Saab eye in the sky debuts here
by David Donald

Making its worldwide public debut at the Dubai Airshow is Saab’s GlobalEye, a multisensor “swing-role surveillance system” based on the Bombardier Global 6000 business jet, for which the UAE Air Force is the launch customer. The first delivery is expected sometime in the first half of next year.

The aircraft features an Erieye ER radar in a “ski-box” fairing above the fuselage with a primary role of airborne early warning and control (AEW&C), with a belly-mounted Leonardo Seaspray 7500E multi-mode surveillance radar that is mainly used for surface search. Complementing the radars is an electro-optic sensor turret.

An initial order for two GlobalEyes was announced at the 2015 Dubai show, and a third aircraft was added in February 2017. Having been supplied as a “green” Global 6000 from Bombardier, the first GlobalEye flew after modification on March 14, 2018. The second aircraft took to the air on January 3, while the third joined the test fleet on August 30.

GlobalEye features extensive aerodynamic and structural alterations from the baseline business jet, requiring an intensive trials campaign that was conducted using aircraft number one. Following initial tests at Saab’s Linköping plant in Sweden, the trials moved to Granada in Andalucia, Spain, where the good climate ensured that the aggressive schedule could be met.

The aerodynamic handling and envelope expansion tests are now complete, with Saab (Stand 1060) reporting that handling is close to that of a regular Global 6000, despite the alterations. Test crews also report that the three aircraft all behave identically and in full alignment with ground-based tests and computer-modeled predictions.

In the meantime, mission system verification trials have been performed using the second and third aircraft, which were completed and continues on page 53.

Where are your next pilots coming from?
Right here.
787-10 DREAMLINER
Dubai Airshow powers Middleast aerospace

by Peter Show-Smith

The Dubai Airshow sets out today to give the regional aviation industry a fresh sense of energy, as uncertainty over regional security, flat load factors, and a dormant order book blights optimism. With Emirates Airline likely to stand pat and Etihad of late paring its fleet, the only hope for major commercial aircraft orders this week appears to be Air Arabia deciding to pull the trigger on 100 new narrowbodies, if CEO Adel Ali deems the timing right.

As the president and CEO of Emirates Tim Clark launches perhaps his sternest defense of the airline’s A380 strategy to date—and takes personal credit for the plan since inception—it is clear that the recent retirement of two of the aircraft for spares does not indicate the death-knell of the airline’s 500-plus-seater model, as some analysts have suggested. Whether the passenger volumes streaming through hub Dubai, which faltered in the past 12 months, will lead to ultimate justification for the doyen of Middle East aviation executives remains to be seen.

In an interview with Airline Ratings on November 14, Clark excoriated other flag carriers, particularly Air France and British Airways, over their failure to capitalize on the opportunity the superjumbo offered, especially out of a hub as big as London Heathrow. “Maybe it needed someone like me to persuade our shareholder to buy 150 of them,” he said. “Most carriers were buying three, four, or 10 if they were lucky. We will still have 90, maybe a hundred A380s flying by the end of the next decade and will be flying the A380 until the early 2030s.”

Emirates’s rival across the Gulf, Qatar Airways, last week announcing a $4 billion CFM engine order for its 50 Airbus A320neos and recently signed for another 10 Gulfstream business jets, this time the all-new G700 ultra-long-range jet, bringing the total commitment of charter arm Qatar Executive to the U.S. aircraft manufacturer to 58 aircraft.

Elsewhere, the haste with which Saudi Aramco has launched its initial public offering, after years of prevarication, only serves to underscore the growing threat to the region’s dependence on hydrocarbon income, as the global quest for, and debate on, clean energy and renewables quickens.

One bright spot for Dubai has been business aviation, with total flights through the city’s two airports jumping 26 percent to 7,950 movements in the first half of the year, 72 percent of them through Al Maktoom International Airport (DWC)—a new high—where the Dubai Airshow is being held. The outlook will only improve with the commencement next October of World Expo 2020, likely to be a tourism jamboree for the emirate’s flagging economy.

Although official estimates of overseas arrivals for the six-month event were cut back to 11 million, the Expo is expected to give the UAE economy a $33 billion boost.

Dubai Airshow orders were the hard currency by which the world’s four main airshows are judged, and Dubai has seen a total of just under $640 billion in cumulative aircraft deals since 1999, say the show organizers. Banner Dubai Airshow years included 2017, when total orders were just shy of $114 billion, 2013, when the figure reached $82.5 billion, and 2007 when more than $155 billion of deals took place. Other years, such as 2015, have been weaker.

In 2017, Emirates ordered 40 Boeing 787s worth $15.1 billion and Flydubai signed for 225 Boeing 737 Maxs valued at $27 billion, while in 2013, Emirates made its largest aircraft order ever, for 150 Boeing 777Xs and 50 Airbus A350s, together worth $39 billion. Flydubai committed that year to 111 Boeing 737s—including 100 Boeing 737 Max—worth $14 billion at list prices.

Sheikh Mohammed bin Rashid Al Maktoom, the driving force behind the UAE’s aviation development, is once again leading a delegation of local dignitaries around the show site today during the opening day. “We work with His Highness’s protocol team and they usually request where they want to stop, and then we add in where we know there’s something new that hasn’t been there before: new exhibitors, new products, new aircraft,” Michele van Akelijen, managing director of show organizer Tarsus F&E
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Hawk jet assembly a big step for Saudi aerospace

by Jon Lake

Saudi-built BAE Systems Hawk 165 Advanced Jet Trainers are now in service with the Royal Saudi Air Force, making the Hawk the first indigenously assembled fast jet aircraft to fly in Saudi skies. This represents a significant step forward for the Kingdom’s aerospace industry; Saudi Arabia has wanted to assemble military aircraft for many years. License manufacture, or final assembly of aircraft is frequently considered emblematic of a maturing indigenous defense/aerospace industry, and Saudi Arabia eventually wants to manufacture half of its military aircraft domestically.

By doing this, the Kingdom hopes to gain a strategic advantage by reducing its dependence on foreign suppliers, while creation of a sustainable defense industry is a key pillar of the Vision 2030 program.

Saudi Arabia had hoped to undertake final assembly of 48 of the 72 Eurofighter Typhoons that it ordered in 2007, but those plans changed. Instead, the Saudis were persuaded that local participation in Typhoon through life support would be a more realistic proposal and provide more benefit to the local industry.

However, when Saudi Arabia ordered a second batch of new-generation Hawk Mk 165 AJT (Advanced Jet Trainer) aircraft in February 2015, it was specified that these aircraft would be completed in-country, using a new Hawk In Kingdom Final Assembly (Hawk IKFA) line established in the former Tornado Programme Depth Maintenance Upgrade (TPDMU) facility at Dhahran.

The Hawks are delivered as major sub-assemblies, consisting of the fuselage, wing, tailplane, and fin. These are airfreighted from Warton in the UK to Dhahran, where they are assembled to become a complete aircraft. The Hawk In-Kingdom Final Assembly (IKFA) team then tests, flight tests, and paints the aircraft, and manages acceptance by and delivery to the RSAF.

More than 70 percent of personnel in the IKFA facility are Saudi nationals and the Hawk assembly facility was created with the support of 25 Saudi companies, with many more benefitting across the supply chain.

The first delivery of Hawk 165 parts to Dhahran took place in October 2017. BAE Systems Saudi Arabia chief test pilot Andy Blythe made the first flight of the first Saudi-assembled Hawk 165 on November 4, 2018. This was the first manned aircraft to be assembled in the Kingdom and was also, coincidentally, the 1,000th Hawk built.

“The aircraft themselves have been assembled very well,” he said, “based on what I have experienced from the Brough, Warton, and Williamtown [Australia] production lines, IKFA has a better strike rate with respect to the tuning required of a hand-built aircraft. The aircraft definitely feels the same as those assembled at Warton, though I never experienced any 48 degrees C while test flying at Warton. However, the RSAF are excellent hosts by providing airspace for us to test and a very long runway.”

First deliveries from the new Saudi Hawk production line were originally expected to begin in the third quarter of 2018, but the first of the 22 locally assembled Hawk Mk 165s was ceremonially rolled out on April 1 at Dhahran in the presence of Crown Prince Mohammed bin Salman, Saudi’s deputy prime minister and minister of defense.

The first delivery to the RSAF was made in June 2019, and seven Saudi-assembled aircraft had flown by October 2019. The final kits for assembly by the Hawk IKFA were delivered later in October and the last aircraft is scheduled to be delivered before the end of 2020.

“The skills transferred and experience gained in establishing a Hawk assembly capability in-Kingdom puts the Kingdom in a good place for whatever follow-on contracts are awarded,” observed Ian Wood, director of manufacturing operations and Hawk IKFA general manager for BAE Systems Saudi Arabia.

The final assembly of 22 Hawks, together with local industrial participation in the assembly of Sikorsky S-70 helicopters, together with the local conversion of Boeing F-15S strike fighters to F-15SR standard, will stand Saudi Arabia in good stead when its aerospace industry moves on to its next goal—which is to produce an indigenously developed aircraft in the mid-2030s.

By taking on assembly of its BAE Hawks, Saudi Arabia is fulfilling a long-held ambition.

Automatic refueling for A330 MRTT planned in ‘21

by David Donald

Airbus Defence and Space’s A330 multi-role tanker transport (MRTT) will become capable of performing automatic air-to-air refueling (A3R) in 2021, the maker said. Airbus has already conducted tests of the system using a company-owned A310 MRTT testbed, beginning on March 21, 2017, when trials were conducted with an F-16 receiver, including contacts at night and in adverse light conditions. In June 2018 the system was tested with a large receiver—an A330—for the first time.

Tests with a customer are due next year, leading to certification and service entry in 2021. The customer has not been revealed, but it was the Royal Australian Air Force that provided a KC-30A for the June 2018 trials.

For now, it is not intended that A3R replaces the air refueling operator (ARO) but acts as an aid to refueling while reducing risks. A3R offers more accurate and quicker contacts, increasing operational efficiency by reducing the time needed to complete rendezvous. The capability is easily retrofitted to existing aircraft.

A3R is one of a number of developments being planned to enhance the A330 MRTT’s effectiveness and versatility. Drawing on experience with the airliner fleet, Airbus is working on the introduction in 2021 of predictive maintenance based on big data analysis.

More roles are planned for the A330, including VIP transport. Talks are already underway with a customer for an aircraft with VIP cabin that retains its refueling capability. Airbus asserted that the refueling boom and pods can be easily removed and reinstated on an as-required basis.

Airbus also said it is technically feasible to add a boom to the RAF’s wingpod-only Voyager aircraft, which might become an issue as the RAF begins to operate an increasing fleet of boom-refuelable aircraft types.

More importantly, the company noted that the size of the aircraft and the nature of its operational employment make it an ideal platform to handle stand-off ISR tasks with signals intelligence sensors and to act as a command and control node in a wider comms network.

In June, the company demonstrated its “Network for the Sky” concept, in which data from ground forces was uplinked to a fighter, then on to the A300 testbed equipped with cyber-secure communications systems that relayed the data via satellite to a distant command post receiver. Such capabilities have resulted in Airbus now talking of a “Smart MRTT.”
Partnership looms large at Dubai Show USA Pavilion
by Chad Trautvetter

The USA Partnership Pavilion is hosting a majority of the 140 U.S. companies exhibiting this week at the Dubai Airshow—a number that exemplifies America’s growing role as the Middle East’s leading aerospace and defense supplier. These exhibitors hail from 25 U.S. states, including four state pavilions, and reflect the largest international contingent at the show.

According to the U.S. Commercial Service, the trade promotion arm of the U.S. Department of Commerce, the UAE has been the top U.S. export market in the Middle East and North Africa (MENA) region for the past 10 years and is thus a critical regional hub for 1,500 American companies. It is the third-largest arms market for the U.S.—the world’s top defense supplier—behind only Australia and Saudi Arabia, the agency added.

Organized by Kallman Worldwide, the Pavilion is America’s headquarters this week at the airshow, providing a location for buyers to meet more U.S. suppliers, a professional business center for U.S. exhibitors to maximize exposure and impact, and a forum to share ideas and insights. This year, the USA Partnership Pavilion has expanded its footprint to 3,517 square meters, supporting 92 participating companies—15 of which are first-time Dubai Airshow exhibitors.

To highlight the partnership between the U.S. and the UAE, the USA Partnership Pavilion will host the first Astronaut Al Worden Endeavour Scholarship Awards in association with the UAE Space Agency on Monday. The program was announced in June at the Paris Air Show by Kallman and Worden, pilot of the Apollo 15 command module “Endeavour,” to inspire young people to pursue their dreams through STEM education.

This scholarship will send selected students and educators to experience a week of astronaut training at the U.S. Space and Rocket Center Space Camp in Huntsville, Alabama. The Dubai awards to four Emirati students and two educators are the first in the inaugural schedule, which is planned through the summer of 2021.

This scholarship will send selected students and educators to experience a week of astronaut training at the U.S. Space and Rocket Center Space Camp in Huntsville, Alabama. The Dubai awards to four Emirati students and two educators are the first in the inaugural schedule, which is planned through the summer of 2021.

In addition, the USA Partnership Pavilion will host a schedule of executive presentations and conversations with government, military, and industry thought-leaders, including new U.S. FAA Administrator Steve Dickson.

Jolly Rogers’ F/A-18F flies into Dubai

A Boeing F/A-18F Super Hornet from VFA-103 “Jolly Rogers” flew in from duty aboard USS Abraham Lincoln with the U.S. Fifth Fleet to join the U.S. Department of Defense display at the Dubai Airshow. This aircraft is in the so-called “five-wet” configuration for use as a tanker—it carries a refueling drogue unit on the centerline and four wing tanks. The aircraft is the squadron’s “CAG-bird”—specially marked for the Air Wing commander. On the inside of the tail is a list of the aircraft types flown by the “Jolly Rogers” since their formation as VF-17 in 1943.

Dassault brings Falcon, Rafale contingent to Dubai

Dassault Aviation (Stand 840), a partner of the United Arab Emirates Air Force for more than 40 years, has a contingent of military aircraft and Falcon business jets this week at the 2019 Dubai Airshow.

Two large-cabin Falcon trijets—an 8X and 900LX—adorn Dassault’s static display (Chalet A27-29), as does a full-scale cabin mockup of the company’s super-midsize Falcon 6X that is slated to enter service in 2022. In addition, a French Air Force Dassault Rafale C—from the French detachment deployed to the Al Dhafra airbase in the UAE—is taking part in the daily flying display. The Patrouille de France, which flies Alpha Jets built by Dassault Aviation, is also performing in the daily airshow.

According to Dassault, the Gulf-based Falcon fleet has nearly doubled over the past five years, to about 75 aircraft, and continues to grow. The Middle East is also expected to be a major market for the 5,000-nm/10,186-km Falcon 6X, “as it is already proving to be for our Falcon 8X flagship,” said Dassault Aviation chairman and CEO Eric Trappier. “The Middle East has always been a key market for Falcon aircraft, whose efficiency, cabin comfort, and value for money are particularly appreciated by local operators.”

C.T.
DHC’s reborn Dash 8-400 building backlog
by Chris Kjelgaard

Six months into its emergence as a separate company resurrecting the storied de Havilland Aircraft of Canada name, DHC (Stand A04) is focusing much of its sales effort on the North American, African, and Asia/Middle East regional-aviation markets. The goal is to build the orderbook for the Dash 8-400, its only aircraft-manufacturing program. DHC is also pursuing potential sales of new Dash 8-400s to government customers that would then customize the aircraft for special-missions work.

Todd Young, DHC’s chief operating officer, told AIN that at the company’s preferred, somewhat flexible production rate of two to two-and-a-half aircraft a month, DHC’s Dash 8-400 order backlog in October was sufficient to sustain production until late 2020. As of July 31, when DHC last provided a precise number for the Dash 8-400 order backlog, outstanding orders stood at 46 aircraft.

Immediately after Longview Aviation Capital (LAC) bought the Dash 8-400 type certificate and production assets from Bombardier and created a new subsidiary under the de Havilland Canada name to run the Dash 8-400 production and sustainment program, DHC first established as its top priority the need to “create additional backlog for future years,” said Young.

DHC was already primed to do so, with the Dash 8-400’s existing sales organization under Bombardier moving over to the new company by remaining at the Downsview location where assembly of the Dash 8-400 takes place. DHC as an OEM has always been based at Downsview since the original company was founded in 1928. Young said that while DHC views North America and Europe as “fortress” markets where a considerable number of Dash 8-400s are already operating, the company is particularly optimistic about the potential for suitably configured new Dash 8-400s to replace sizable numbers of aging 50-seat Bombardier CRJ200e regional jets in the North American market.

While Ethiopian Airlines was the first customer for the 86-seat, single-class version of the Dash 8-400 developed and marketed by DHC as an Extra Capacity Seating (ECS) version, DHC subsequently certified a 90-seat Dash 8-400 ECS cabin configuration. Indian carrier Spicejet then became the launch customer for that version, ordering 25 and optioning 25 more. DHC hopes for more such orders from India. “The Middle East is a big potential market too,” added Young.

Product Improvements
In its efforts to stimulate sales of new Dash 8-400s well into the future, DHC maintains a constant focus on product improvement, according to Young. In addition to developing the ECS versions of the cabin by removing the cabin’s T2 and T3 doors and forward baggage compartment, in June DHC introduced ultra-lightweight seats made by Expliseat as a customer option both for installation in new-build aircraft and for retrofit. “We have been and continue to look at product improvements—indeed, over the past decade more than $300 million has been spent on improvements to the aircraft,” said Young.

