the ground. The 6X handled like a much lighter airplane, and it was easy to point the nose exactly where I wanted while the autothrottle helped keep the 6X on speed.

At 200 feet, Ferry called for a go-around and I pushed the TOGA button on the side of the power lever. The autothrottles quickly advanced while I pulled back on the sidestick to set a climb attitude, then I pulled the power back to level off at 1,500 feet in the right-hand traffic

pattern. The second approach, also with SF3, was to a normal landing, although I got a bit low on the right base and I could feel the autothrottles advancing when I held the nose up to keep from getting even lower. After turning final, speed and altitude were on target, and I proceeded to my first 6X landing, which as Ferry had predicted was a "kiss landing." The view on final gives the pilot plenty of visibility and the nose attitude is relatively low, making it look as if it will be necessary to pull the nose up in

keep on heading. I maintained  $V_2 + 10$  then accelerated to 160 knots briefly until it was time to level off at 1,500 feet for the right downwind.

This landing was with the "good" left engine still producing power, and trying to avoid getting too low on base, I held altitude too long and ended up too high and too fast on final. The 6X made me look good, however, and easily adjusted to my errors. When I stopped trying to work so hard, the 6X settled down and the rest of the approach started to look more normal, albeit at a slightly higher Vref due to the one engine out. The result was another perfectly smooth landing.

### Entry Into Service

Dassault is preparing for first delivery of the 6X in mid-2023. Its 6.5-foot-tall and 8.5-foot-wide cabin offers 1,843 cu ft of volume, a 3,900-foot cabin altitude at FL410, and a variety of interior configurations with 12- to 14-passenger layouts. A skylight in the galley was pioneered in the 5X design and helps bring more natural light into the 6X. Larger windows than in previous Falcon models add even more light to the cabin. The 155-cu-ft baggage compartment is accessible in flight, plus there are another 76 cu ft of unpressurized baggage space.

At maximum takeoff weight, the 6X's balanced field length for takeoff is 5,840 feet and landing distance is 2,480 feet, thanks to a typical landing weight Vref of 109 knots. The 6X continues Dassault's tradition of flexibility, allowing short flights followed by long-range flights without refueling. In one example given by Dassault, the 6X can complete a five-stop round-robin trip without refueling starting and finishing in London via Geneva; Rome; Warsaw, Poland; and Stockholm. Another example has the 6X flying a "short hop" and then another 3,850 nm unrefueled. ■

the flare to make sure the main wheels touch first. But I resisted that feeling and after making sure the power levers were at idle descending through 50 feet, I made some small corrections with the rudders to align with the centerline and just barely pulled back on the sidestick, then the 6X was rolling on the main wheels with absolutely no firmness to the arrival. I let the nose drop then deployed the thrust reversers briefly, needing no braking to slow down.

We taxied back to Runway 15 for another takeoff. This time, as we passed Vr, Ferry pulled the right engine to idle and I continued the takeoff without needing any abnormal moves other than a small amount of left rudder to



Moscow's Vnukovo-3 FBO has a market share of 30 to 40 percent of all business aviation flights in Russia.

Vnukovo-3 and other Russian FBOs this year.

As Vitaly Vantsev, a co-owner of Vnukovo-3, said in an interview with Russia's RBC business paper, despite the hobbling sanctions the industry still exists, although the percentage of flights from outside of Russia is insignificant. Prior to March, Vnukovo-3 was not only the most active FBO in Russia but one of the busiest in Europe. According to Vnukovo-3's data, in the past there were 120 to 130 daily flights to the terminal, but now this figure is estimated at 30 to 40 flights. However, these are mainly domestic flights within Russia.

International business flights are mostly to and from countries friendly to Russia, which include Turkey, the United Arab Emirates, Maldives, Thailand, and others in Southeast Asia.

As for Vnukovo-3, 2021 was its most successful in the last six years. The FBO served 17,340 flights and 105,800 thousand passengers—a 27 and 35 percent increase, respectively, compared to 2020. Last year, traffic to international destinations accounted for about 65 percent of flights completed and passengers served at Vnukovo-3. In January, Russian market participants expected that the growth of the business flight market would continue in 2022, albeit at a more modest pace. Those projections were dashed by the international sanctions.