Going forward, DHC is focusing on two main areas of potential Dash 8-400 improvement. One is generally to “continue to advance the Dash 8-400” by enhancing its functionality and the customer experience it offers, and—as a longer-term possibility—potentially re-engining the aircraft, according to Young. The second main area of product improvement would be to develop new shorter-fuselage and/or longer-fuselage Dash 8-400 models.

Leonardo and Diamond offer TS-80 radar for DA62
by Beth Stevenson

Following the June 2019 announcement that they would collaborate on the development of a new mission surveillance aircraft (MSA) concept, Leonardo (Pavilion P8) and Diamond Aircraft Industries (Static S5) have revealed that Leonardo and Diamond’s Gabbiano Ultra-Light TS-20 following the June 2019 announcement was the radar selection for the aircraft, and Diamond Aircraft’s site in Wiener Neustadt, Austria, where ATOS and the radar will be installed on the aircraft ahead of a series of anticipated flight campaigns.

“The decision to integrate the Ultra-Light TS-80 was taken due to an analysis of the market and discussions with several potential customers, which highlighted a market niche existing for long-range surveillance from a platform such as this,” Fabrizio Boggiani, senior vice president of airborne sensors and mission systems at Leonardo Electronics, told AIN. “For many customers, the Ultra-Light TS-20 variant will fulfill all of their requirements, but there are some mission types, such as wide-area surveillance, where the extra power output by the TS-80 is of benefit.”

The Gabbiano Ultra-Light TS-80 variant is also being integrated into Leonardo’s ATR 72 for the Italian Guardia di Finanza and ATR 42 for the Italian Guardia Costiera, while the family of radars has been selected by 14 international customers to date.
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Airbus sees continued optimism for growth in Middle East

by Cathy Buyck

Airbus (Stand 940, P10) remains buoyant on the long-term demand for new aircraft and even upped its 20-year forecast. This optimism persists despite increasing trade tensions, expectations of a slowdown of economic growth, and the globalization of calls to temper air transport’s growth to reduce carbon emissions and flying’s negative impact on the environment. The flight-shaming movement, which started in Sweden, has crossed Europe, and while it has not yet spread with the same vigor to the Middle East or other parts of the world, Extinction Rebellion protesters have a worldwide following and their campaigns increasingly target aviation.

For Christian Scherer, Airbus chief commercial officer and head of Airbus International, the “flygskam” movement represents an opportunity, not a concern. “What might strike some as a disruption or an impediment to the industry, we see as an opportunity to continue to drive the efficiency of the industry,” he stressed during a briefing in London presenting the OEM’s Global Market Forecast (GMF) for 2019-2038. Air transport is on a path to decarbonize, and Airbus intends to be a leader in this trend, he noted.

There are some clouds on the horizon, he said, conceding that the company remains concerned about increased protectionism and other geopolitical risks but, he insisted, “the huge dark clouds will blow over and we will continue to benefit from the resilience of the industry.” Air transport has become more balanced and has proven to be resilient to external shocks, weathering short-term economic storms and geopolitical disturbances, according to Scherer. “Economies thrive on air transportation. People and goods want to connect,” he said.

For the next 20 years, the Airbus forecast predicts a 4.3 percent global annual growth of passenger traffic measured in revenue passenger kilometers (RPK). Asia-Pacific, the new world economic growth engine, will lead world traffic by 2038 and the domestic Chinese market will become the largest traffic flow before the end of the forecast period. More than half of the top 20 biggest traffic flows will involve Asia-Pacific, while four will involve the Middle East: flows connecting Western Europe, the Indian Subcontinent and emerging economies in Asia with the Middle East, and the intra-Middle East traffic flow. Five of the 20 fastest growing traffic flows over the next two decades involve the MENA region—the Middle East to South America; North Africa to China; the Middle East to China; emerging economies in Asia to the Middle East; and Sub Sahara Africa to the Middle East.

With a projected average annual RPK growth of 5.6 percent, passenger traffic to, from, and within the Middle East is expected to grow at a higher rate than the world average and even slightly above the Asian traffic growth rate of 5.4 percent. More than being a crossroads between East and West, the region is also well located in terms of people and wealth, the Airbus GMF pointed out. “Plotting global population against regions, the Middle East is closest to the world’s traveling population; in fact, 100 percent are within 8,400 nm,” it noted.

In addition, data for inbound and outbound traffic growth for the Middle East between 2002 and 2018 show the region’s resilience to a number of global crises over that period, especially when compared to other regions. Airbus also expects the rapid expansion of low-cost carriers, both foreign and indigenous, to be a main driver for the region’s forecast RPK growth and support a doubling of the number of aviation mega-cities in the Middle East, from five today to 11 by 2038. Airbus describes aviation mega-cities as urban areas with the most aviation connectivity and international passengers.

Fleet Trebling

In terms of fleet development, Airbus anticipates a need for 39,210 new passenger and cargo aircraft over the next 20 years, a near 5 percent increase over its forecast a year ago. Last year, it predicted demand for 37,400 new passenger aircraft over 100 seats and jet freighters over 10 tonnes. Based on its revised segmentation, the European OEM’s latest forecast gives rise to a demand for 29,720 small airliners, 5,370 medium, and 4,120 large. The small category comprises all A220 and A320 family models except the A321LR and A321XLR, which Airbus placed—owing to its long-range capability of up to 8,000 nm and 4,700 nm in a standard 2-class layout, respectively—in the medium category alongside the A330. The large category is mainly occupied by the A350-900 and -1000 owing to the phase-out of the A380 program. Airbus does not include models from other manufacturers in its segmentation overview, even though its GMF covers industry-wide demand.

Of the 39,210 projected deliveries of new-build aircraft—of which 850 are freighters—globally by 2038, 65 percent (25,000 units) are to support growth while 36 percent of shipments (14,100 aircraft) are to replace older models. Airbus believes the large category will account for 10 percent of deliveries, medium will represent 14 percent, and the small category will make up 78 percent of the total volume, equaling 29,720 aircraft.

The Middle East will hold an 8 percent share of all new-build deliveries in the next 20 years, comprising 3,200 passenger airliners—about 2,100 will be to fuel growth and 1,090 to replace existing aircraft—and 40 freighters, according to the Airbus GMF. Overall, considering also the 195 aircraft that will remain from today, the region’s in-service passenger fleet will grow to 3,305 in 2038, from 1,185 aircraft at the beginning of 2019.

About half of the new passenger aircraft will sort under Airbus’s small category, while 475 deliveries will be M-segmented models and 1,095 airlines will be A330s and the remaining A380s from Emirates’s backlog of the type. Airbus in February confirmed its last superjumbo would be delivered in 2021.

Airbus also estimates that there is a need for 50,080 new pilots and 51,920 new technicians in the next 20 years to cope with the Middle East’s anticipated fleet growth.
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Bahrain Airshow is now just 12 months away | by Peter Shaw-Smith

Although a year away, the sixth Bahrain International Airshow (BIAS), taking place in November 2020, has cemented itself as a major event in the Middle East aviation calendar alongside the Dubai Airshow. “Bahrain has become an event on the circuit where anybody who’s anybody is at this show,” said BAE Systems’ Mark Simpkins, regional vice president for the Middle East. “The show provides an intimacy where we can connect and hold business and industrial partnering meetings. We find that is one of the key benefits this show provides.”

Gradually, the show is emerging from the shadow of the larger extravaganza organized by its Emirati neighbors, and the event has benefited from the change in timing from January to November. “There is an ongoing major capital investment plan that covers huge upgrades across the facilities at Sakhir Airbase,” a spokesperson for Farnborough International, co-organizer of the event along with the Bahrain Ministry of Transportation and Telecommunications, told AIN. “There is a newly planned layout across the site that will direct visitors through the exhibition hall, where 80 international organizations from across the aviation supply chain [will be present].”

The Farnborough International News Network (FINN) sessions will involve briefings and seminars on aviation and aerospace development in the region, while a comprehensive delegations program, with key decision makers from the civil and military sectors, will also be featured. The 2nd Women in Aviation Conference will highlight the role of female aviators in the Middle East, while the 3rd Manama Air Power Symposium will stage discussion from senior military officials from around the world. “BIAS offers high-level networking opportunities in purpose-built chalets where exhibitors can display products and aircraft directly opposite their chalet location,” the spokesperson said. “They also offer privacy, enabling business meetings to take place in an exclusive environment.”

Speaking at the 2018 event, Bahrain’s transport minister, Kamal Mohammed, said: “We have seen tremendous success and expansion at the Bahrain Airshow. It is becoming bigger and bigger. I can say that this is the fastest growing airshow in the Middle East.”

The Bahrain Airshow takes place at the Sakhir Airbase from November 18-20, 2020.
Urban air mobility advances fast: will Dubai become a big part of its future?

by Charles Alcock

The drive toward a widespread expansion of so-called urban air mobility (UAM) is gaining momentum worldwide, powered mainly by hype for the time being. Start-up companies are vying with established aerospace players to be at the vanguard of early adoption of new aircraft designs that they say can transform the availability of air transportation, not only within urban areas but also by connecting conurbations—and in rural areas, as well.

There are now anywhere between 150 and 200 new aircraft programs at various stages of development, ranging from pipe dreams to within sight of service entry. Many of these aircraft are harnessing electrical power in a bid to be more environmentally and economically sustainable, with multiple electric vertical takeoff and landing (eVTOL) aircraft taking shape. Other programs are looking beyond electricity to alternative energy sources such as hydrogen fuel cells.

Autonomous operations (i.e. no pilot on board) are also on the horizon for both cargo- and passenger-carrying flights. According to Guillaume Thibaut, a partner with consultants Oliver Wyman, operators could reduce costs by as much as 30 to 40 percent without pilots on the payroll.

However, given the technical and regulatory complexity of introducing new power sources and autonomous flight controls, it is not surprising that many of the innovators are taking a more gradual or hybrid approach on both scores. As a result, many of the new aircraft feature a conventional engine driving electric motors and others are being developed to be optionally piloted.

Similarly, not everyone is taking the VTOL path. Others are opting for new short takeoff and landing (STOL) designs combining fixed- or tiltwings and electrical power. In fact, the various architectures being advanced by the urban air mobility pioneers are bafflingly diverse, encompassing concepts such as multicopters (with as many as two dozen mini rotors), lift-and-cruise combinations, tiltswings, and tiltrotors.

Some companies are focusing on aircraft with a tight mission specification to serve short hops of little more than 20 miles in dense, urban areas. Others are developing platforms to challenge conventional airliners on flights as long as 700 miles or more.

Dubai Seeks To Be Early Adopter

Unsurprisingly, given its precocious track record in air transportation, Dubai harbors ambitions to be a UAM early adopter. In 2017, city officials announced plans to conduct flight trials with two eVTOL aircraft pioneers, China’s EHang and Germany’s Volocopter. Ahead of the 2019 Dubai Air Show, it remained unclear when these initiatives might come to fruition, and neither company is exhibiting at the event. Dubai has stated an intention to conduct 25 percent of all passenger travel within the emirate by autonomous modes of transportation by 2030.

In June 2017, Volocopter signed an agreement with Dubai’s Roads and Transport Authority to conduct a five-year test program to evaluate the case for launching autonomous eVTOL air taxi services in Dubai by the end of 2022. In September 2017, the UAE’s Crown Prince Hamdan bin Mohammed Al Maktoum was a passenger in a public demonstration of Volocopter’s early VC200 prototype.

However, Volocopter now appears more focused on plans to launch its air taxi services in places such as Singapore, where it last month conducted a public flight demonstration and unveiled its concept for the VoloPort ground facility. It also has made flight demonstrations this year at Helsinki International Airport in Finland and in the center of the German city Stuttgart.

Also, in 2017, EHang conducted demonstration flights with its 184 eVTOL prototype aircraft. The company is now developing a single-seat 116 model and a twin-seat 216. However, it appears to be focusing efforts to make its autonomous aircraft operational in markets such as China, where it enjoys the close cooperation of local aviation authorities.

Uber Elevate, the aviation division of ride-sharing group Uber, has identified Dubai as one of several cities to be among the first wave of its plans to introduce eVTOL aircraft service based around its flight booking app. The U.S. group is partnered with five or six eVTOL aircraft developers and intends to launch trial operations in 2023. However, lately, its priorities seem to be focused on launching service in cities such as Dallas and Melbourne, Australia.

In March 2019, the Dubai Police took delivery of the first production example of Hoversurf’s Scorpion S3 “flying motorcycle” and the U.S./Russian manufacturer has supported training for at least two police officers since then. According to Brigadier Khalid Nasser Alrazooqi, general director of Dubai Police’s artificial intelligence department, the vehicles are expected to be used in law enforcement operations during 2020.

Bullish Market Projections

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Urban air mobility

wave of aircraft could be in commercial service on a limited basis as soon as 2023. Their critics would argue that, given the complexity of the change process, this is fanciful propaganda propagated by start-ups to keep investors motivated. More conservative elements believe that it will be closer to 2030 before urban air mobility has put down sustainable roots.

Overall, there is a growing consensus that urban air mobility will, sooner or later, represent a viable element in the wider business aviation and air transport equations. “The Change Is In The Air” study by accountants Deloitte published earlier this year forecast that in the U.S. alone, the eVTOL market could be valued at $17.7 billion annually by 2040, after rising steeply from $3.4 billion in 2025.

In August, Nexa Advisors, in association with the Vertical Flight Society, published its Urban Air Mobility—Economics and Global Markets report, which forecast a 20-year market value of $318 billion between eVTOL aircraft manufacturers, operators, and infrastructure providers. The report sees growth being concentrated across some 74 metropolitan cities around the world.

In a similar vein, a June 2019 report by investment bank UBS predicted that the introduction of hybrid electric powerplant for aircraft engaged in both urban air mobility and regional airline service could generate a new market worth $7.9 billion as soon as 2028. A key component of the UBS research is testimony from more than 2,000 travelers in the U.S. and Germany about the extent to which they are reducing their air travel use on environmental grounds. Overall, 22 percent said they had already reduced air travel for this reason and 38 percent said they would be willing to fly in hybrid-electric aircraft. That proportion rose above 50 percent among respondents aged between 18 and 44.

Pioneers at Dubai Show

In any case, several of the companies pioneering UAM and eVTOL aircraft developments are present at this year’s Dubai Airshow.

By around the end of 2020, Airbus (Pavilion P10) expects to have a clear picture of its long-term plans to develop new aircraft to serving what it views as growing needs for more efficient urban air mobility. The European airframer is very well aware that smaller and much younger startup companies are pursuing more urgent timelines but says that it prefers to take more time to ensure it delivers the right product.

Airbus has completed flight testing of its single-seat Vahana eVTOL concept, which has flown more than 100 fully autonomous flights since Jan. 31, 2018. Over the next 12 months or so it will conclude its evaluation of the four-seat CityAirbus model. What it learns from these programs will inform the company’s next steps in this sector, according to Eduardo Dominguez-Puerta, Airbus’ senior vice president for urban mobility.

The Vahana program has been led by A3 by Airbus, the group’s Silicon Valley-based technology hub, while CityAirbus is in the hands of Airbus Helicopters. It is still to be determined which part of the Airbus empire will take the lead in taking a series-production eVTOL aircraft to market. For now, it has created a division called Urban Air Mobility that includes its Voom helicopter charter partnership. “Having lived and worked in Silicon Valley I’m well aware of the fail-safe-fall-cheap philosophy of many tech startups there, but this approach doesn’t work when you are planning to fly people over people,” Dominguez-Puerta told AIN. “We have a strong safety brand, and because of our track record, the regulators know we are serious about this. So we don’t want to take a short-term approach.”

With recent developments, such as the July 2019 announcement by the European Union Aviation Safety Agency of its new “special condition” SC-VTOL rules, the regulatory path to getting eVTOL aircraft certified is getting somewhat clearer. However, Airbus feels there is still some way to go before the type certification process for the new generation of urban air mobility aircraft is established.

What’s more, Airbus sees greater progress required to establish a clear legal, environmental, and social policy foundation for operating these aircraft in urban environments. Behind the scenes, the group is committing significant resources to working with all stakeholders to resolve these issues. It also sees significant challenges in terms of integrating the new category of aviation into the air traffic management system and believes that its in-house expertise in this area will give it an edge over new market entrants with shallow aviation roots.

Airbus’s extensive research into prospective urban air mobility markets has confirmed an insistence that the new aircraft don’t add to existing levels of air pollution. Noise, “visual pollution,” and privacy concerns have also been identified as significant factors in terms of social acceptability.

At Boeing (Stand A21-24), NeXt division, formed in 2018, appears to be hedging its bets in the eVTOL market. The U.S. aerospace group’s Aurora Flight Sciences unit has been developing its Passenger Air Vehicle, which made a first flight in January 2019. The prototype suffered a crash on June 4 during its fifth flight, and the company has yet to confirm when flight testing will resume or how the development timeline might be affected.

Boeing has since announced a strategic partnership with start-up company Kitty Hawk to develop its Cora eVTOL aircraft. It has yet to publish a clear timeline for its plans to enter the urban air mobility market, but there appear to be indications that the company considers this a priority.

Another leading business aircraft manufacturer, Embraer (Stand A47) also is setting its sights on urban air mobility and has been quietly exploring concepts under a working project title DreamMaker. Earlier this year, the Brazilian airframer issued an open invitation for customers and prospective customers to propose a name for the program.

At the Uber Elevate Summit held by rideshare technology giant Uber in early June, the company’s U.S.-based EmbraerX division unveiled a lift-and-cruise all-electric design, while providing almost no detail as to its projected performance and specifications. Nonetheless, Uber has named Embraer one of six prospective aircraft partners for its planned air taxi service.