Meanwhile, other Russian FBOs are also suffering from Russia's isolation. However, they are hoping that the beginning of the holiday period in the coming weeks will allow them to at least partially compensate for their huge losses in the current year. ■

# Russian FBOs hoping for partial recovery in Q4

by Eugene Gerden

Russian FBOs are hoping for at least a partial recovery in the fourth quarter after a sharp drop in traffic due to Ukraine war-related sanctions imposed on Russia earlier this year. As the Russian business aviation industry was starting to recover after the pandemic, it was shocked in March by tightening sanctions against Russia for its aggression against Ukraine.

In March and April, business aircraft flying dropped about 75 percent year-over-year. While traffic began to gradually stabilize in the second quarter, the situation in the sector remains complex and most Russian FBOs continue to feel the pressure of the sanctions.

Business aviation infrastructure in Russia is still represented by specialized terminals only in Moscow and St. Petersburg. Among them are Vnukovo-3, the A-Group terminal in Sheremetyevo, UTG PA Business Aviation Center (Domodedovo), International Business Aviation Center in Ramenskoye, and Pulkovo-3 and A-Group Pulkovo in St. Petersburg.

As a rule, Russian FBOs do not disclose the results of their performance. According to the Russian Federal Air Transport Agency, Vnukovo-3 remains a market leader, accounting for about 30 to 40 percent of all business aviation flights in Russia.

The pandemic and economic fallout from the ongoing military conflict in Ukraine have had a negative effect on the performance of

## Jet Aviation adds heavy 777 maintenance at Basel facility

Jet Aviation's Basel, Switzerland maintenance facility has received approval for heavy maintenance on the Boeing 777, extending its work scope for the widebody jet. The new approval also includes 15-year checks.

Jet Aviation (Stand 450) has purchased the specialized tools and invested in training for the heavy maintenance tasks on the 777, in response to market demand for the new capability. The Basel facility holds maintenance approval for more than 50 aircraft types and provides completions services for the 777, as well as all narrow- and widebody airframes.

With six hangars that total more than 36,700 sq m and 13,500 sq m of workshops, Jet Aviation Basel is an authorized maintenance facility for Airbus Corporate Jets, Boeing Business Jets, Embraer

Executive Jets, and Gulfstream Aerospace.

"Maintenance is one of our core businesses in EMEA," said Jeremie Caillet, Jet Aviation's senior v-p regional operations EMEA, "and this scope extension is a further example of our continued commitment to meet the evolving requirements of customers across our network."

To continue serving its EMEA customers, Jet Aviation also announced an expansion of its maintenance, interiors, non-destructive testing (NDT), line maintenance, and on-site support capabilities at its Dubai International Airport facility. This includes adding modular tail-docking equipment for heavy structural repairs, as well as new avionics modification and upgrade services and high-speed satcom installations. NDT services include eddy current ultrasonic and expanded on-site borescope inspection. **M.T.**



DAVID MCINTOSH

# Bizav provides tools for growth in Middle East

by Peter Shaw-Smith

While the Middle East represents only about 5 percent of general aviation worldwide, the region is poised for growth given its size, the different businesses that exist, and the fact that companies typically have dealings in several countries in the region and increasingly have to connect to Europe, the U.S., and Asia. That's according to Dassault Aviation international sales director Renaud Cloâtre, who is based in Dubai.

"Growth potential is enormous because the region is underequipped," Cloâtre said. "If you look at general aviation's structure in Europe or the U.S., there's clear growth potential in the Mideast. We are in an economy where the energy market is actually changing relations between Europe, the U.S., and the Middle East. The value of oil is increasingly recognized. Oil prices are increasingly relevant, underlining oil's true value. It's needed. There is also a requirement to use it wisely and not burn too much.

"Regional transition, as you've seen in Saudi Arabia and the UAE, as well as in

other countries, is taking place. The UAE has changed over the past 10 years. Change has taken place all over the region. When you move towards change, you need the tools for it, and business jets are one of them."

He said the Falcon 7X—of which Dassault sold six to Saudia Private Aviation—has been a tremendous success. "The 7X and 8X are fantastic aircraft, going all the way from here to continents. People in Saudi Arabia love three-engine aircraft. They love the stability of fly-by-wire. The Saudi market is very complex, in terms of actors and operators. It's a big country, a big domestic market; it's distance they need.

"Again, if you look at all the missions general aviation can perform—transporting people, goods and materials, or medical evacuation—many things are required in Saudi Arabia. Given the Vision 2030 plan and infrastructure changes in the kingdom, it will be a completely different proposition in years to come. That will give us big development opportunities."

Setting aside the UAE and Saudi Arabia, he also sees opportunities elsewhere in the Gulf Cooperation Council (GCC). "It's developing

and changing, and not just because oil provides the backbone," Cloâtre said. "These countries are evolving. Regional transformation plans offer opportunities everywhere. I've also worked in Egypt, which has plenty of wealthy companies. Have you been to Cairo lately? New Cairo and the administrative capital are amazing."

He said his work in the Middle East is a spread. "Let's say we have activity in all these countries because we can actually respond to different missions in different countries—it's government flights, private flights, or special missions. It's an entire portfolio. You've got the GCC and up to Pakistan. Then it's from Turkey to Egypt. Israel is not my territory. There's always a need, somewhere," he said.

Turkey has also proved to be an excellent market for Dassault. "Istanbul is a very good market," he said. "We have a strong presence in Turkey. The Falcon 6X had a very good reception. The 6X has significant experience in Turkey with long-time owners, who have also availed themselves of the wider Falcon portfolio."

## Face-to-face

Cloâtre said the pandemic had been a period of ups and downs, with the regional economy fluctuating.

"Covid showed that you cannot just rely on your computer and say: 'Okay, I've got Zoom, I've got Skype, I've got whatever, and I can do my business from home,'" he said. "That's not



really the case. You have to be on-site talking about business. You have to be able to check what's going on at your facilities on the other side of the world; you have to deal with your client and you have to interact. Covid showed that private aviation is a very strong tool, not only for business. We've seen the sanitary measures taken by Dassault in France and in Europe. Although unseen, these are an important part of aviation."

He underlined the ability of the Falcon 8X, which is on static display this week at MEBA 2022 (Static A21), to fly from New York or Washington direct to Abu Dhabi. The 10X, officially due for delivery in late 2025, will be an even better option. "On the way back, when the headwinds get stronger, you need the 7,500-nautical-mile range of the 10X, if you want to do it nonstop," he said. "Otherwise, you make a 30-minute fuel and customs stop in Shannon, and you can fly fast between the stops."

Dassault has noted that its large-cabin models such as the 6,450-nm Falcon 8X comprise a third of the 75 Falcons in the region. That fleet is expected to grow once the Falcon 6X and 10X reach the market in coming years.

The Falcon 6X is due to enter service in mid-2023. "You have a mix of demand, for which the 6X is ideal," he said. "It can perform a variety of missions, from long-range to short-range, but the key is that it takes you to your destination. Given generations of our clients, what's more important today, apart from avoiding distress, is the journey from door to door. In a single day, you can, for example, have meetings in three cities. Most importantly, the Falcon offers valuable flexibility."

Dassault has received strong interest, including a "significant number of orders" from the Middle East for the 6X. Several deliveries are lined up to the region shortly after the wide-cabin model enters service, the French airframer said, adding the 6X is in the final stages of flight testing.

As its fleet continues to grow, Dassault Aviation is expanding its service capabilities in the region. In 2019, Dassault acquired the worldwide maintenance activities of Luxaviation subsidiary ExecuJet, which plans to open a 15,000-sq-m (163,000-sq-ft) FBO/MRO at Dubai Al Maktoum International Airport (OMDW) early next year.

Serving operators in the Gulf region, the facility at OMDW will be able to accommodate between 18 and 24 aircraft simultaneously and will be qualified to handle a full

range of MRO activities, from line maintenance to major overhauls.

ExecuJet will offer services for other OEM aircraft in addition to Falcons, including both regionally-based and in-transit aircraft. To serve as ExecuJet's regional headquarters, the complex is replacing ExecuJet's base maintenance at Dubai International Airport (OMDB). However, the OMDB location will continue to provide AOG services.

"We have a strong investment in OMDW with our three hangars," he said. "This

investment aims to bring us closer to our clients in terms of maintenance; clients can go to Dassault Dubai as easily as to Paris Dassault Falcon Service. The development of OMDW—the initial OMDW master plan—is gradually bearing fruit. There's certainly a transition from OMDB to OMDW. I think the government has phased it well. It's a transition which I welcome."

Dassault also has a spare parts distribution center in Dubai and added an engineering office in Cairo. ■

## Empire adds Boeing BBJ to charter fleet

Aircraft management, sales, and charter specialist Empire Aviation Group (EAG, Static S4) has added a Boeing Business Jet to its fleet, increasing to 20 the number of business jets it manages. The company has inducted more than 70 aircraft in its 15-year history. EAG is operating the BBJ on behalf of its Dubai-based owner.