The concept shown at the Washington, D.C., Uber event features a pair of aft ducted fans and eight lift rotors. EmbraerX, which has operations in Melbourne, Florida, as well as in Silicon Valley and Boston, said the design is based on “a broad range of tests and simulations, aiming at operational optimization for the urban environment” and promises high reliability, as well as low operating costs and noise. The aircraft is ultimately intended for autonomous operations.

Helicopter manufacturers Sikorsky (Stand P6) and Leonardo (P8) have each worked on plans to extend their product range beyond conventional rotorcraft, but neither appears to be progressing on these for the time being. By contrast, Textron (Chalet S13), through its subsidiary Bell, unveiled its Nexus eVTOL aircraft early in 2019.

In 2010, Sikorsky started working on the Firefly program, a technology demonstrator for an electrically powered...
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Urban air mobility

helicopter based on the Schweizer S-300C model. Despite apparently making some progress, the company abandoned the project two years later, perhaps due to a realization that battery technology still had some ways to progress.

Leonardo also started work on its Project Zero AW103 electric tiltrotor in 2010. As recently as 2016, it was demonstrating a prototype on the international airshow circuit, but the Italian company’s work on the ducted fan model appears to have slowed, or at least gone underground, since then.

Endurance for the all-electric technology demonstrator was said to be no more than around to minutes and Leonardo indicated it intended to work on a hybrid version, backed up with a diesel engine. However, program leader Dr. James Wang has since left the company and now serves as chief technical advisor to start-up eVTOL developer XTI Aircraft, which is working on the TriFan 600 model.

Meanwhile, Bell unveiled the Nexus air- craft at the Consumer Electronics Show in January 2019. The design features a central wing, integrated landing skids, and a modified V tail topped by a short horizontal stabilizer. Its first flight is projected for 2020, with the aircraft expected to be certified in 2023. At last month’s NBAA show in Las Vegas, Bell exhibited an updated Nexus model with moving parts.

The Nexus is one of just a few eVTOL programs being advanced by a major manufacturer with relevant experience of bringing aircraft developed with related technology (i.e. helicopters) to market. What’s more, Bell has firm partnership commitments from experienced aerospace groups including Safran (engines), Thales (flight controls), Moog (flight control systems), Garmin (electronics integration), EPS (energy storage), and Sumitomo (logistics and transportation).

The aircraft will be powered by a hybrid/ electric distributed propulsion system feeding six tilting ducted fans, each powered by individual electric motors. The six-fan design is a compromise between quad- and octo-rotor configurations seen on other urban VTOL designs to provide system redundancy and space for passengers to safely embark and disembark while the vehicle is operating. The ducted fans also offer improved performance and a quieter noise signature than comparable open rotor designs, according to the company.

The Nexus propulsion system incorporates a series-hybrid layout in which a turbine engine feeds an electrical distribution system, which in turn routes power to a battery pack that drives the fan motors. In addition to providing system redundancy in the event of turbine failure, the series-hybrid architecture offers an upgrade path toward eventual fuel-cell and/or full-electric propulsion.

The prototype’s cabin is configured in a “4+1” layout with room for a single pilot/operator in addition to four passengers. Projected range is 150 miles, with cruise speeds of around 178 mph anticipated.

Also present this week in Dubai is Jetoptera (Stand 1464), which is working on a novel VTOL aircraft design that it intends to be powered by its so-called Fluidic Propulsion System (FPS). The U.S. company has published very few details about this powerplant, beyond that it involves a combination of a gas generator and gas turbines. The transition between vertical and horizontal flight for the fixed-wing aircraft appears to be powered by the deployment of tilting ducted fans at the rear of the fuselage and flight surfaces.

In August 2019, Jetoptera announced that it had concluded the first phase of flight testing with an early prototype aircraft, which achieved both hover and vertical flight and speeds of over 100 mph. The prototype was powered by conventional electric batteries as the FPS is still in development.

The company says that it expects to be ready to fly an FPS-powered prototype, designated the J-220, next year. It argues that the FPS offers performance far superior to that of today’s electric batteries while acknowledging that it may subsequently switch to electrical power when battery technology advances sufficiently.

GE Aviation is reportedly involved in the development of the FPS technology. Another start-up looking to draw support here in Dubai is U.S.-based Zeva Aero (Stand 1464), which was launched in January 2018 by CEO and chairman Stephen Tibbitts. The company is working on a distinctive disc-shaped single-seat eVTOL aircraft called the Zero that is intended for personal transportation. It is being designed for use in cities with a SkyDock unit that would allow it to be parked on the sides of buildings.

Zeva Aero is looking to close a $500,000 bridge round of funding by the end of this month. The company has yet to release any performance or specification details about the Zero model.

Engine Makers Step Up

At face value, you might think that conventional engine makers could feel threatened by the advent of electrically powered aircraft. But companies such as Rolls-Royce (Stand 1015), Safran (Stand A46), Honeywell (Stand 1249), GE Aviation (Stand A20), and Pratt & Whitney Canada (Stand 1320) have embraced the opportunity to show leadership in the move towards alternative powerplants.

In March 2019, Rolls-Royce started ground testing hybrid-electric propulsion based on its M250 turboshaft engine. This will be used to test Airbus’s E-fanX airliner development program from 2020, with a first flight projected for 2021. The engine is projected to generate between 520 kW and 1 mW of power.

The UK-based engine maker also hopes to find applications with eVTOL programs. In June 2019, Rolls-Royce confirmed plans to purchase the electric propulsion division of Siemens and expects to complete this transaction by year-end.

In July, XTI Aircraft selected GE Aviation’s new Catalypt turboprop engine to provide power for its hybrid-electric TriFan 660 VTOL aircraft. The manufacturer has yet to build a full-size prototype, but GE is advancing work on the Catalyst.

In September, Boeing and Safran announced a joint investment in energy storage specialist Electric Power Systems (EPS). The undisclosed investment amount committed during a Series A funding round will help Utah-based EPS to develop a highly automated industrial baseline capable of producing aviation-grade batteries at far higher rates than is possible today. It will also support work to reduce the cost of the batteries, making them more viable for electric aircraft.

France-based Safran is involved in a number of eVTOL aircraft developments, including Bell’s Nexus, for which it is providing a new turboshaft to support its hybrid-electric powerplant. It has also been involved in Zunum’s ZA-10 fixed-wing program, which appears to be stalled due to a lack of funds, and, reportedly with MetroSkyways’ City Hawk.

EPS is already providing energy storage units for the Nexus model. It is also supporting Bye Aerospace’s electrically powered eFlyer fixed-wing aircraft.

Safran views the eVTOL sector as a launch pad for introducing electrical power to larger aircraft, and, in its view, improving the efficiency of energy storage is a key factor in achieving this. “We think that eVTOL is a significant business opportunity that still faces a lot of uncertainty,” Hervé Blanc, vice president of the group’s Electrical & Power Solutions told AIN. “The eVTOL aircraft are perfect for demonstrating the benefits of electric and hybrid power solutions and we expect them to drive other opportunities with larger aircraft.”

According to Safran, weight constraints for energy storage units are a far greater challenge for aviation than they are in the automobile sector. So too are the ability to meet safety standards and to produce large numbers of batteries at an acceptable cost.

In Blanc’s view, power is more of a challenge for eVTOL aircraft developers than autonomous flight controls. “Autonomy is easier with aircraft than for a car,” he argued. “You take off from one fixed point and land in another, following a clear channel to fly so it’s much easier to define how this is done than it is for an autonomous car in the middle of traffic.”

Safran believes it may well take another five years to get eVTOL aircraft certified and in commercial service and that operations will likely start with cargo missions.

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“It is fairly easy to do a flight demonstration with just one prototype but getting a fleet of aircraft into service with the right level of safety and reliability will be another story, and demonstrating that the industry can achieve that will require a step-by-step approach,” Blanc commented. Safran also is working on algorithms to ensure that operators will know with a high degree of accuracy how much charge is left in batteries so that they can be sure of landing safely.

The company is looking to support both hybrid and all-electric aircraft. It sees the latter as being limited to flights of up to around 30 minutes with currently available energy storage technology, but it sees this shifting, as the power-to-weight ratio of batteries improves. “Getting to 300 kW/kg will be a game changer,” said Blanc. “The question is whether that will take one to two years or five to 10 years.”

Safran also has invested in Oxis Energy, which is developing new lithium-sulfur batteries. In July 2019, it acquired Neelogy, a France-based specialist in electrical current sensors. Separately, Safran’s cabin products division has partnered with Uber to develop a cabin mock-up concept for air taxi operations. The first unit was displayed at October’s NBAA-BACE show and featured a four-passenger plus one-pilot layout. According to John Badalamenti, Uber Elevate’s head of design for advanced programs, the concept illustrates its expectations for passenger comfort and amenities from the aircraft that will be used for its ride-sharing services.

Meanwhile, Honeywell is developing a new hybrid-electric turbo generator that combines its 1,100-shp HTS gas turbine engine with a pair of 200-kilovolt generators. It believes this technology will provide a quieter, cleaner and more fuel-efficient powerplant for urban air mobility aircraft.

Transcend Air Corporation has selected Pratt & Whitney Canada to provide a version of its 1,700-shp PT6 turboprop to provide power for its hybrid-electric Vy 400 eVTOL model. The current status of this program is unclear.

Along with Honeywell, several leading aerospace groups are taking a leading role in developing avionics, flight controls and other cockpit systems for the new-generation aircraft. These include Collins Aerospace (Stand 1055) and Thales (Stand 835). In May 2019, Collins announced plans for a new electrical power development facility called The Grid in Rockford, Illinois, to harness expertise in this area from across the group, including the former UTC Aerospace businesses that it recently acquired.

Honeywell’s engagement with the urban air mobility wider electric aircraft sector is extensive. For Slovakia-based Pipistrel’s 801 fixed-wing model, it is providing avionics and flight controls. For Jaunt Air Mobility’s ROSA program, it is to supply avionics, navigation systems, flight controls, and powerplant too. It is also partnered with the UK’s Vertical Aerospace to provide flight controls for its Vertical eVTOL project.

Several Dubai show exhibitors are involved in developing the critical unmanned air traffic management capability on which these new generation urban air mobility concepts will depend. In fact, the challenges associated with safely integrating especially those aircraft intended for autonomous (i.e. pilot-less) operation into public airspace have been identified as the biggest roadblock to these aircraft entering service. GE Aviation subsidiary AirXos is involved in development work to this end, as is Harris Corporation (GATM Pavilion) and Boeing NeXt with its partner Skygrid.
Honeywell forges futuristic fleet and flight ops platform
by Peter Shaw-Smith

Honeywell’s aviation business is growing in the Mideast despite lower demand for business jets in the region, according to Raghed Talih, aerospace leader Middle East for Honeywell Aerospace.

The company’s Global Business Aviation Outlook again, as last year, reported flat purchase plans in the Middle East, due to political tensions and ongoing conflict in the region. “[Some] 12 percent of respondents said they will replace or add to their fleet with a new jet purchase, down from 14 percent last year,” it said. “About 32 percent of operators responding to the survey plan to schedule [a] new purchase within the first two years of the five-year horizon. The share of projected five-year global demand attributed to the Middle East and Africa is 4 percent, in line with the historical range of 4 percent to 6 percent.”

The company recently launched ‘Honeywell Forge,’ a platform serving aviation and other industries, through big data and machine-learning capabilities. Talih said this new platform will drive airline profitability. “Based on data analytics and artificial intelligence, we identify and resolve problems faster, making fleet management, flight operations, and ground operations more efficient,” he said.

The service will benefit airlines’ daily operations, he said. “Analyzing flight delays and cancellations, a huge cost to airlines, any percentage that you can save in performance enhancement allows operational growth in their revenue. The experience is also tailored, depending on what the customer wants to focus on.

“With the technology around connected [technology] moving so fast, now you have a true pipeline into the aircraft, a live view into what’s happening on the flight, from takeoff to landing. There’s so much data that you can take out of this process. This is the power of it.”

Depending on where the airline chooses to focus in terms of fleet optimization, it could implement a model based on Forge. “We can help them focus on certain areas of their operation,” he said. “In the end, it’s about increasing the availability of their fleet and reducing costs of operation, flight delays, and so forth. If you can improve an operation by a point or two, that’s tremendous. It’s a level of intelligence that the operators never had before.”

Honeywell Forge, a platform that uses data analytics and artificial intelligence to identify and resolve problems, helps make fleet management, flight operations, and ground operations more efficient.

Dubai’s World Aviation Safety Summit Set for December

The Dubai Civil Aviation Authority’s (DCAA) World Aviation Safety Summit will highlight the effects of the growing use of flight data analytics and digitalization. The event, scheduled for December 9 to 10, returns for the seventh time this year and will advise participants on the use of data in real-time and the shift in management from a responsive function into a core planning and prevention tool.

Industry leaders will showcase trends on the collection, analysis, and sharing of data as well as address how analysis of millions of data points aboard aircraft leads to the prevention of incidents and effective management of threats and hazards.

“The World Aviation Safety Summit provides our industry with an opportunity to learn about the latest advances in digitalization, big data, and predictive safety,” said Khalid Al Arif, the executive director of the aviation safety and environment sector for DCAA. “These technologies are advancing rapidly and it’s important that we understand how they can be used to ensure improved safety with the sector.”
GE9X engines prepped for flying testbed trials

by Gregory Polek

GE Aviation has delivered the first three fully compliant GE9X turbofans to Boeing's Everett, Washington widebody plant. This follows retrofit of redesigned Stage 2 stator vane assemblies in the engines' compressors, GE9X program head Ted Ingling reported just ahead of the Dubai Airshow. Ingling explained that the process that led to the fix to the titanium part involved revamping the geometry to ensure a proper wear profile. With testing completed, GE has now retrofitted the fix on six engines, the fourth of which it was preparing to send to Everett when Ingling spoke with AIN on November 8.

"We have a fleet leader that keeps our knowledge points of the engine way ahead of the field."

— GE9X program head Ted Ingling

In all, GE has built 10 compliant engines, eight of which will go on flying test airplanes, along with two spares. While Boeing CEO Dennis Muilenburg said during the company's recent third-quarter earnings call that the engine remains a "pacing item" for the new Boeing 777X, Ingling told AIN that the timing of the fix has not deviated from the schedule set for it when GE discovered the problem in late May. With both engines now mounted, the first 777X awaits final installation work and on-wing testing before making its first flight, scheduled now for the first quarter of next year. As a result of the engine delay, Boeing has moved the airplane’s certification target from late this year to early in 2021. "We continue to explore opportunities to improve the timeline such as leveraging our system integration labs and additional airplane ground testing," said Muilenburg.

GE’s stator vane fix involved what Ingling called some geometrical changes outside of the flow path, meaning engineers did not alter the aerodynamics of the design. "So that, number one, is paramount to hanging on to our performance and our operational characteristics," said Ingling. "So it didn’t need to change. It was the boundary conditions around it that had to change."

Although GE halted certification testing while it devised the stator vane fix, maturation testing continued unabated. "We had certification vehicles we had to incorporate into our development vehicles as we continued to prepare the engine for entry into service," explained Ingling. "We’re doing the final couple of certification tests to finish that up. We halted those while we were waiting for this fix."

"And then we have our maturation testing that we continue to do...we put some of that in between a couple of the compliance engines. We introduced our maturation engine with the fix in it so we can keep the maturation program going on. We have a fleet leader that keeps our knowledge points of the engine way ahead of the field as a means to help smooth out anything that might show up in the engine in service." Ingling said testing on the maturation article would start soon.

Textron Aviation Longitude joins special missions role

by Jerry Siebenmark

General aviation manufacturer Textron Aviation comes to the 2019 Dubai Airshow with an emphasis on special missions aircraft, announcing a new option for the Beechcraft King Air 350 and a new role for the recently certified super-midsize Cessna Citation Longitude.

The Wichita airframer will introduce an FAA-certified option for extending the King Air’s nose that provides 12 cubic feet of extra space and is capable of holding 250 pounds of extra equipment.

“We’ve actually delivered the first couple of them already and there are a lot of different missions possible with those," Textron v-p of defense and special missions sales Bob Gibbs told AIN. "We’ve got different equipment we can put up there for different customers." He declined to disclose the first customer for the extended-nose option.

The new equipment bay has a range of possibilities, he said, "We currently don’t have it certified as a baggage compartment, so it’s not for golf clubs—yet." But Textron does have a proposal out on a potential medevac order in which the customer requires 3,000 cubic meters of oxygen. Textron is proposing to use that extra space for additional oxygen bottles. On medevac-equipped King Airs, Gibbs added, having the extended nose actually improves the 350’s center of gravity because of all the equipment carried in the passenger compartment, such as the stretcher and medical monitoring equipment. He noted the additional space could also be used for special missions 350s used for maritime patrol and other intelligence, surveillance and reconnaissance missions.

Textron is also using the show to announce that Japan’s Civil Aviation Bureau has ordered a Longitude for flight inspections, the jet’s first special missions application. "They needed the speed and the range of the [Longitude] and it was the best value for them," Gibbs said, noting that the Japanese CAB already owns and operates Citation CJ3s.

He also added that the OEM’s first special-missions Citation Latitude in an air ambulance configuration has already proved successful with its new owner, Babcock Scandinavian Air Ambulance in Norway. "It scared everybody how quickly it ramped up from when the operator took over that contract in Norway," Gibbs said. "They and all of us expected a slow ramp up, and they flew something like 60 missions in the first week."

In its first 90 days of operation, Babcock’s Latitude has flown missions totaling 300 hours, Gibbs added.

"We’ve got different equipment we can put up there for different customers."