On the eve of MEBA, EAG founder and managing director Paras Dhamecha told **AIN** that EAG had seen its charter business increase 200 percent year-to-date versus 2019 as aircraft availability for charter now is at a premium in the region. For this reason, EAG will have plenty to celebrate this week at MEBA 2022.

EAG has become one of the largest aircraft management and charter operators in the UAE and also manages a sales office in the U.S., with activities in India, West Africa, and Asia. The company holds an air operator certificate from the UAE General Civil Aviation Authority and certification of registration with the San Marino Civil Aviation Authority. EAG's affiliate in Bangalore, Empire Aircraft Management Services, holds

a non-scheduled charter operator's permit in India.

Aircraft sales are also a growing segment for the company, and it is marketing a portfolio of Gulfstream, Bombardier, Dassault, and Embraer aircraft. In 2021, Gulfstream appointed EAG as its international sales representative in India.

In addition to its other services, EAG also offers continuing airworthiness management organization services to its aircraft owners and also third party owners and operators.

"Empire Aviation has successfully developed into a reputable and award-winning global private aviation service provider to aircraft owners and charter clients, thanks to the team and the support of all our partners," said Dhamecha.

"There is no doubt that we have benefited from Dubai and the UAE's position as an international aviation hub with world-class infrastructure, facilities, and regulators. Our journey continues, and the exciting addition of the BBJ quite literally adds a new dimension," he concluded. **P.S.-S.**



The addition of this Boeing Business Jet brings Empire Aviation Group's fleet to 20 aircraft.

# Duncan Aviation broadens reach to Middle East

by Jerry Siebenmark

Business aircraft maintenance provider Duncan Aviation is using the 2022 MEBA Show this week as a platform to meet with current and past clients and “to evaluate and explore possible opportunities in the future and to share our brand image, which is synonymous with high-quality work, responsive customer service, and a wide range of capabilities within the region.” While it is one of the larger independent MROs in the U.S, the Lincoln, Nebraska-based company has forged business relationships with business aircraft owners and operators in the Middle East over several years.

Phil Suglia, Duncan sales manager, told *AIN*



DAVID MCINTOSH

Duncan Aviation sees growing interest in its maintenance support from Middle East and North Africa operators.

that the company (Stand 855) holds certifications and authorizations to perform work from 13 aviation regulators, including authorities in India and the United Arab Emirates.

“These facilities perform high-quality, nose-to-tail services on the most popular business aircraft in flight today,” he said. “We consistently work with business aircraft management companies and owner/operators from the Middle East and North Africa region.”

The company’s capabilities include major and minor airframe inspections, engine maintenance, major retrofits for cabin and cockpit avionics systems, full paint and interior services, engineering and certification services,

fabrication and manufacturing services, and preowned aircraft sales and acquisitions.

Duncan’s aircraft sales and acquisitions department regularly works with MEBA member clients, as does its parts and rotables support division, which provides parts and components to operators worldwide. “Duncan Aviation does regularly provide support for Middle East maintenance providers, developing relationships and brand recognition to support their clients with the more intensive inspections and MRO projects that cannot be serviced regionally and that would require relocation of an aircraft to Duncan Aviation facilities in the United States,” Suglia said. ■

## Atlas Air serves variety of customers

Germany-based Atlas Air Service Group comes to the 2022 MEBA Show as a bigger company with increased capabilities following its January acquisition of AAL (Stand 750), formerly Altenrhein Aviation, a business aviation maintenance company based in Switzerland. The acquisition of 100 percent of the shares of AAL expanded the companies’ AOG services and improved spare parts availability, as well as access to test equipment and more tools.

With the AAL acquisition, Atlas Group companies employ 280 people and operate from five locations, which includes Augsburg Air Service, also in Germany. Combined, the companies provide aircraft management and charter, sales, maintenance, avionics, and non-destructive testing. On the maintenance

side, AAL, Atlas, and Augsburg also have capabilities in sheet metal repair, full interior refurbishment, and paint.

The three group companies have service center authorizations from Embraer, Cessna, Beechcraft, Hawker, Honeywell, Cirrus, Piper, Gulfstream, Daher, Pilatus, and Williams International. In addition to operating as FAA and EASA repair stations, the companies are approved by regulators in Bermuda, Canada, Cayman Islands, Guernsey, India, Isle of Man, Nigeria, Russia, San Marino, and the UK.