— Textron v-p of defense and special missions sales Bob Gibbs

With the new SkyCourier coming online, followed by the Denali, Gibbs said there are more opportunities ahead for Textron’s special-missions business. The high-wing, twin-turboprop SkyCourier is “an airplane that we’re already looking at how to missionize so, very early on in the delivery process, we hope to have some specializations [and] customers that we can announce," Gibbs said. Its first flight is expected in early 2020.

Likewise, Textron is looking at potential applications for the single-engine turboprop Denali. "We have customers that are very interested in that platform for a lot of different missions,” he explained. "The engine that’s in it with the Faced and low pilot workload are interesting to customers."
While much of the attention paid to Airbus’s A321XLR has centered on prospects for opening further transatlantic narrowbody markets, the latest and largest member of the A320neo family—the A321XLR—carries a far wider appeal, particularly in places in which the airline industry’s low-fare sector remains comparatively underdeveloped.

In the Middle East, low-fare carriers account for just 19 percent of the market, compared with some 40 percent in North America and Europe, presenting an opportunity perhaps as dynamic as that already largely exploited by Airbus in Asia. Meanwhile, current A320 operators such as Saudi Arabian Airlines and Lebanon’s Middle East Airlines have shown a market exists for the A321XLR—carries a far wider appeal, particularly in places in which the airline industry’s low-fare sector remains comparatively underdeveloped.

Airbus head of marketing for the Middle East and Africa Andrew Armitstead. “Airlines want to know about it, they want to hear about it, they want to understand it. And it goes across all the sides of the airline market as well. Most airlines in the region have asked about the new aircraft.”

Armitstead explained that the XLR offers capacity flexibility for long-haul carriers flying A330s and market expansion opportunities for current Airbus A320 operators such as Flynas. For Middle East Airlines, the extra range means network planners can add a route from Beirut to Cape Town, for example.

Airbus calls the XLR the latest neo family evolution, from the 4,000-nm A321LR—which it introduced in 2015—to a 4,700-nm-range aircraft carrying the capability to serve all of Europe, Asia, and Africa from existing Middle East hubs. Changes in the XLR include a permanent rear center fuel tank as opposed to the auxiliary fuel tanks in the LR, modified landing gear to account for an increase in mtow from 97 to 101 tonnes, and an “optimized” flap configuration to preserve the takeoff performance and engine thrust requirements of today’s A321neo.

“The real step forward was to say, ‘look, we can design a permanent fuel tank, which is more efficient in terms of weight; it weighs less than the auxiliary center tanks,’ so there were efficiencies to be had there,” allowing Airbus to address concerns about increased fuel burn that extra capability typically suggests, explained Armitstead. “Any aircraft engineer normally thinks that’s impossible, to put more range on an aircraft and not affect the weight and the fuel burn,” he said. “But we found a way of doing that, which was particularly attractive.”

Making its first appearance at a Dubai Airshow since adopting its current moniker, the Airbus A220-300 on display here in EgyptAir colors embodies the kind of operational flexibility Middle East carriers particularly covet, according to Airbus A220 product marketing director Raymond Manougian.

Speaking with AIN just days ahead of the show, Manougian highlighted the ability of the former Bombardier C Series jet to replace Embraer 190s on regional routes—in a fashion reflected by EgyptAir’s replacement strategy—while covering long, thin narrowbody markets in the way Air Tanzania has done with its Dar es Salaam-Mumbai ETOPS flights and Air Baltic with its six-and-half-hour service between Riga and Abu Dhabi.

By the middle of next year, a 5,000-pound increase in maximum takeoff weight and a resulting 450-nm range extension will add still further capability to an aircraft uniquely positioned—in Airbus’s estimation—to profitably fly 100 to 160 passengers between the Middle East and far into Western Europe and Asia.

“If we look at EgyptAir, that’s able to do a regional operation,” said Manougian, “but at the same time it has the flexibility and the range the regional [airplanes] didn’t have… and the flexibility to connect two far-flung destinations that don’t necessarily have the market size to fill a large single-aisle airplane like the A320 or A321.”

While he said it remains too early to meaningfully gauge the dispatch reliability of the five A220-300s EgyptAir now flies (the airline took its first airplane on September 5), he reported that the airline has expressed satisfaction with their performance. “EgyptAir is extremely happy in the early going,” judging by] the limited feedback that we’ve had,” he noted, adding that early routes connect a few secondary markets in Saudi Arabia and key markets in Egypt such as Sharm El Sheikh. Now flying five of the 12 A220s it has ordered, EgyptAir expects to have taken all its airplanes by the middle of next year.

Air Tanzania, meanwhile, recently doubled its initial order to four A220s after a year of what Manougian characterized as more than satisfactory operational performance.

Neither airline, however, has experienced any of the engine problems that caused recent in-flight shutdowns at Swiss International Airlines, which resulted in a 24-hour grounding of that fleet. While the shutdowns—traced to a problem involving the low-pressure compressor—remains under investigation, Transport Canada airworthiness directives require borescope inspections every 15 flight cycles and place a low-speed spool limitation of 94 percent of N1 at altitudes above 29,000 feet. Operators have conducted initial inspections on all of the A220s in service and have found no anomalies, according to Airbus.

Apart from the low-pressure compressor issue, Pratt & Whitney expects to complete the remaining improvements to the A220’s PW1500G turbofans, including installation of a full-life combustor, sometime next year. What will become the engine’s fourth-generation combustor will last 25,000 hours, compared with the current generation’s 15,000 hours. Meanwhile, Pratt has finished fitting all PW1500Gs with new liftoff seals, a redesign of which has resolved premature wear problems.
Although as of late last month Boeing continued to cite a fourth-quarter target for authorization from the FAA for the Boeing 737 Max to return to service, the company also harbored contingencies—namely, further production-rate reductions or a complete shutdown of the narrowbody assembly line in Renton, Washington—if the approval process extends beyond the end of the year.

Furthermore, Boeing CEO Dennis Muilenburg acknowledged during the company’s third-quarter earnings call the likelihood of a “phased” certification process in which approval from aviation authorities outside the U.S. would come after the FAA return, he said, would depend solely on those authorities’ determinations.

The prospects for the Max’s re-certification by year-end hinged on Boeing’s ability to finish validating a software update that will always allow pilots to override its activation of the airplane into a dive from which the pilots could not recover. A similar scenario appears to have taken place in the March 2019 crash of an Ethiopian Airlines 737 Max in which all 157 occupants died.

For the Indonesia crash, off the coast of Java, investigators blamed design flaws in the MCAS combined with insufficient oversight by U.S. regulators, failures in crew resource management (CRM), and maintenance lapses. A final report into the accident released by the KNKT on October 25 gives nine main contributing factors that led to the crash, including the fact that a faulty reading in one only AOA sensor caused the airplane’s MCAS to pitch the nose of the airplane downward.

Other factors included a lack of documentation about the existence and functionality of the MCAS in flight manuals or training programs and the FAA’s over-reliance on Boeing’s own employees to oversee the system’s certification. The report also noted the absence of an AOA disagree alert—a system that came standard on the 737NG. Still, the KNKT did not place all blame on the airplane design, noting that maintenance crewmembers failed to detect a miscalibration of an AOA sensor they replaced on the Max before its fateful flight. However, investigators could not determine whether or not the mechanics properly performed the installation test of the AOA sensor, only that the miscalibration “was not detected.”

Meanwhile, the KNKT attributed a lack of detection of the miscalibration by maintenance and the flight crew’s failure to recognize the reasons for the uncontrolled dive at least partly to a lack of documentation related to MCAS.

Finally, the flight crew did not “effectively manage” the multiple alerts, MCAS activations, and distractions resulting from numerous ATC communications due to a CRM failure, said the report.

For its part, Boeing said it made several changes to the Max that address all the shortcomings cited by the KNKT, including a redesign in the way AOA sensors work with the MCAS. First, the MCAS will compare information from both AOA sensors before activating, meaning the system will now turn on only if both sensors agree. Moreover, the new design will ensure that the MCAS will activate only once in response to erroneous AOA, and will always allow pilots to override its activation with the control column.

Boeing targets 4Q for 737 Max ops in U.S.
by Gregory Polek

Collins Aerospace sales up as merger benefits grow
by Chris Kjelgaard

Strong sales growth in Collins Aerospace’s commercial-aviation aftermarket business will persist in the short term as a result of both the Boeing 737 grounding and upcoming ADS-B equipage mandates, according to CEO Kelly Ortberg.

Collins Aerospace celebrates the first anniversary of its formation—through the merger of UTC Aerospace Systems and Rockwell Collins—on November 26. Its commercial-aviation aftermarket business achieved sales growth of 17 percent in this year’s third quarter. The strong growth was fueled, in large part, by deliveries of ADS-B equipment from the company’s avionics augmentation system (MCAS), flaws in which investigators believe set in motion the series of events that led to the 737 Max crashes in Indonesia and Ethiopia. Meanwhile, a second software update unrelated to the MCAS also needed to pass muster with U.S. authorities.

Boeing insists that its changes address all the concerns highlighted by the final report from Indonesia’s National Transportation Safety Committee (KNKT) into the October 2018 crash of a Lion Air Max in which 189 people lost their lives. Investigators have concluded that accident stemmed from an incorrect reading by an angle of attack (AOA) sensor that triggered the MCAS to force the airplane into a dive from which the pilots could not recover. A similar scenario appears to have taken place in the March 2019 crash of an Ethiopian Airlines 737 Max in which all 157 occupants died.

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Other Areas of Sales Growth
Another area of strong short-term sales growth for Collins Aerospace is its military business, which in the third quarter grew at a high single-digit percentage rate. This growth “is really just a fallout of the improved budget environment over the past three years” within the [U.S.] Department of Defense,” said Ortberg. It takes three years from when the DoD receives budget-funding authorization by Congress for specific acquisition programs to the point when the U.S. armed forces begin placing orders under those programs.

“The military market has significantly grown” for Collins Aerospace because of massive aircraft-purchasing programs such as the F-35 and the KC-46, he said.
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UAE air force display team returns for Dubai 2019

by Peter Shaw-Smith

Fursan Al Emarat (The Knights of the Emirates) will once again fly on after-Fursan Al Emarat (The Knights of the Emirates) will once again perform during the aerial display at the Dubai Airshow 2019. The team will also help celebrate the UAE’s 48th National Day on December 2.

The team deployed to celebrate the Year of Zayed to mark the 100th year since the birth of former UAE president, Sheikh Zayed bin Sultan Al Nahyan, who died in 2004, in a flight along the UAE’s coast, on December 2, 2018. The team accompanied an aerial display involving A380s belonging to Emirates and Etihad Airlines, as well as Flydubai and Air Arabia narrowbodies. The last major international event where the UAE’s official aerobatic squadron performed was at the Bahrain International Airshow in November 2018. Fursan Al Emarat also participated in IDEX 2019 in Abu Dhabi. Its 2019 flight program has largely involved local and GCC shows.

On November 1, Fursan Al Emarat flew as part of exercise events involving UAE air and ground forces at the UAE Fortress 6 Military Parade in Ras Al Khaimah. The team will also celebrate the UAE’s 48th National Day on December 2 with a special flight.

Fursan Al Emarat operates the Aermacchi MB339A for its displays. Seven aircraft are involved, with three others on standby. Engine type is the Rolls-Royce Viper 632-43. Top speed is 500 knots or Mach 0.82. Maximum aircraft ceiling is 40,000 feet.

Col. Nasser Al Obaidli, squadron commander of Fursan Al Emarat, has led the team since its operational inception in 2011. In April 2019, he gave a lecture to the Gulf Flight Safety Association at Emirates Flight Training Academy in Dubai on aspects of the safety and training procedures of Fursan Al Emarat.

Al Obaidli expects his team to know their aircraft, display discipline and teamwork, think ahead, keep physically and mentally fit, rest well, prepare, and speak out if anything is on their minds. Team members employ the personal “I’m Safe” checklist before displays, to ensure that illness, medication, stress, fatigue, and diet do not impede performance on display day.

His advice to the team before takeoff is clear: “Do a mental rehearsal of your display before you get airborne, give yourself an extra 10 to 15 minutes and walk through the sequence, ‘flying it’ with your hands. Do not get forced into rushing. Isolate your mind.”

In eight years of operations, Fursan Al Emarat has put on displays in Russia, China, the UK, Malaysia, Saudi Arabia, Bahrain, Oman, Switzerland, Belgium, Morocco, Italy, Slovakia, and Kuwait.

“We have two new pilots now undergoing training; they are expected to deploy in summer 2020 to replace existing team members, who will move on to other duties,” Al Obaidli said. “We also changed the number six position on the team, and switched number one and number two around.”

In addition to Al Obaidli, pilots on the Fursan Al Emarat display team include Ahmad Al Menhali, in his first official airshow as team leader, Khamis Al Seriadi, Haitham Al Naqbi, Abdullah Masood, Haitham Al Naqbi, Salem Al Kaabi, and Sultan Al Kindi.

Dubai World Expo 2020 less than a year away

Although its bid for the right to hold World Expo 2020 came in at the last minute, Dubai was highly confident of winning host status. The emirate was so confident, in fact, that high-performance sports cars bearing Dubai Police insignia and on display at Dubai Airshow 2013—a week before the official result was announced— bore logos proclaiming Dubai would be the event’s host. Those logos are now seen on Emirates aircraft all over the world.

Taking place under the direction of the Bureau International des Expositions (BIE), with a theme of “Connecting Minds, Creating the Future,” this will be the first Expo hosted from the Middle East, Africa, and South Asia (MEASA). Organizers claim that 25 million people will visit the six-month event, 70 percent of them coming from outside the UAE. Judging by its status as a global conference hub, Dubai has perfected the art of hospitality, and the emirate is committed to ensuring its guests will not be disappointed.

Expo 2020 will welcome more than 200 international participants, including a record 192 countries. “It will connect nations, multinational corporations, non-government organizations, and millions of visitors from all over the world, providing an opportunity to see future innovations, marvel at unique architecture, experience diverse cultures, taste cuisines from all over the world, and enjoy live performances, art, and other entertainment,” the BIE said.

Construction is well underway at the 4.38-square-kilometer (1.7-sq-mile) site at the northern apex of Al Maktoum International Airport (DWC), including a new metro station designed to handle 36,000 passengers per hour. DWC officials have been hesitant to provide estimates, but around 2,000 business aviation flights could bring VIP attendees to the event.

Ever since the Great Exhibition captured the imagination of the United Kingdom in 1851, World Expos take place every five years. Innovations introduced at past Expos include IMAX (Osaka, 1970), touchscreens (Knoxville, 1982) and the humanoid robot (Nagoya, 2005). Expo 2020 will be held between October 20 and April 10, 2021.
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Middle East carriers feel the pain of Max hold-up
by Peter Shaw-Smith

With almost 400 orders for the Boeing 737 Max on hold in the Middle East, regional patience is running thin. Saudi Arabia’s Flydubai became the first major regional low-cost carrier (LCC) to cancel orders, for 30 737 Max-8s, in July, after parent Saudi Arabian Airlines upped an order for Airbus aircraft to 100, including 30 Flydeal A320ceos, at June’s Paris Air Show.

After signing for 245 Boeing 737 Maxes worth $27 billion at Dubai Airshow 2017, Flydubai, the Middle East’s biggest 737 operator, was clearly impacted by the grounding. It reported a 2019 first-half loss of $53.6 million, 38 percent down on the previous first half. While revenues held stable, available seat kilometers fell 14.9 percent, and passenger numbers dropped 7.5 percent to 5 million.

“Without any deliveries of new aircraft and no visibility of the timelines, we will see our operating fleet reduce in size to what it was in 2014,” said Flydubai CEO Ghaith Al Ghaith. “This is disappointing. If the grounding continues until the end of the year, we expect our performance to continue to be impacted.”

News was not all bad. Adel Ali, CEO of UAE-based Air Arabia, confirmed to AIN in October the company wished to proceed with an order for 100 new aircraft within the coming 12 months and could choose either the Boeing 737 Max or the A320 family. To date, Air Arabia has operated an Airbus-only fleet, as also has other major Saudi LCC Flynas.

The return to service of the Max remains a global issue. Peter Morris, chief economist at UK-based Ascend by Cirium, was pessimistic about its return to service. “(Given) the various kinds of dominoes that need to go down, my personal feeling, and it’s not based on any inside knowledge whatever, is that I will be surprised if it was on a huge scale before March next year,” he told AIN in Dubai. “There are other people saying it’s going to be November, so we’re clearly at a disagreement.

“I just see two elements that come in. One is the approval of EASA and the Chinese, as a minimum. Maybe the Canadians are going to be another group, as well. I can’t see that just being an automatic process in the way it has in the past, no matter what kind of agreements and behind-the-scenes negotiations [have] been going on. The other [is that] I find it difficult to believe that there won’t be pilot training issues; I hear whispers that there [is] talk of pilot training being required.

There were a lot of wildcards and complications regarding return to service, Mike Stengel, senior associate at Ann Arbor, Michigan-based AeroDynamic Advisory, told AIN. “First, although the aircraft have not been flying, there are still some calendar-driven maintenance events that may have to be completed, and it would not be surprising if there are some unexpected issues that technicians discover as a result of the aircraft sitting idle for what would be around nine months at the end of 2019.”

He cited April 2019 Boeing data to show just over 5,000 outstanding Max orders, with 387 delivered. Asia-Pacific operators accounted for 23 percent of orders, North America 14 percent, Europe 10 percent, South America 6 percent, the Middle East 5 percent, and Africa one percent.

“Second, it is not yet clear what requirements EASA will impose as conditions of the Max returning to service, or if they will accept the same requirements as the FAA. If, for example, EASA ends up requiring more (extensive simulator training), then there could potentially be a choke point, since there are relatively few Max simulators that would be handling a wave of pilots.”

However, he said this could be mitigated if the additional training could be completed during routine recurrent training, which most pilots undergo every six to nine months.

Third, it was unclear whether the Civil Aviation Authority of China would streamline the Max’s return to service, given Sino-U.S. trade tensions. “On one hand, Chinese carriers account for a significant share of the Max backlog and need the aircraft to support their growth plans,” he said. “On the other, the Chinese government may want to leverage the Max as a bargaining chip with the U.S.”
THE NEW FLAGSHIP HAS ARRIVED

Live life to the fullest in our new flagship, the Gulfstream G700™. The G700 features the tallest, widest and longest cabin in the industry, plus all-new, high-thrust Rolls-Royce engines and the award-winning Symmetry Flight Deck™.
Qatar Executive is first operator in line for Gulfstream’s five-zone G700 flagship

by Chad Trautvetter

With a five-zone cabin that includes 20 large windows, as well as a guaranteed range of 7,300 nm, it’s no surprise that Gulfstream Aerospace’s new G700 flagship attracted a Middle East operator as its launch customer. Qatar Executive, the executive charter arm of Qatar Airways, is taking 10 G700s worth $750 million at list price, with deliveries to start immediately after aircraft certification in 2022.

“We already see robust interest in the G700 from the Middle East,” said Scott Neal, senior vice president of worldwide sales at Gulfstream (Stand 1364, Chalet A17/18). “Like operators around the world, those in the Middle East appreciate the G700’s performance, comfort, and technology. The new industry flagship gives them all of that in the industry’s most spacious cabin, so customers can meet their business needs around the world while enjoying the same lifestyle they have on the ground.”

Gulfstream’s fly-by-wire G700 is a 10-foot stretch derivative of the G650, with which it also shares the same nose, fuselage cross-section, and wing. It also borrows the G500/600’s Symmetry flight deck, including active-control sidesticks, while adding a redesigned tail with lower height for easier hangar access, swoopy winglets, and new Rolls-Royce Pearl 700 engines. Because of the similar flight deck, the G700 will share a common pilot type rating with the G500/600.

But it’s the cabin that sets this aircraft apart from its siblings. “This will be the largest airplane we’ve ever built,” Gulfstream president Mark Burns told AIN. “It will have the widest, tallest, and longest cabin in the industry. The G650 set the bar...[and] the G700 is another game-changer.”

An NBAA-BACE Showstopper

A cabin mockup displayed last month at the NBAA-BACE show highlighted the G700’s space, comfort, and luxury. Plenty of light permeated the mockup, thanks to the score of large oval windows in the daytime and high-definition LED lighting at night.

The mockup’s first section included a forward lavatory; storage area; three-person divan (instead of an optional crew rest area); and an “ultra-large” galley complete with a 10-foot countertop, refrigerator, microwave, conventional oven, and plenty of storage space.

The second section offered club-four seating with all-new, fully articulating, and berthable seats—available in a number of fabrics, finishes, and firmness levels for improved comfort and aesthetics. The third zone featured an entertainment area with a three-seat divan, pop-up 40-inch 4K flat-screen TV, and immersive 3D sound system. For dining, the fourth section was configured in a club-six layout with a quick-deploy table that spans the entire cross-section.

The aft section contained a master bedroom with a full-size bed and dresser, in addition to an en-suite lavatory with a toilet and vanity opposite a floor-to-ceiling storage closet. Aft lavatory options not shown on the mockup include a larger vanity with opposite toilet, as well as a shower. A rear door in the aft lavatory allows in-flight entry to the 195-cu-ft baggage compartment, which can hold up to 2,500 pounds.

At the front end, the G700 features Gulfstream’s touchscreen Symmetry flight deck driven by Honeywell Primus Epic avionics and BAE-developed active-control sidesticks that simulate mechanical linkage to prevent simultaneous pilot input.

Standard avionics include dual head-up displays and EVS III enhanced-vision and synthetic-vision systems, giving it full-enhanced flight vision system (EFVS)-to-land capability. It also comes with 3-D Taxi, Honeywell RDR-4000 3D weather radar that provides predictive hazard warnings for lightning and hail, and a predictive landing system that aims to prevent runway overruns.

Power for the G700 comes from two 18,250-pound-thrust Rolls-Royce Pearl 700 turbofans. Compared with the Rolls-Royce BR715 on the G650/650ER, the new model provides 8 percent more thrust while burning 3.5 percent less fuel, in addition to weighing less. It will also meet or exceed Stage 5 noise standards.

According to Gulfstream, the G700 will have a maximum takeoff weight of 197,600 pounds and a maximum fuel load of 49,400 pounds. Balanced field length at mtow is 6,250 feet, while the landing distance is 2,500 feet.

Maximum range is “conservatively” 7,500 nm at a normal cruise speed of Mach 0.85 or 6,400 nm at Mach 0.90 high-speed cruise. Like the G650/650ER and G500/600, the G700 has a maximum speed of Mach 0.945. At Mach 0.87, the G700 will be able to fly nonstop from Dubai to New York City, São Paulo, or Sydney, Australia.

The two first-test aircraft (T1 and T2) have already rolled off the company’s G650 production line in Savannah and are undergoing ground tests before a planned first flight next month. Service entry of the G700 is expected to follow in 2022. In total, Gulfstream has already racked up more than $2 billion in orders for the G700.
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Extraordinary together
Falcon expects bizjet MRO boost with new DWC base

by Peter Shaw-Smith

Abu Dhabi-based offshore aviation support and private jet charter operator Falcon Aviation expects to be able to offer unrivaled MRO facilities at its new hangar at Al Maktoum International Airport (DWC) in Dubai, which opened in September, COO Capt. Raman Oberoi told AIN.

“We recently opened our MRO facility at DWC,” he said. “This Code-F Plot hangar has sufficient height to accommodate the Airbus A380. All our business-jet MRO services have been moved to this new hangar, including base and line maintenance for Embraer, Gulfstream, and Bombardier. We are looking into the possibility of providing base and line maintenance to narrow-body commercial and business jets. The hangar is located at a 24,000-square-meter [258,334-sq-foot] plot, with an additional apron space of 13,000 square meters.”

Falcon (Stand 1640) has four revenue streams, its main income stemming from oil-and-gas operations. “We have been able to effectively support Abu Dhabi National Oil Company’s [ADNOC] oil-and-gas operations for the last 10 years with helicopters, and four years with fixed-wing. We have supported Total ABK on oil field operations for eight years using Bell 412s, and for three years with AW169 helicopters,” he said.

Falcon operates a fleet of VIP helicopters from a heliport located outside the VIP terminal. “With a fleet of 23 aircraft [26 helicopters and seven fixed-wing], we achieve about 16,000 flight hours per year, about 12,000 of these on helicopters,” he said. “Most of our operations are for ADNOC offshore, utilizing 65 percent of these flight hours.”

Oberoi expects Kuwait to invest $100 billion in oil-and-gas operations in the next five years. In January 2019, Falcon began oil and gas and medevac operations in a Kuwait Oil Company (KOC) contract, using three new AW169s at the heliport in the Ahmadi area of Kuwait City. An increase in demand for lift is expected within two to three years, as these projects expand.

“These helicopters are based in the newly constructed hangar at the heliport,” he said.

Falcon has been an Embraer service center in the region over the years through its MRO facility in Abu Dhabi. The long-standing partnership is being relocated to Falcon’s new MRO hangar at DWC. “With this top-class facility, we will be able to provide MRO services to Embraer jets in the region, including Lineage and Legacy,” he said. “This will further strengthen Falcon Aviation’s relationship with Embraer.”

Jetex tapped again as Dubai Airshow FBO

For the third consecutive time, Jetex has been selected as the official FBO service provider of the biennial Dubai Airshow. In 2017, the show attracted 1,200 exhibitors from 65 countries and nearly 80,000 visitors. While that show featured 159 aircraft in its static display, this year is expected to attract as many as 165.

“The Dubai Airshow has grown every year in its 30-year history,” said Michele van Akelijen, managing director of show organizer Tarsus F&E LLC Middle East, adding this year’s show is expected to be the largest yet. “We are thrilled to have Jetex on board as the official FBO again as we [prepared] for the Dubai Airshow to open on November 17.”

Dubai-based Jetex is headquartered at Dubai International Airport (DXB), where it established an operations center in 2005. Its flagship location, which earned FBO of the Year honors in the region for the second straight year in the 2018 Aviation Business Awards, is located in the private aviation terminal at Al Maktoum International Airport (DWC), site of the Dubai Airshow. The facility offers five-star hospitality, with aircraft parking directly in front of the terminal, direct ramp access, concierge, well-appointed passenger and crew lounges, shower facilities, conference rooms, on-site customs and immigration service, and Rolls-Royce airside transfers, as well as being the only FBO in the MENA region to earn IS-BAH Stage 2 registration. The company also serves as the official FBO and handler for the Middle East and North Africa Business Aviation Association (MEBAA) convention, which is also held every other year and alternates with the Dubai Airshow.

“This year has been an incredibly successful year for Jetex, and we look forward to seeing what 2020 holds not only for us but for the whole of the luxury aviation industry,” said company founder and CEO Adel Marandi. “It is an honor to be the official FBO service provider for the Dubai Airshow as it represents the trust and respect that we have gained within the region.”
Airbus expands Middle East cabin electronics services

by Cathy Buyck

Airbus in late September inaugurated its first cabin electronics service center for the Middle East and Africa. The move comes as part of its drive to further expand its presence in the region and bring technical support closer to its customers.

The new facility, which is located at the the Dubai Airport Free Zone Authority, is the European OEM’s fourth center providing repair and spare part services for cabin components and systems after Buxtehude near Hamburg, Beijing and Dallas. It is also offering customer on-site technical services such as cabin system training.

“As we have an extensive range of airline and freight customers operating Airbus aircraft in the Middle East and Africa region, Dubai will be an important strategic addition to these key locations for our customer base,” Mikail Houari, president of Airbus Africa and Middle East, told AIN. Airbus is performing “extremely well” in the Middle East with airlines of different sizes and stages in their development using the airframer’s equipment, he said.

More than 240 Airbus aircraft operate in the region and “over the next decade, we have already signed orders for more than 1,400 aircraft that will land in the fleets of Middle Eastern carriers, he added.”

The Dubai cabin electronics service center will serve airlines based in the United Arab Emirates (UAE) and the wider Middle East and Africa markets, as well as customers in India, Houari stressed. The facility’s first customer was Thales and the inaugural airline customer was South African Airways. The new repair and maintenance shop is UAE General Civil Aviation Authority and EASA Part 145 certified.

The latest Airbus investment “absolutely” will translate into cost savings for operators, vowed Houari. “Airlines using our new cabin electronics service center will benefit from faster turnaround times and improved mean shop processing times. Given the service center’s location in the Dubai Airport Free Zone Authority, we’re closer to our customers’ operations. As such, customers will receive faster technical support and lower logistical costs for moving spare parts.”

Before the opening of the Dubai facility, the cabin electronic components were repaired and certified at the company’s German service center, which is the main headquarters for Airbus Cabin Electronics. The Dubai Airport Free Zone Authority with its investment incentives proved an additional lever to draw the Airbus investment, the region’s Airbus boss conceded; without spelling out the incentives the company received. For DAFZA director general Mohammed Al Zarooni, the long-term partnership with Airbus reaffirms the body’s “continuous efforts to provide the ideal environment which has been instrumental in driving foreign investment into the UAE.”

Moreover, he asserted, the Airbus cabin electronics service center aligns “with the UAE’s commitment to localization and plays a key role in the UAE’s economic diversification plans and development of the wider regional aerospace sector.”

Military Airbus H160M set for 2026 service entry

by David Donald

In 2021 the Helicoptère Intermédiées Léger (HIL, joint light helicopter) program is due to be officially launched by France. The Airbus Helicopters H160—a dedicated military version of the civilian six tone H160 that is due to enter service next year—has been selected to meet the requirement, and is expected to make its first flight in 2023.

The Safran Arrano engines offer a 15 percent fuel-burn reduction compared to similar turboshafts. The H160 features the Thales FlytX avionics suite.

To begin with, the H160M Guépard (cheetah) is being tailored to meet the French program that is replacing a number of current types serving with the French army, navy, and air force. As part of the militarization, the H160M will be equipped with a range of communications systems, tailored to meet cybersecurity requirements and varying levels of data classification.

Sensors planned for the Guépard are a Euroflir 410 electro-optical system and a Thales multirelational tactical radar that is now in development. The radar will offer various search and targeting capabilities and will feature three flat electronically-scanned antenna arrays that will be located in an arrangement that provides near 360-degree coverage around the helicopter. A self-protection suite will be installed but has yet to be selected.

Weaponry will comprise axial side-mounted gun and rocket pods, including the ability to fire laser-guided rockets. The naval version will also be able to launch the MBDA Sea Venom anti-ship missile. Internally the cabin can be configured for up to 12 passengers or at least five fully equipped commandos. A typical SAR fit could accommodate two stretchers and five troops. The H160M could be fitted with a refueling probe, and Airbus is awaiting a go-ahead for development from the DGA, the French defense procurement agency.

France intends to acquire 169 H160Ms for the HIL program. First deliveries are expected for the army in 2026, with the navy receiving its first machines in 2028 and the air force thereafter.
As a major infrastructure project in the emirate of Dubai, the build-out of Al Maktoom International Airport (DWC, aka Dubai South) is an enterprise of national significance over which the authorities are content to play a long game. This makes sense given the economic headwinds buffeting the UAE economy today and postponement last year of Emirates’ move to DWC by five years to 2030.

With fewer than 10 commercial flights a day either arriving or departing in September and October at DWC, according to checks carried out by AIN, the rationale for the expansion of the airport’s passenger terminal building to a capacity of 26 million passengers a year appears yet to be justified.

In contrast, the centrality of operations at Dubai International (DXB) continues, with the transfer of a number of Flydubai flights to the dedicated Emirates Terminal 3, and Dubai Airports attempting to speed up aircraft turnaround dramatically, according to CEO Paul Griffiths.

However, DXB saw only 41.3 million passengers in the first half of 2019, compared to a full-year figure of 89.1 million in 2018. The closure of one of DXB’s two runways for refurbishment in April and May contributed to a decline in traffic of 5.6 percent year-on-year. DXB cargo throughput, at just over 1 million tonnes, was down 18.3 percent.

Although a total of 22,128 flights took off or landed at DWC during the first half of 2019, an increase of 38 percent, this was largely due to the DXB runway work. DWC cargo fell to 450,000 tonnes, according to Dubai Airports, a 5.3 percent year-on-year decline.

Focus on Bizav

In light of slow scheduled growth, Dubai South continues to concentrate on other aspects of the aviation value chain, particularly business aviation. “The year started well,” Tahnoon Saif, CEO of Mohammed bin Rashid Aerospace Hub, told AIN. “H.H. Mohammed bin Rashid Al Maktoum officially inaugurated Dubai South’s Aviation District. It is now called Mohammed bin Rashid Aerospace Hub (MBRAH).”

MBRAH offers global aerospace players high-level connectivity and is a free-zone destination for the world’s leading airlines, private-jet companies, and associated industries. Located in and developed by Dubai South, MBRAH is also home to a VIP FBO terminal, a maintenance center, and a training and education campus. It seeks to strengthen engineering industries at DWC to foster the emirate’s vision of becoming a leading aviation hub.

“In terms of business, we are focusing more on business aviation than commercial,” Saif said. “Commercial aviation is [the responsibility of] Dubai Airports, as operator. They are having work done on both airports, at DWC and DXB.” DWC officials told AIN that the cessation of Phase 2 expansion at DWC had allowed manpower to be transferred to the task of preparing DWC for the six-month Dubai World Expo, which launches on site in September 2020.

Although AIN understands business aviation flights across Dubai fell 9 percent in 2018, to just under 13,000 movements, the figures rose 26 percent year-on-year in the first half of this year. “On business aviation, the year started very well,” Saif said. “Around 72 percent of movements took place at DWC. [Those using DXB] are mainly operators tied to the maintenance centers there, [operated by Jet Aviation and ExecuJet].”

Of the around 7,950 business aviation flights through Dubai in the first half, some 5,750 went through DWC, while only 2,200 used DXB, giving DWC 72 percent market share, compared to only 59 percent in the comparable period in 2018.

“We had growth of more than 20 percent in the first half of 2019, compared to the same period last year. We refer to the operations handled by FBOs, rather than general aviation, or unscheduled flights handled by the airports, training, etcetera,” he said.

He said no cutoff date would be imposed on business aviation flights going into DXB, especially given the MRO facilities there. “An investment was made by operators there, so it’s wise to do business when slots are available. Our focus is to create value for FBO operators at DWC, to attract movements.

“Different operators have different plans. Some FBOs are pure FBOs. But others have MRO models, too. Jet Aviation and ExecuJet have dual operations, here and at DXB. This is something we take into consideration: the investment they made there. [For them to move all operations to DWC] is not something we want to happen overnight. They made significant investments in MRO.”

Saif looks forward to eventual consolidation of operations into DWC. “We don’t know when full consolidation will take place here, but we are looking forward to having the whole business aviation ecosystem here. Currently, five FBOs are operating from DWC, and we don’t have intentions to attract or introduce more.”

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**DWC focus remains on business aviation**

by Peter Shaw-Smith

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**Edge shapes 25 UAE orgs into R&D effort**

The UAE government launched advanced technology conglomerate Edge earlier this month to oversee the consolidation of more than 25 innovative national security companies in an effort to boost the UAE’s defense credentials. It also appointed Faisal Al Bannai, a seasoned technology entrepreneur to lead the concern.

Although details of companies involved are sparse, the UAE is keen to consolidate defense entities that were formerly subsidiaries of the Emirates Defense Industries Company (EDIC), namely Emirates Advanced Investments Group (EAIG), Tawazun Holding, and other independent organizations.