AAL managing director Natascha Rode told *AIN* that AAL specializes in heavy maintenance on the Gulfstream G150, G200, and G280 and Embraer jets, aircraft for which it is an authorized service center (ASC). “As an Embraer ASC, we have regular customers

coming from Africa for major inspections,” she said. “Over the years, AAL technicians have performed numerous 8C, 12C, and 16C inspections. It is not unusual that customers from the Middle East and Asia would ferry their aircraft to Switzerland for such complex maintenance.”

More recently, AAL has seen an increase in pre-purchase inspections. “It is common knowledge that the aircraft’s value is higher if the last major inspection was performed in an authorized service center,” Rode said. She further noted that AAL, Atlas, and Augsburg are accustomed to working with clients from a variety of cultures. “Our employees understand different cultures and by extending our hospitality, we guarantee our customers an ‘at-home’ feeling.” **J.S.**



# Gulf region

› continued from page 1

to be an early adopter of eVTOL vehicles. According to Falcon COO Raman Oberoi, Eve—which is majority-owned by Brazilian aircraft manufacturer Embraer following an initial public offering on the New York Stock Exchange—approached Falcon with the proposal to launch services in the Gulf region.

Abu Dhabi-based Falcon is planning to operate the eVTOLs initially from its existing heliport at Atlantis the Palm, from where it offers tourists a bird's-eye view of Dubai. In 2021, the heliport was used by 45,000 passengers taking sightseeing rides from the island site. In 2019, Falcon announced plans, in partnership with helicopter maker Leonardo, to develop vertiports in the region.

## Airport Shuttle

The Eve aircraft also has the potential to appeal to travelers moving to and from the VIP terminal at Dubai Al Maktoum International Airport. Helicopter shuttles from Falcon's heliport at that site have yet to take off due to the failure to effectively compete with limousine service, Oberoi said.

In October, China's Xpeng chose Dubai as the site for the international debut of its X2 "flying car," which is primarily intended for personal transportation by owner-pilots. While the X2 has no wheels and looks more like one of the commercial eVTOL designs, Xpeng is also working on a model called the X3 that is more car-like and has eight retractable propellers that might appeal to high-net-worth Emiratis.

AAM expansion will also require significant investment in new ground infrastructure. Last month at Abu Dhabi Air Expo, French airports group ADP signed a memorandum of understanding with Abu Dhabi Airports to jointly prepare to build a network of vertiports in the emirate. ADP is already involved in a consortium working to launch eVTOL air services in the French capital during the 2024 Paris Olympic Games.

Meanwhile, the UAE's neighbor, Saudi Arabia, also has ambitions to be a significant player in the AAM sector. The most recent development, in October, saw Saudi Arabian Airlines (Saudia) sign a deal with Lilium to acquire 100 of the company's seven-passenger Lilium Jet aircraft.

The memorandum of understanding covers plans for the Saudi flag carrier to operate an



UAE operator Falcon Aviation plans to use Eve's four-passenger eVTOL aircraft for air taxi services starting with flights from Atlantis the Palm resort.

eVTOL air-taxi network across the country. The airline will help Germany-based Lilium to secure local type certification for its aircraft, as well as operational approvals.

Saudia said its purchase will accompany new electric point-to-point connections and seamless feeder connections to its hubs for business-class passengers. Lilium promotes the Lilium Jet's flexible cabin architecture as ideal for meeting the needs of the premium market, which it believes can help drive the early adoption of eVTOLs in the discerning Gulf market.

Originally expecting to win certification of the Lilium Jet in 2024, Lilium in March said it pushed back the projected timeline to achieve approval by potentially 12 or more months into 2025. Several new eVTOLs are expected to enter commercial service that same year, including Archer's Midnight, Joby's unnamed model, and the Vertical Aerospace VX4—all of which will carry four passengers.

## Neom Service

The Lilium deal follows a separate agreement announced last December between the Neom regional development project in the northwest of Saudi Arabia and Volocopter. This is aimed at launching urban air mobility services by 2024 with 10 of the German company's two-seat VoloCity aircraft and five fully autonomous VoloDrone cargo-carrying vehicles.

Under the agreement signed, the partners plan to develop what they called a public vertical mobility system in Neom on the country's Red Sea coast. Plans call for the development of an "industrial city" called Oxagon and a residential community called The Line that will extend for slightly more than 100 miles and house a population of one million people.