“Faisal Al Bannai has been [selected] to lead Edge (Chalet A14-16), based on his startup background and proven track record in leveraging emerging technologies to expand business opportunities at home and abroad,” an official press release said. The entrepreneur started his startup background and proven track record in leveraging emerging technologies to expand business opportunities at home and abroad, an official press release said. The entrepreneur started retail mobile phone chain Axiom Telecom, today worth $2 billion, in 1997, and in 2015, established UAE-based cyber-security consultancy Darkmatter.

“Edge will invest extensively across R&D, working closely with front-line operators to design and deploy practical solutions that address real-world challenges,” Al Bannai said. “The solution to address hybrid warfare lies at the convergence of innovations from the commercial world and the military industry.

Established with a core mandate to disrupt an antiquated military industry generally stifled by red tape, Edge is set to bring products to market faster and at more cost-effective price points.”

The UAE is known to be a trendsetter in the Arab world in several technological fields and is also keen to buy in international expertise. “We are invested in managing the uncertainty that technology brings by adapting our focus and capabilities toward a sustainable defense and security industry,” Tareq Al Hosani, CEO of UAE defense catalyst, Tawazun Economic Council, said. “Edge will help us transform our domestic capabilities while growing our engagements on defense and security exports.”

Al Bannai said the constituents of the new group had a total of around 12,000 employees, revenues of $5 billion, and would be split into five core clusters: platforms and systems, missiles and weapons, cyber defense, electronic warfare and intelligence, and mission support.

The announcement likely signifies the UAE government’s wish to improve cost-effectiveness in defense procurement. In light of intensification of regional threats, U.S.-based Deloitte Consulting LLP said in December 2018 that although defense expenditure in the UAE and Saudi Arabia had slowed recently, seven out of the top 10 countries with the highest military expenditure as a percentage of GDP worldwide were in the Middle East: Oman, Saudi Arabia, Kuwait, Jordan, Israel, Lebanon, and Bahrain.

Asked by AIN if the entity had been set up due to the worsening security situation in the Middle East, Al Bannai said, “Not really. I think the reason for this announcement is a very clear vision from the country [that] this is the right time to put all of these entities under one roof, to have a unified strategy and [be] in a position to dramatically accelerate our capability. It relates to the country’s overall strategy of becoming a strong technological player and setting the foundation for that to happen.”

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**Business aviation traffic at Dubai South (DWC) grew more than 20 percent in the first half of 2019.**
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Rolls-Royce expands Middle East services

by Ian Goold

Rolls-Royce (R-R, Stand 1015), here at Dubai Airshow to promote “forward-looking” technologies, is showing its Trent XWB high-bypass turbofan that powers the Airbus A350 twinjet.

R-R claims a 92 percent share (about 50 aircraft) of the African twin-aisle market backlog and almost half (45 percent or more than 220 aircraft) of that in the Middle East. The company said that an average of 20 Rolls-powered aircraft are delivered to the Middle East and Africa each year.

In addition, the manufacturer highlighted the two regions’ “transitioning” market as airlines and lessors transfer ownership of Rolls-engined aircraft. “We see a significant transitions market, particularly across Africa, from the Trent 700-powered [Airbus] A330.”

With after-market service sales increasingly a paramount consideration for all manufacturers and suppliers, R-R is looking forward to increasing demand for its CareNetwork overhaul services. The in-service engine fleet will grow from 4,000-plus today to almost 6,500 in the mid-term—and even further beyond that,” said R-R. “Expansion of our global CareNetwork includes the development of an additional network of overhaul bases, in-field maintenance, and repair providers.”

In the Middle East, the engine manufacturer has expanded its global service network with a new independent Trent 700 authorized maintenance center (AMC) at Abu Dhabi International Airport. Under the nine-year, $6.5 billion agreement, Sanad Aerotech (formerly Mubadala Aerospace Turbine Services & Solutions) will offer engine-overhaul and component-repair services to global operators.

Trent 700s power more than 800 Airbus A330s flying with over 80 operators, and the deal illustrates how R-R is increasing maintenance capacity through “strategic partnerships with service centers in important regional locations.”

Meanwhile, on the development front, Rolls said that work is progressing on the UltraFan geared-engine demonstrator that is expected to provide significant reductions in emissions, fuel consumption, and noise. The company reports completion of “successful worldwide tests of key technologies, ready for flight and ground testing in the coming years.”

Construction of Engine Testbed 80, claimed to be the “biggest, smartest testbed in the world,” is underway at Derby, ahead of planned commissioning next year. “Equipped with precision x-ray equipment, state-of-the-art data systems, and the ability to test with sustainable aviation fuel, [it] will allow us to validate and understand engine technology better than ever before,” said the manufacturer.

Patrolling the skies over Dubai...

Exquisite timing, superb skills, deep trust, and clear-eyed confidence are mandatory for the talented pilots of the Patrouille de France, seen here practicing for the opening of Dubai Airshow 2019 in their Dassault Alpha Jets.

Local capabilities key to Collins Middle East market

by Chris Kjelgaard

Commercial aircraft interiors and premium-class seating represent one of two business areas that offer Collins Aerospace particularly strong sales-growth opportunities in Middle Eastern markets, according to Collins CEO Kelly Ortberg. Ortberg said Middle Eastern operators’ requirements for airliner interiors and premium-class seating are “leading demand” in the region for Collins Aerospace’s range of products. He added that requests from armed forces of Middle Eastern countries for military-aerospace equipment also are giving Collins “a lot of work round military products—communications, navigation equipment, and ejection seats,” he said.

Collins now has about 400 employees based in the Middle East and Northern Africa, and Ortberg expects the company’s workforce in the region to “continue to grow.” Sales to civil-aviation customers represent about 70 percent of Collins Aerospace’s total business in the region.

The company’s basic strategy for growing its business in the Middle East and Northern Africa is “to locally invest and build our local capabilities,” said Ortberg. At the same time Collins Aerospace is always looking to cement business partnerships in the region to help grow the extent of its business there and become more deeply involved in the market, he said. Two initiatives announced by Collins late last month clearly illustrate that strategy.

One is Collins Aerospace’s move to expand the size of its production facility in Casablanca, Morocco, by 40 percent to allow for production growth there. Established in 2012, the Casablanca facility conducts final assembly and testing for commercial aircraft cockpit and cabin equipment, including sidesticks, throttles, and rudder controls.

The site expansion will support the production of rudder controls for the A320neo family and the future assembly of horizontal-stabilizer trim actuators for the Boeing 777X. Expected to be complete by spring 2020, the extension will create about 60 new jobs and it is “critical to the company’s strategy to grow its footprint in the Middle East and Africa,” according to Collins.

Collins Aerospace’s second new initiative in the region is its participation in Aviation X Lab, an aviation-specific business incubator founded by Emirates in partnership with Dubai Future Foundation in 2017. Aviation X Lab is a long-term partnership involving Emirates, Airbus, Collins Aerospace, GE Aviation and Thales, that aims to enhance the air travel experience.
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We took on our customers’ challenges. We made them our own, creating disruptive solutions that would allow them to outperform — ambitions we will carry well into the future as we deliver the world’s most disruptive and technologically advanced products and solutions. One thing is certain: we will never stop dreaming.

Fifty years of innovation have led us to this moment. You won’t believe what we are dreaming up next.
Collins Aerospace is pouring millions into expanding facilities, machinery, and employee bases at its Landing Systems businesses as it works to keep up with growth across its markets. This has included an $80 million expansion at its carbon-brake center in Pueblo, Colorado; possible expansion at a second carbon site in Spokane, Washington; and increased personnel and machinery at landing gear sites in Poland and Canada.

“It’s a very good time to be in aerospace these days,” said Ajay Mahajan, vice president of the Landing Systems unit. “We continue to feel pretty good about our conditions going forward and we will continue to strive to maintain that advantage by our investments.”

Collins (Stand 1055) has produced wheels and brakes and/or landing gear for the spectrum of commercial aircraft, including from a Dash 8 turboprop up to the largest Airbus and Boeing airliners. Executives agree much of the growth the Landing Systems business unit is experiencing is driven by healthy airliner order books. However, the company also sees a steady business and new opportunities in the business aviation market, as well as increasing interest in the military side, particularly with strategic programs such as the F35.

“We’re seeing a fair amount of expansion across the board,” agreed Samir Mehta, president of Collins Aerospace’s Mechanicals Systems business lines, which includes Landing Systems. “We’re seeing it certainly in commercial, and that’s single-aisle and double-aisle. Our customers have strong backlogs and strong order books on them, so that’s driving a lot of the demand.”

A major focus of investment has been increasing carbon capacity as its brakes business has soared. “Everything to us is landings, landings, and landings. They’re building more [aircraft] than they’re retiring,” said Tony Wurmel, executive director of wheels and brakes operations, based at the Pueblo site.

**Carbon Disc Investment**

In response, Collins has engaged in a multi-year expansion of the facilities at Collins Aerospace’s plant in Pueblo, Colorado, where raw materials are transformed into pure carbon and then into a brake disc designed to withstand landings of the heaviest aircraft. That expansion, which began in 2015 and is expected to be completed late next year, has resulted in a footprint spanning 325,000 sq ft, provided additional furnace and machinery capabilities, and increased employment by some 25 percent to 350. The net result is a 50 percent increase in production capacity.

These investments build on the advanced technologies that Pueblo has been gradually bringing online as it evolves the process. This includes machinery to do the basic weaving of the raw materials that arrive primarily from two main suppliers (both in Japan). As it arrives, that material has the appearance of soft “horsehair” and machines shape it into soft, thick blocks that are then cut into brake disc shapes before they are baked multiple times in furnaces.

A significant amount of investment has been made in bringing several more large furnaces online that are the key to carbonization (purification) and densification of the discs. The furnaces run around the clock for weeks at a time as they bake discs carrying hundreds of carbon brake discs at temperatures that can reach more than 2,000 degrees centigrade.

The furnaces are monitored through a control room to ensure they remain within tolerances—a half-degree of variance can upset the entire process. Investments in this area over the past decade have reduced the need for the constant manual checking of the furnaces.

Other investments have involved robots to help with the oxidation process, a protective coating step to ensure the discs can withstand exposure to weather elements over time. Collins further has brought online machinery to quality-test the brakes. Each batch must have discs tested for rejected-takeoff stresses on an in-house dynamometer.

While the basic process has remained the same, it has evolved and become much more efficient over the four-plus decades that carbon brakes have been produced. “Our carbon that we produce with today’s process is much more reliable, much more effective, and has significantly lower wear rates than even 10 years ago,” Mehta said.

Pueblo is just one of three carbon plants that Collins operates. Another major center is Spokane, where Mahajan said Collins is considering a similar investment.

A third, smaller site is in Santa Fe Springs, California, which makes the carbon brakes for the smaller-run programs, including some military and newer business aviation platforms.

On the landing gear side, Collins is focusing on the growth of facilities outside of the U.S. in an effort to be closer to customers, said Mahajan. “We now have a huge footprint in Poland,” he said, adding that with manufacturing plants at Krosno and Rzeszow, Poland is becoming one of its largest gear manufacturing hubs.

Another growth area is its plant in Oakville, Ontario, Canada. “We are growing quite a bit, both in terms of people, as well as investing in new equipment,” he said, estimating that more than 100 employees have been added to the site in the past nine months. In addition, more machines have been brought in and “we’ll continue to expand that going forward.”

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**Euramec inks Dornier 228 simulator deal with Kenya’s Kasas**

European flight simulation provider Euramec (Stand 1844) is to supply a Dornier 228 flight training device (FTD) for Kenyan charter operator Kasas, which operates a fleet of nine Dornier 228s and a Dassault Falcon 10 from Wilson Airport in Nairobi.

“Euramec is contracted to provide a certifiable FTD [flight training device] for training new and existing Kasas cockpit and ground crews,” a statement said. “The Do-228 FTD will be mounted on a compact full-motion platform for full reality integration. Training is to commence in early 2020.”

Kasas provides services to-governmental organizations such as the International Red Cross, Medecins sans Frontieres, Save the Children UK, GOAL Ireland, and the UN World Food Program in many Central and East African countries.

“A diverse client base [enables us] to provide fixed-wing contract and charter services to non-governmental organizations; the oil, gas and mining resource sector; regional governments; and multinational companies,” Kasas said. “We also offer corporate services, tourism, and medical evacuation flights.”

Euramec designs, manufactures, and builds pilot training simulators and other devices, including a range of training aids, from the Diamond DA-40 and -42, Cessna, and other general and business aviation aircraft types to EASA- and CAAC-certified A320 family solutions. The company delivers integrated services to commercial flight training centers, military, and government agencies, as well as flying schools, providing turnkey solutions to customers worldwide.

Euramec’s headquarters is in Belgium. The group has a design and production center near Porto in Portugal, and offices in Europe, Canada, and Singapore and Hangzhou, Harbin, and Hong Kong, China.

The company will also unveil a new range of flight simulation platforms and smart flight services at the Dubai Airshow, including the A320 full-glass cockpit FTD, certifiable under EASA FNP7 Level II MCC specifications, and the Piper PA28 Archer/Warrior and the PA44 Seminole Series.

“In Dubai, the standard Diamond DA-20/40/42 range of glass cockpit flight simulators, as well as its Cessna T2F flight simulator will be on offer,” Euramec said. P.S.S.
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Simulation specialist ANSYS generates three major software releases annually. The company says users are increasingly using cloud-based environments for their simulation platforms.

Simulation is on the verge of a new-tech revolution

by Gerrard Cowan

Simulation and training technology has evolved in several directions in recent years, according to industry representatives, driven by increased interest in new or evolving areas like urban air mobility (UAM).

Different types of simulation are used in various aspects of aerospace, from flight training to engineering, with companies in these sectors set to have a presence at this year’s Dubai Airshow. Simulation has been used in the commercial aerospace sector for decades, though the past few years have seen “a dramatic increase in the use of simulation in many areas, including electronics, communication systems, and avionics,” said Paolo Colombo, industry director aerospace and defense at ANSYS (Stand 531). The company delivers a multi-physics and multidomain engineering simulation platform to design, validate, and certify aerospace components and systems, including advanced avionics, autonomous aircraft, and eVTOL platforms. Its product line includes ANSYS Twin Builder, software that allows engineers to build, validate, and deploy complete systems simulations and digital twins.

The aerospace industry is facing an exponential rate of change, Colombo said. Concepts like UAM and regional mobility are driving a great deal of interest in electric propulsion and autonomous systems, including the design, testing, certification, and integration of components like motors, cameras, radar, and embedded software.

“The industry lacks experience in some of these newer areas,” Colombo told AIN. “Without simulation, it’s difficult to imagine how engineers could innovate in these highly complex fields. It would be extremely costly and time-consuming.”

Simulation is evolving quickly, Colombo said, with ANSYS releasing three major software releases annually. He said that physics integration has long been a major focus for the company, allowing users to evaluate the phenomena influencing a component or system and predict its behavior in the real world. Additionally, he said, aerospace customers are increasingly using simulation in a cloud-based environment, allowing them greater flexibility in the way they access computational power.

Virtual reality (VR) is also a new and interesting growth area within simulation, Colombo said. For example, test pilots can now sit in front of a physics-based simulation of a cockpit and validate it, while an autonomous aircraft can be flown for millions of miles to evaluate its response to various weather conditions, impacts, inbound traffic, or engine failure.

VR is particularly useful in areas outside flight training, such as helping mechanics to locate particular aircraft components, said Bert Buyle, CEO of EURamce (Stand 1844), a provider of flight training devices for a wide range of aircraft, including the Airbus A320. Buyle said he sees the potential for augmented reality (AR), where computer-generated imagery or text is superimposed over the real world, although he said this is still in the early stages of development. The company is looking into a number of new technologies that could replace certain applications used in simulators, such as building simulators with “virtual instructors” and replicating an increasing number of situations that cannot be trained for in real life.

Kissimmee, Florida-based Aerostar Training Services (Stand 1660E) uses flight training simulators in a number of its courses, with the company training pilots on the Airbus A320, the Boeing 737 and other aircraft. Jerry Lee, Aerostar’s director of admissions, told AIN that graphics technology has seen the most obvious advances in recent years. He also expects to see greater exploitation of artificial intelligence in the coming years, with the simulators learning how a particular user operates and adapting to meet their training needs. “It’s intriguing,” he said. “It’s still in its infancy, but at the same time it’s very interesting.”

The market is evolving, said Colombo, with concepts like electrification moving from the automotive industry into aerospace. This could create new demands for simulation software, he said, adding that although the U.S. remains the dominant market, followed by Europe, “Asia is growing, as improved transportation continues to be a focus.”

Buyle also highlighted the growth of the Asian market, notably China and India. He said that flight training is becoming more sophisticated, with greater demand for recurrent training as new aircraft enter the market. EURamce is designing new products aimed at these pilots, he added.

The company will be presenting its range of simulation products and services at this year’s Dubai show, Buyle said, including its new cooperation with GeoSim on helicopter-focused simulators and its new A320 simulator.

Colombo said that simulation can support companies through the growing digital revolution, with the company focused on simulation solutions in new areas like additive manufacturing, predictive maintenance, and autonomous systems. He expects such themes to be highlighted at Dubai.

“Simulation is becoming more and more important to improve engineering efficiency, prove product reliability and safety, and introduce new technology faster,” Colombo said. “The future will see simulation becoming more pervasive, expanding beyond the classical design phase and into production, operations, and maintenance.”