Developers claim the communities will

be powered entirely from renewable energy sources with "zero cars, zero streets, and zero carbon emissions." However, plans initiated in 2019 also call for the building of a new international airport.

The venture will be the sole operator of initial public transit services across Neom, which covers 10,200 sq mi and is being developed with a budget of \$500 billion as part of a Saudi government plan to reduce its economic dependence on oil revenues. The partners said infrastructure will be developed in a way that can be used by other types of eVTOLs, and rival companies will be able to provide services such as logistics and emergency response.

Last month, Neom stepped up its commitment to Volocopter in backing a \$182 million Series E funding round. The campaign was jointly supported by Hong Kong's Gly Capital Management, which is part of the Chinese automotive group Geely.

Meanwhile, the UAE's Tawazun Economic Council is supporting efforts by Cranfield Aerospace Solutions to convert existing aircraft—such as the nine-passenger Britten-Norman Islander—to hydrogen propulsion. The council, which is the defense and security acquisitions authority for the UAE Armed Forces and Abu Dhabi Police, backed a £14.4 million (\$16.8 million) funding round for the UK company, which is also working on plans to develop a hydrogen-powered 19-seat regional airliner.

Today at the MEBA show, a conference series titled "Tomorrow's Customer-Next Generation" includes a session on prospects for eVTOL air services. It will be led by U.S.-based Odys Aviation, which is working on plans for a hybrid-electric eVTOL model with an eye-catching blown-wing design. ■



# World Fuel sees Middle East surge

by Curt Epstein

As the MEBAA Show makes its triumphant return after a Covid-induced pause, business aviation activity in the Middle East region has been riding the same post-pandemic surge seen in other regions, according to World Fuel Services (Stand 1120).

“The Middle East came out of Covid more quickly than Europe,” said James Hardacre, the U.S.-based company’s v-p of business aviation sales for Europe and the Middle East. “It was quicker to start the bounce [back] and it looks like the bounce is lasting longer in the Middle East when I compare it to Europe at least.”

He noted that while growth in some regions is showing signs of slowing down, the Middle East is continuing to show strength. “Year-to-date just versus last year alone, Middle East departure activity is up around 15 percent, and that’s on 2021 which was a solid year in itself,” he explained. “Generally, the Middle East has been pretty similarly aligned to the European market for [business and general aviation] in



James Hardacre, World Fuel Services v-p of business aviation sales for Europe, Middle East

terms of growth, but it’s actually outgrown Europe this year.”

Hardacre added that while charter activity drove the initial post-pandemic growth, that paradigm has shifted. “You are starting to see the slowdown across the aircraft management and charter side of the business,” he told AIN. “In terms of longevity, whereas charter has started to dip, private and corporate is stronger presently.”

The company is able to take a wide view of the local market due to its presence at more than 1,000 locations throughout the region. “I would be quite comfortable to say we supply almost every airport where there is a material fuel demand across the board,” said Riyan Qirbi, World Fuel’s director of market development for the region. “The two points that

we try to focus on: are we reliable in terms of our supply and is the fuel being supplied to a very high standard and according to the best international practices?”

While World Fuel does not provide actual fuel handling for its customers, it serves a vital role in making sure they are able to operate throughout the region. “We’re able to basically operate on what we call a back-to-back basis, so we arrange fuel supply for our customers and we deal with the entire interface with the supplier who actually does the intoplane part for the customer,” said Qirbi.

This week at MEBAA 2022, the company is sharing its exhibit stand with UK-based Harrods Aviation, which is a member of the World Fuel-sponsored Air Elite network of global upscale FBOs. Harrods operates facilities at London Luton and Stansted airports.

“They’ll tell their story of how they fit in with what we’re doing,” explained Peter Stevens, the Miami-based fuel provider’s v-p of global marketing for aviation and marine. “This is part of the value we provide to the [FBO] locations that we have is taking their message forward and helping them present it to bigger audiences.”



Harrods is a member of the Air Elite FBO network.