SNCA to start flight training for cadets this month

Saudi National Company of Aviation (SNCA) has established CAE-authorized training center OxfordSaudia at its aviation center at Dammam Airport. The new flight academy will provide ab initio training to cadets in Saudi Arabia and the Middle East. “We start flight training [in November] with 33 students and more than 30 the [following] month,” Larry Wade, OxfordSaudia CEO, told AIN.

The intention is also to launch new dispatch, maintenance, and cabin-crew training programs in the coming months as a result of partner agreements. “We will [also] be announcing our plans for a Type Rating Training Organization (TRTO), in conjunction with one of our partners at the Dubai Airshow,” Wade said.

At Dubai Airshow 2017, SNCA and CAE announced an agreement to jointly create OxfordSaudia. CAE is to provide cadet training, such as commercial pilot license curricula and coursework; the training of staff and instructors; and safety and quality control systems. Worldwide, CAE said it trains more than 220,000 civil and defense crewmembers, and more than 135,000 pilots, each year.

Today, OxfordSaudia has more than 700 cadets in a foundation program. While students are from all over the Gulf Cooperation Council (GCC), Europe, and the U.S., the majority come from Saudi Arabia. Wade said no other school offered the level of ab initio pilot training OxfordSaudia provided, at a cost of SAR350,000 ($93,000), making it one of the most competitive schools in the kingdom.

“We currently teach a foundation program comprised of math, physics, English, aviation terminology, and group exercises [Pre-CRM],” Wade said. “We will be offering flight training (private, instrument, commercial, and A320 Type Rating) starting this month.”

In time, SNCA intends to provide training for all aviation disciplines, including ticket agents, travel agents, ground-handling, catering, and aviation management. P.S.S.
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Hub Dubai holds its own, as Saudis sit back
by Peter Show-Smith

Despite a tough year for regional business aviation in 2018 and a stuttering recovery in 2019, Dubai’s dominance as a Middle East business aviation hub continues, with Al Maktoum International Airport (DWC) continuing to demonstrate its primacy as a bizav and FBO center for the Gulf Cooperation Council (GCC).

“I can really put my hand on my heart and say [the situation] is very good,” Ali Alnaqbi, founder and executive chairman, of the Middle East and North Africa Business Aviation Association (MEBAA), told AIN. “I can see a business aviation hub and center in Dubai [developing]. It is really doing very well, despite the shared terminal, which is dominated by Jetex Flight Support’s FBO, along with [those of] Jet Aviation and Falcon Aviation.”

In addition to these players, DC Aviation Al Futtain set up DWC’s first FBO in 2013, and ExecuJet manages a temporary facility until work on its new FBO-MRO site at DWC is completed in mid-2021. Jet Aviation and ExecuJet also manage MRO-focused facilities at Dubai International (DXB).

“As far as Dubai Airshow is concerned, MEBAA is going to be present,” he said. “Business aviation is always part of [the show] and will continue to be so. There are many companies from our industry coming.”

Saudis Market Still Hazy
A clear picture of the direction of business aviation in Saudi Arabia has yet to emerge.

“Do you think the situation created more awareness, or the awareness contributed to the situation?”

He concluded that the Saudi recovery has been slow. “We wish for something, but the reality is something else. Compared to the situation in Saudi Arabia in 2018, this year has been much better. That’s what I mean: that’s how bad 2018 was. There was a lot of uncertainty.”

New regulations introduced at the end of last year in Saudi Arabia called for business aircraft to be registered onshore under General Authority for Civil Aviation (GACA) regulations, either as Part 121 Special Unschedular for commercial charter operations, or on an operating certificate for non-commercial operations. This is leading to market consolidation, with single owners moving aircraft under third-party management contracts, and smaller entities merging with larger ones.

“You will see that effect in Saudi Arabia: companies joining each other,” Alnaqbi said. “This also happened in Dubai. This was evident at last year’s MEBAA Show. It’s moving in the right direction. The GCC will finish the year with 8 to 9 percent growth in movements overall. The dip in Saudi Arabia coincided with a good figure in the UAE. 2019 will see around 8 to 9 percent growth, the same figure as last year.”

Alnaqbi said the Saudi bizav market is struggling. “There used to be a lot of [oil and gas] activity moving into northern Iraq. Now it’s reduced. Baghdad is almost dead for business aviation. It’s going to take time. All the Iraqis run their business from abroad.”

He commended the establishment of Oman Aviation Group (OAG), the new umbrella entity managing flag carrier Oman Air, Oman Airports, and Oman Aviation Services. “Oman is really moving in the direction of business aviation,” Alnaqbi said. “They are studying the conversion of the existing terminal at Muscat Airport into a business aviation facility.”

Alnaqbi said a number of market participants continue to be negative, no matter how well the market was doing in the GCC. “I am very optimistic. I think the market is heading in a very normal direction; we have a dip, we have a rise, and it’s just a case of people sending the wrong message. Most stakeholders send out the wrong message for just one reason. They go to the vendors and say: ‘Business is down; reduce the rent, reduce our costs.’

“Despite the disasters that happened, the wars in certain countries, we still maintain very good numbers in regional business aviation. No one can complain, honestly.”

Alnaqbi said MEBAA’s strong presence at Dubai Airshow 2019 would underline the importance of bizav in the region. “I would love to see all the companies in the Middle East and North Africa (MENA) grow,” he said. “That’s our motive. We would like to smooth the road and be able to represent all these companies to the authorities.

“If you have a problem, come to us. I would like to encourage anyone who has an issue with the authorities, whether in the UAE, Saudi Arabia, or elsewhere in MENA, to come and speak to us. I would love to hear from members who have issues of any kind. Don’t be shy.”

Russians explore growth in business aviation sector
by Eugene Gerden

The Russian market for business aviation is on the verge of big changes, according to recent statements from leading Russian experts in the field and senior officials of the Russian Ministry of Sport and Tourism. These will be driven mainly by shifting preferences of local customers towards economy and functionality, they say.

Mikhail Titov is vice president of the Russian United National Association of Business Aviation (ONADA)—a public association, which unites leading operators in the field of business aviation. He said recently that the market is becoming more civilized, while local customers are becoming more pragmatic. He sees these trends reflected by the ever-growing interest of local customers in small- and medium-size business jets.

Titov said that was generally uncommon for Russians in the past, and he views it as a clear sign of rapidly-changing customer preferences.

Pavel Kolobkov, Russia’s minister of sport and tourism, commented that many potential Russian customers in recent years have started paying more attention to “the technical component of an aircraft, the level of its fuel consumption, and crew aboard,” instead of the brand and various frills.

The ongoing change in customer preferences has also contributed to growth in demand for domestic jets. One of them is the Superjet VIP, an aircraft built by Russia’s Sukhoi. Growing interest from potential customers has already forced Sukhoi to consider an increase in Superjet production.

In the meantime, analysts told AIN they have also noticed growing interest from local customers in chartering jets, instead of purchasing.

According to these analysts, the cost of charter varies (by type of aircraft and destination) from $9,000 to $10,000 per flight hour for the bigger jets and most popular destinations, to $2,000 to $3,000 per flight hour for smaller models.

In the meantime, according to Titov, despite the improved economic situation in Russia, the current market remains unstable. Analysts at ONADA predict growth in registrations of business jets owned by Russians and operated under domestic jurisdiction. That will also be part of a bigger trend for wealthy Russians returning their capital and fortunes to Russia, amid fears of new personal sanctions from the West.
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Middle East remains a strong performer for JSSI

by Chris Kjelgaard

Having experienced steady, constant growth in its Middle East business throughout at least the past five years, Jet Support Services, Inc. (JSSI) sees plenty of opportunity for further near-term growth in the region as its existing business evolves and because new markets are appearing. JSSI has had a presence in the Middle East for “well over 20 years” and established a technical support and business development office in Dubai eight years ago to serve its customers in the region, according to Mark Winzar, the company’s senior v-p for business development for the Middle East and Africa. Today, “we certainly see the Middle East as a growth area. It has certainly proved to be so over the past five or six years. We’ve been seeing steady development, and we’re continuing to see it going forward,” he told AIN.

As a result, JSSI—long known as an independent, non-OEM-affiliated provider of power-by-the-hour engine, auxiliary power unit (APU), and airplane maintenance plans and technical support services to business aviation and helicopter operators worldwide—regards its Dubai office as a key asset for further development of its Middle East business presence. “It’s hugely important for JSSI to have a local presence, namely for business development but also for technical support,” said Winzar.

JSSI’s business in the Middle East sees “a lot of activity in bigger [business] jets,” such as the Bombardier Global family, the Airbus Corporate Jets, and Boeing Business Jets, according to Winzar. “We’ve seen growth in the Middle East region based around larger business jets.” While “a lot of the MRO [for these aircraft] needs to go out of the region,” JSSI’s business providing MRO plans and technical support continues to burgeon in the Middle East because “keeping control of [MRO] costs and managing the process is important” to its customers.

Aided by the plethora of international destinations served by commercial flights from Dubai, the JSSI Advisory Services technical support staff based there provide quick-reaction, on-the-spot support to the company’s customers throughout the region. JSSI’s Middle East technical team covers all the Gulf States, Saudi Arabia, Jordan, and even India, according to Gregory Olympios, JSSI’s Dubai-based director of business development. Various large cities in India are less than two-and-a-half hours flying time from Dubai, and because passenger-traffic flows between India and Dubai are so vast, there are hundreds of commercial flights a week to many Indian cities from the emirate. But JSSI’s Middle East technical-support presence is strongly bolstered by the fact that it has other technical-support teams based in Europe (at Farnborough, Asia (in Hong Kong and elsewhere), and in the U.S., according to Olympios. Those teams—in total, JSSI has some 75 technical-support staffers worldwide—frequently work with the company’s Middle East team to provide technical support for Middle East customers’ aircraft traveling out of the region and also join forces on the ground to provide technical support in important markets such as Turkey and India.

JSSI considers Turkey part of its Middle East business region for business-development purposes, but the company’s European technical-support team provides most on-the-ground support there that customers require, Olympios explained. While JSSI considers India a highly important market for future business growth and plans eventually to base technical-support personnel there, at present no JSSI support staff are based in India because its business there hasn’t yet reached the level that would require a permanent support commitment. So JSSI’s Dubai-based and Asia-based technical-support teams often join forces to provide technical support to its Indian customers.

Additionally, for the company’s customers in the Middle East, JSSI’s Advisory Services staff provides “local [MRO] support for aircraft away from the region on a mission,” said Olympios. One such example involved JSSI’s Farnborough tech-support staff arranging for a mobile repair team to work on a Middle East customer’s aircraft that became grounded at Shannon Airport in Ireland. The customer’s own personnel “couldn’t have done it on their own,” he said.

Expansion Efforts

JSSI’s Middle East business is growing both through expansion of its existing market expertise and through the company entering new market areas, according to the two executives. “JSSI’s [existing Middle East] business is based predominantly on engines and APUs, but one area of growth is airframe MRO plans and technical support,” said Winzar. While individual airframe maintenance events tend to be less expensive than engine overhauls and repairs, “the drip-feeding of airframe maintenance cost over the lifetime of the aircraft is enormous. People are looking at the cost of airframe maintenance, and we’re seeing a lot more interest in airframe maintenance coverage—in the Middle East, particularly.”

Additionally, while most of JSSI’s existing MRO-support business in the Middle East involves larger business jets (“that’s the [aircraft] population—they tend to operate the bigger aircraft,” said Olympios), the company is continuing to see its presence in the VVIP aircraft market in the Middle East grow, according to Winzar. “Interestingly enough, we’ve seen a huge increase in [MRO] support in the CFM56 market” for BBIs and Airbus Corporate Jets, he said. “That is manifested [both in] in [MRO plan] contracts and also in support business,” through, for instance, JSSI Advisory Services providing technical oversight of shop visits and JSSI Parts & Leasing organizing rental engines for short-term placement of customers’ engines undergoing MRO.

“We’re also seeing steady growth in the helicopter market” in the Middle East, said Olympios. “The helicopter market tends to be a bit more volatile, with spikes and troughs; there’s a lot of reliance on utility work such as oil-and-gas and support some...”
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classic programme
Air BP preparing to introduce a fueling-safety program in Middle East

by Chris Kjelgaard

Air BP is in the process of acquiring the hardware and software needed to begin rolling out its Airfield Automation fueling-safety digital platform at all of the airport locations in the Middle East and Northern Africa where it has direct operations.

Robert Gerritsen, Air BP’s general manager for the Middle East and Northern Africa, told AIN that the rollout of the company’s Airfield Automation platform throughout the region will begin at its airport locations in the United Arab Emirates. Air BP expects to complete installation of the cloud-based platform—designed to prevent misfueling of aircraft and to provide operators with real-time data on their fueling activities—at all its UAE airport sites in 2020.

Describing Air BP’s Airfield Automation platform as “a very important strengthening of the safety barrier” in improving aviation safety, fueling reliability and regulatory compliance, Gerritsen said that, in total, the company is planning to roll out the platform at some 350 locations worldwide where it has direct aircraft-fueling operations.

Air BP (Stand 1265), formed in 1926, now has locations in more than 800 locations in 55 countries, counts some 350 airlines and 16,500 private aviation operators as customers, and more than 46,000 of the company’s instant-fueling-payment Sterling Cards are in use, said Gerritsen. “The vast majority” of those cards are held by private-aviation customers.

Globally, Air BP’s 1,000 employees fuel aircraft at the rate of more than four aircraft a minute on average, according to Gerritsen. In providing this fuel, Air BP is responsible for producing 6.6 billion U.S. gallons of jet fuel annually. It has had a presence in the Middle East since 1932, which for an aviation-fuel company represents a longevity “unique in the region,” he said, adding, “We’re very proud of supporting a number of our customers [in the region] from their start-up days and [various] airports from the beginning” of their operations.

Air BP Middle East and Northern Africa has a presence in the UAE, Bahrain, Saudi Arabia, Oman, Lebanon, Egypt, Tunisia, and—its most recently added location—Erbil in Iraq. Additionally, while Air BP does not have a location in Qatar, it counts Qatar Airways as a customer, along with Emirates and Etihad Airways, which together form the so-called “Big Three” Gulf-based carriers. Those carriers, together with Air BP’s other airline customers in the Middle East and Northern Africa, fly to more than 800 locations throughout the world at which Air BP maintains a presence.

AirBP concedes the Middle East has challenges, but sees the region’s “trajectory” indicating major growth in aviation. The company is developing a cloud-based fueling-safety program.

As it is doing elsewhere in line with its support for the aviation industry’s commitment to grow sustainably, Air BP is actively growing its aviation carbon-offsetting program throughout the Middle East and Northern Africa. The program—which generates funds used by parent BP’s Target Neutral program to invest in sustainable-energy and sustainable-development projects globally—is already widely used by Air BP’s private-aviation customers based in or flying to and from the region, according to Gerritsen.

This gratifying take-up is a result of Air BP’s partnerships with Alyssum group companies RocketRoute and Victor, he said. Every time a customer uses aviation service-provider network RocketRoute Marketplace or charter-booking platform Victor, the carbon generated by the customer’s flight activity is automatically offset by Air BP. “So all of our [private-aviation] customers get a chance to participate,” said Gerritsen.

While Gerritsen sees growth potential existing for Air BP’s business activities in all sectors of aviation in the Middle East and Northern Africa, “CA [commercial aviation] has been a real success story for the business in the region,” he said. “It’s the stand-out story for this region.”

To date, that success has been linked substantially with the growth of the “Big Three” Middle East-based carriers and of those airlines’ home bases (which are the region’s biggest hub airports), but the other national carriers in the region are now growing quickly, said Gerritsen. This is providing Air BP with additional business-growth potential. So too is the growth of the region’s private-aviation sector, which he said is “very solid.” Many of Air BP’s 16,500 private aviation customers are based in the Middle East and Northern Africa, according to Gerritsen.

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Mitsubishi’s commitment to M90 must include support

by Gregory Polek

While Mitsubishi Aircraft recently trumpeted an MOU with Mesa Air Group covering 100 SpaceJets as a signal of the new regional jet family’s market potential, behind the headlines an embryonic product support apparatus prepares to grow into something that will have to rival far more established competing networks if the Japanese company expects the program to succeed long-term. In fact, Mitsubishi executives acknowledge the pitfalls associated with any burgeoning OEM’s efforts to compete with established companies with longstanding customer and supplier relationships and highly developed support systems. However, Mitsubishi Aircraft head of customer support Nicola Jabour and director of service readiness and integration Nicola McCarron point to a broad and considered approach their company has brought to the admittedly monumental task as a distinguishing characteristic.

“We have made a huge investment in the staff and our team this year,” said McCarron. “We have brought on between 35 and 40 global experts. We’ve carefully hand-selected each of these experts from around the world. And within a very short span, between three and six months, we’ve seen a massive improvement and a surge in performance for entry-into-service readiness for the M90. It’s really been noticed by our launch customer and it’s noticed in our deliverables.”

The larger of the two SpaceJet models under development, the M90 would enter service some time near the middle of next year with Japan’s All Nippon Airways if Mitsubishi hits its targets. Suffering through no fewer than five major program delays since its launch as the MRJ90 in 2008, the M90 appears to have finally found its footing from a design perspective. Now, the company must ensure its support efforts fill what Jabour characterized as organizational and process gaps.

The new support personnel recruited by Mitsubishi have come from many backgrounds and OEMs, noted McCarron, herself a former Bombardier executive. In fact, she emphasized the importance of diversity among the team and its ability to work effectively with customers from around the world.

“We’ve spent a lot of time over the past few months meeting with customers, operators, and airlines and we understand what’s important to them is to have excellent communication; inventory and logistics planning has got to be seamless for them; and the way we can achieve that is by having fully integrated systems,” said McCarron. “Certainly tech pubs is important, but having the robust processes in place will allow all the systems to be integrated, from the warehouse all the way through to DHL or FedEx for the parts.”