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Advertising Inquiries: +1 (201) 345-0085, adsales@ainonline.com

Circulation Inquiries: +1 (201) 345-0085

subscriptions@ainonline.com

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Printed by Emirates Printing Press L.L.C., Dubai

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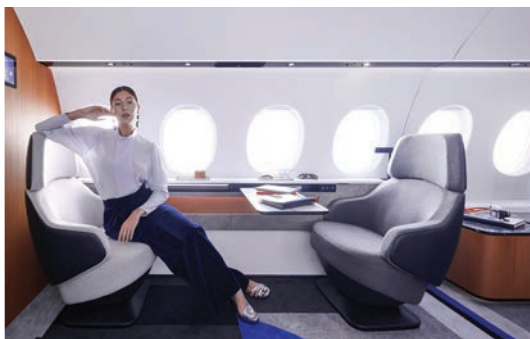
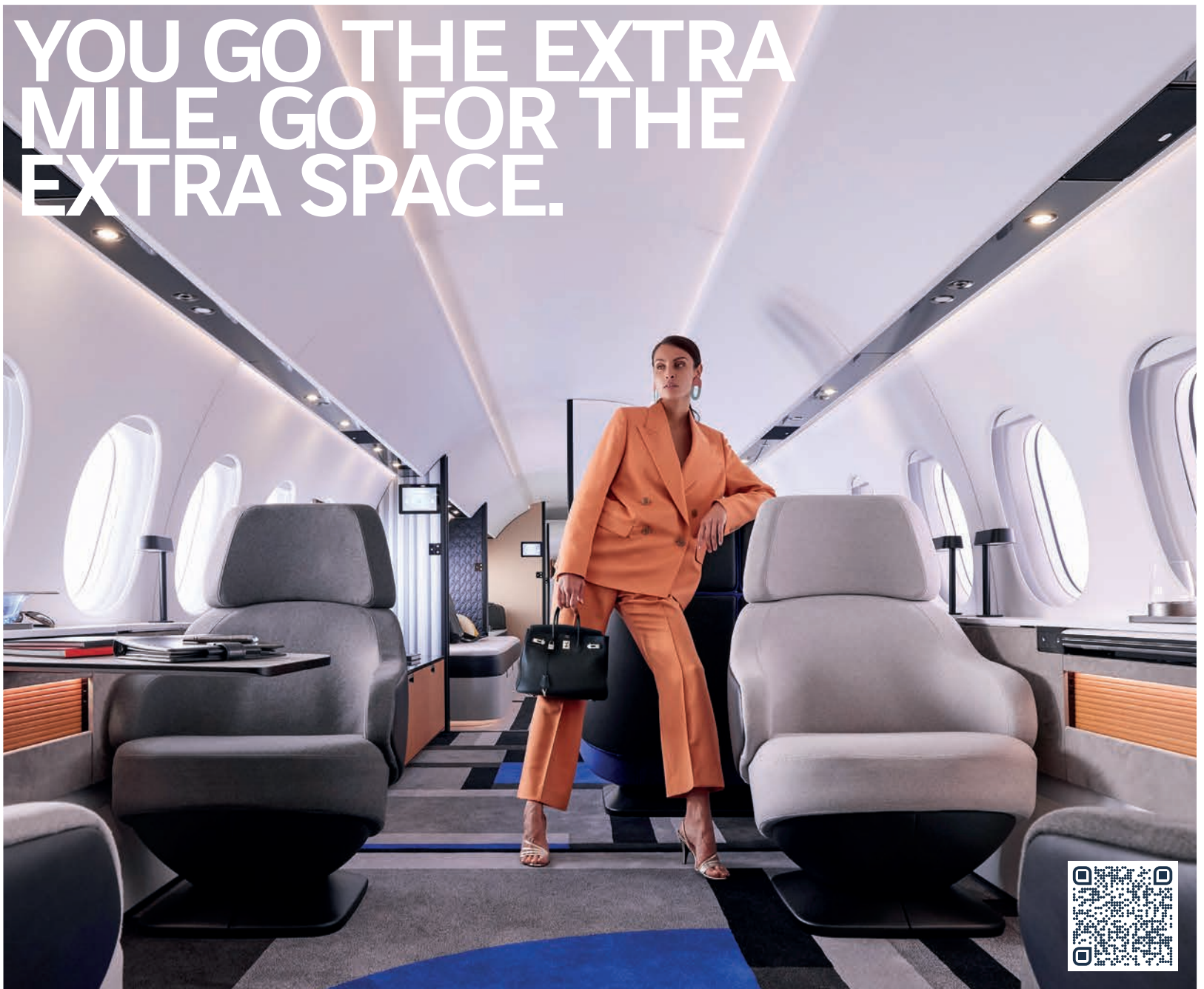
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