Mitsubishi Aircraft maintains a partnership with Japanese logistics specialist Mitsui-Soko for warehouse services in Haneda. It also has begun negotiating with potential future partners on plans to establish warehouses in the U.S. and Europe before customers from those regions begin taking deliveries, said Jabour.

“One of the first things that customers want from any OEM is to involve customer support from the development phase, and we are doing that,” he added. “We have been working with flight testing and design engineering in terms of enhancing and improving the reliability and maintainability of the aircraft.”

McCarron stressed the importance of the involvement of the support apparatus during the contract stage of the customer relationship, allowing it the leverage necessary to get the parts at the right time. “That is the key for us,” she said.

Referencing launch customer ANA, McCarron characterized Japanese airlines as the most demanding in the world. “What is unique about Japan is that it’s extremely competitive because the Japanese airlines have to compete against the Shinkansen [high-speed train],” she explained. “The Shinkansen has an average delay of around thirty seconds per day, maybe for the entire fleet. To compete with the Shinkansen the airlines need to have excellent dispatch reliability rates. So working with this Japanese customer is a very positive thing for us because it’s raising our bar.”

Jabour added that ANA’s experience as a launch customer for the Boeing 787 has helped inform Mitsubishi’s approach to the launch of the M90. “ANA is really a top-notch airline and they are helping us test our process, our services, our product; they are working very hard with us,” he explained.

Mitsubishi has contracted with Osaka-based MRO Japan to provide maintenance services in the country. The company, 20 percent owned by Mitsubishi Heavy Industries and 45 percent owned by ANA, already supports Boeing, Airbus, and Bombardier equipment for several airlines in the region.

McCarron explained that much of her team’s focus has centered on executing the company’s so-called digital strategy, one of the most important aspects of which involves aircraft health monitoring. “Other areas of the digital strategy that are not quite so obvious are the integrated systems and the use of your web portal,” she said. “So, again, everything comes back to the optimized planning, making sure you are managing your inventory and your stock and your cash flow. It’s more indirect, but it’s absolutely critical for the success of customer support.”

McCarron said Mitsubishi’s approach differs from previous programs that have suffered from notoriously weak product support in the company’s early engagement with operators and its decision to slowly increase the size of the support team. “I think what happens sometimes, as teams ramp up too quickly a lot of candidates are taken on that were maybe not the best candidates for the job,” she explained. “We are not doing that. We are very deliberately ensuring that we have the best-in-class candidates from around the world, from direct maintenance cost experts to the operations center experts.”

Riyadh, Moscow launch ROAL joint venture

The Russian Direct Investment Fund (RDIF) and its counterpart in the Kingdom of Saudi Arabia—the Public Investment Fund (PIF)—have established ROAL, an aircraft leasing company, a joint enterprise also involving the KGAL financial group of Germany. The announcement about the establishment of ROAL came during an October 14 meeting between Russian President Vladimir Putin and Saudi King Salman bin Abdulaziz Al Saud, as they witnessed more than 20 agreements worth $2 billion. RDIF and PIF also made public their decision to invest $600 million in ROAL.

Commenting on the move, RDIF CEO Cyril Dimitriev said that, apart from the oil-and-gas industry, Moscow and Riyadh want to expand their cooperation in the technology and investment sector, targeting projects on high-value-added products. Since 2015, RDIF and PIF have prepared a list of joint projects and have approved investments totaling $2.5 billion out of a plan to spend a total of $10 billion. Thus, Dimitriev hinted at the availability of more funds for possible further capital injections into ROAL.

Although the sides haven’t revealed which airplanes they expect to go into ROAL’s portfolio, Russia’s minister for energy Alexander Novak mentioned the Sukhoi SuperJet 100 and Irktu MC-21 narrowbody as the two primary products Moscow has promoted in the Kingdom. V.K.
Mubadala Aero Portfolio Makes Strong Showing

by Peter Shaw-Smith

Global investment company Mubadala’s aerospace division (Pavilion 3, Stand 910) has had a successful 2019. The owner of all or part of Al Ain’s Nibras Al Ain Aerospace Park, spares lessor Sanad, MROs Sanad Aerotech and SR Technics, business jet operator XOJet, and aerostructures concern Strata has built on its increase in unit profits of 23 percent in 2018.

“We had a very special year,” Strata CEO Ismail Abdulla told AIN. “We celebrate our 10th anniversary [this month]. We have 13 production lines, all of which are single-source to Strata, and are the only company manufacturing these parts. From January to June, we delivered around 3,700 components to aircraft manufacturers.”

Strata is a Tier 1 supplier to major OEMs Airbus, Boeing, and Leonardo. “Over the last 12 months, we added Swiss OEM Pilatus to our portfolio. This is a long-term partnership, to manufacture the belly, as well as the sculpt-strap fairings for the Pilatus PC-30. We are looking for other opportunities to expand relations with Pilatus. The global aerospace sector is highly competitive and we aim to continue growing and advancing our presence.”

Strata’s Emiratization rate is 58 percent, of which 86 percent are women. “Production will now be headed by a female UAE national, Noura Al Braiki; we announced this before the Dubai Airshow,” he said. “In her role, Noura will oversee Strata’s production system and planning functions, shared services, and fabrication and assembly units—all key company functions.”

Strata has also launched Strata Plus, to host its largest production work package to date, the Boeing 787 vertical fin. “This is the largest transfer of technology in our portfolio. Training for UAE engineers is taking place in Salt Lake City, Utah, and elsewhere. We are building knowledge in order to relocate production to the UAE.”

On the outlook for 2020, Abdulla said the market, especially for widebodies, is “extremely challenging,” given macroeconomic conditions. “We are working on ensuring we introduce new production lines. Next year should be very exciting. We expect to ship the Boeing 787 vertical fin to the U.S.”

MRO solution provider Sanad was founded in 2010. “Sanad’s overall growth has continued to focus on entry-into-service aircraft like the Boeing 787, where Sanad now owns eight GE9x spare engines and a growing number of 787 rotatable components on various long-term lease programs,” CEO Troy Lambeth told AIN. “The 787 spare engines and rotables now account for 25 percent of Sanad’s overall portfolio—a growing trend.”

Lambeth expects that trend to continue as the company looks to expand into other entry-into-service fleets like the Airbus A350, the Boeing 777x, and the neo and the Max—upon its anticipated return to service. “We expect to see our portfolio expand into other entry-into-service engine types including the Leap, the GTF and potentially the Trent XWB and Trent 1000—each powering aircraft types that we see large primary and secondary market opportunities to serve long-term.”

Lufthansa Technik Sees Growth in MRO and VIP Interiors Work in Middle East

Germany’s Lufthansa Technik (LHT, Stand 1150) is showcasing at the Dubai Airshow both its commercial MRO and VIP cabin completions capabilities. “The Middle East continues to be a growth market,” said Richard Haas, LHT’s senior director of corporate sales Middle East and Africa, summing up regional MRO demand.

LHT counts some 30 wholly or partly owned subsidiaries in its global service network, including Lufthansa Technik Middle East (LHTME), a wholly-owned facility with hangar and workshop space at the Mohammed bin Rashid Aerospace Hub at Dubai South. By retaining complete ownership of the facility, “We can transfer the way we do business, one to one,” Haas said. “We believe you need to be close to the customer.”

LHTME, which can support VIP as well as commercial operators, also operates a warehouse at Al Maktoum International Airport with additional parts storage for local spares support. The company is conducting tours of LHTME and providing shuttle bus service to and from the site during the Dubai Airshow.

On the custom completions side, LHT is showcasing a VIP airliner sporting one of its interiors on static display and presenting cabin concepts for both narrow- and widebody VIP platforms at its stand. Wieland Timm, senior head of sales for VIP and special-mission aircraft, said the bespoke cabin division is “pretty optimistic about the Dubai Airshow,” given the region’s appetite for VIP aircraft.

Headlining the interiors concepts is Sky Retreat, a yacht-like cabin design conceived for an executive version of the Airbus A220. Unveiled at the Monaco Yacht Show in September, Sky Retreat features deck-like flooring and furnishings to match, highlighted by a forward observation area that includes the cockpit and a divan, accessible in all phases of flight, where passengers can observe the flight deck and don headsets to monitor radio communications.

“The younger generation in the Middle East is interested” in the concept, said Timm. “They are coming to Dubai, and we expect [reaction to] our layout will be very positive.”

J.W.

The 787 Spare Engines and Rotables Now Account for 25 Percent of Sanad’s Overall Portfolio—a Growing Trend.”

DAE Looks to Add Managed Aircraft to Leasing Portfolio

UAE aircraft lessor DAE Capital has invested significantly in new-technology aircraft in the past two years, especially in the widebody Boeing 787-9 and Airbus A350-900. The company had 358 units on lease to 111 airlines in 56 countries as of September 30, Dubai Aerospace Enterprise (DAE) CEO Firoz Tarapore told AIN.

In addition to the approximately 300 aircraft it owns, DAE intends to manage another 100 for third parties. “DAE has received an investment mandate of $1.4 billion from a large international fund manager, which will allow us to significantly grow our portfolio of assets under management and brings our managed fleet to over half our stated targeted value of $8.5 billion in the next few years,” Tarapore said.

DAE recently, at the Airline Economics conference in Dubai last month, he said the company preferred acquiring rivals to signing major orders. In 2017, DAE acquired the AWAS group of companies, propelling its owned portfolio size to around 400 aircraft worth $14 billion. Over the past 18 months, DAE has raised over $3.5 billion in liquidity, leading to an investment-grade rating from Fitch, and the Kroll Bond Rating Agency.

“DAE believes the current environment, where there is strong investor demand for reliable current-generation aircraft, is the right time to manage its fleet exposure and take some returns through targeted and planned aircraft sales. Since January we have sold 23 aircraft [but] we will continue to manage most of these aircraft. We are also actively adding aircraft to our portfolio, having purchased or committed to purchase 23 aircraft, including new-technology Boeing 787-9s and Airbus A350-900s.”

DAE’s fleet ranges from the 70-seat ATR 72-600 to the Boeing 787-9 and Airbus A350-900. “DAE has a clear line of sight to increase its managed portfolio to over $3.5 billion by year-end,” Tarapore said.

Meanwhile, Kuwait’s Aviation Lease and Finance Company (Alafco), claimed an “excellent performance” in 2019. “In 2020, we are well-positioned to continue our journey toward growth, especially through deliveries of new-technology aircraft, but we understand that we are facing some challenging global economic headwinds, likely to dampen demand,” CEO Adel Al-Hamwia told AIN.

Alafco’s fleet list contains 64 aircraft: 29 Airbus A320-200s, 11 A320-200NOS, two A321-200s, and two A350-900s, as well as 15 Boeing 777-800s and five 777-300ERs. It doubled its order book for the 737 Max at Dubai Airshow 2017, to 40 aircraft.

“We continue to monitor the 737 Max situation and are in discussion with Boeing on its recertification. As of now, there is no specific date on the deployment of the aircraft, but Alafco still has four 737 Max aircraft on order.”

“Presently, we have around 70 aircraft in our fleet, with an additional 100 aircraft on order from Airbus and Boeing. Our team has performed exceptionally to place these aircraft globally.”

P.S.S.

Firoz Tarapore, CEO, Dubai Aerospace Enterprise

DAE has a clear line of sight to increase its managed portfolio to over $3.5 billion by year-end.”

Dubai Airshow News | November 17, 2019 | ainonline.com
Abu Dhabi Aviation seeks oil-and-gas ventures boost

by Peter Shaw-Smith

Abu Dhabi Aviation (ADA, Stand 1030) has restructured its commercial division and is employing an aggressive new strategy to win oil-and-gas work around the world.

“The great capability that we have created has been offered internationally in the past, but we are now aggressively going to all the large oil and gas companies with our aircraft and offshore services,” commercial department director Mark Pierotti told AIN. “Since 1975, supporting the Abu Dhabi oil industry has been our base operation, it is our history, our DNA, and always will be. While we recognize the...importance of ADA’s core customer, Abu Dhabi National Oil Company, we are also now looking to [expand] our capability internationally.”

ADA’s earlier strategy was to employ dry and wet leases, but now it is creating joint ventures. “Today, oil and gas countries with energy and power are requiring those who give them service to have local companies,” he said. “It makes sense, so the money can be invested. They can recruit local people rather than foreign companies coming in and performing services.”

Owned 30 percent by the government and 70 percent by UAE nationals, ADA has $1.3 billion in assets and 1,300 employees. It operates 57 aircraft, of which 49 are helicopters. ADA owns Bell, Leonardo, and Bombardier aircraft, including the Dash-8 Q200, Q300, and Q400. The oldest Dash-8 Q200 joined in 1997, and its oldest helicopters, Bell 212s, in 1979.

About 15 ADA helicopters are on dry lease today, in Spain, Afghanistan, India, and Saudi Arabia. “On wet lease, there’s probably another 15, as well,” he said. “We’re an industrial heavy-industry aviation company. We are the biggest helicopter operator in the Middle East and North Africa, but also the biggest helicopter maintenance company.”

ADA operates helicopters for lease to the oil and gas industry, firefighting companies, medical companies, filming and photography, and search and rescue operators. Fixed-wing operations can involve oil and gas, as well as regional airlines. “We also operate VIP helicopter missions, VIP charters, and disaster relief. We’re doing everything you can do with the helicopter,” he said.

Almost half the new jetliners needed in the Middle East over the next 20 years will be twin-aisle designs, according to the latest Boeing Commercial Market Outlook (CMO). European network carriers have been challenged by Middle East operators that have gained significant market share by providing global one-stop service to destinations in areas such as Australia, India, and Southeast Asia, led by Gulf-based airlines exploiting the geographic accident of their location.

“The Middle East has a centuries-old role connecting the economies and populations of Asia, Europe, and Africa,” said Boeing. “[Now], an eight-hour flight can reach 80 percent of the world’s population, and the same boundary will contain 70 percent of global economic growth for the next two decades.”

Middle East passenger traffic (revenue passenger miles/kilometer) is expected to increase at 5.1 percent per year as regional gross domestic product expands at 3.2 percent per year. To address growth, airlines will require a 3,130 new aircraft—nominally valued at $725 billion—as combined fleets grow by 4.3 percent a year from 2020 to 2040.

The aircraft represent 7 percent of the overall 44,440 units (valued at $6.81 trillion) that Boeing believes necessary to support 4.6 percent annual global traffic growth over the next 20 years.

Widbodies constitute 46 percent of forecast Middle East deliveries, the highest proportion of any region and only slightly smaller than the 53 percent comprising single-aisle designs. The remaining 2 percent is split between cargo and regional jet models.

**Range and Volume**

Demand for twin-aisles will be stimulated by their usefulness in two applications, said Boeing: on high-volume Asian and European routes, and ultra-long-range, one-stop services between cities such as London and Sydney.

Exposure to fast-growing Asian markets is a key advantage for Middle East airlines through well-established trade and labor ties and because of burgeoning groups of people in these countries with the financial freedom to travel, said Boeing. Growth of 3.9 percent/year in this middle-class sector is almost 2.8 times that in the overall population (1.4 percent per year), according to the CMO.

Middle East operators are “well-positioned to serve these new travelers for destinations within the Afro-Eurasian landmass.” Indeed, the greatest 2019 to 2038 growth in Middle East inter-regional traffic is expected on routes to/from China (set to grow about 500 percent) and South Asia (440 percent). Traffic on Southeast Asian and European services is seen as expanding by 150 percent and 130 percent, respectively.

Boeing sees many opportunities within the Middle East, where intra-regional traffic will increase by about 150 percent. Deregulation in some markets has stimulated short-haul travel on low-fare airlines, with “the domestic market in Saudi Arabia potentially the next growth area.”

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**Qatar Airways cleans up with GE’s engine wash**

Qatar Airways is the first airline in the world to use GE’s 360 Foam Wash system after partnering with GE Aviation on a three-year trial of the new technology.

GE’s 360 Foam Wash system works by injecting a specially formulated solution to dissolve dust and to direct particles from the engine gas path. Unlike traditional systems, the 360 Foam Wash is self-contained, allowing for its use inside maintenance facilities and aiding in its environmental friendliness.

“Qatar Airways prides itself on our ongoing commitment to innovation in all areas of business,” said Qatar Airways CEO Akbar Al Baker. “Our technical department is constantly striving to maintain our position as an airline of the future by introducing the most forward-thinking, groundbreaking, and environmentally friendly technology.”

With the partnership, the airline’s technical department becomes the first in the industry awarded a GE license to operate Foam Wash on its GEnx-1B engines.

Dubai’s Emirates Airline was the pioneer in using its base to link almost any two points on Earth, famously offering nonstop Boeing 777 service “anywhere out of Dubai (except the Galápagos Islands).”
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Opportunities abound for Mideast low-cost carriers

by Peter Shaw-Smith

While Flydubai’s problems with delays to recertification of the Boeing 737 Max have been the dominant regional low-cost carrier (LCC) theme of late, several other airlines, such as Oman’s Salam Air, Kuwait’s Jazeera Airways, and Saudi Arabia’s Flynas are busy making a name for themselves.

Salam Air said in October it expects to carry 1.3 million passengers in 2019 and to more than double this figure to 3 million next year with its fleet of seven Airbus A320s, which are generating load factors of 85 percent. Meanwhile, Jazeera Airways launched flights to London Gatwick on October 27.

Saudi Arabia’s Flynas announced in October that it had taken delivery of a fourth A320neo from its 32 billion ($8.5 billion) deal with Airbus to purchase 120 A320neos by 2026. Flynas operates a fleet of 30 Airbus A320s, with more than 1,100 flights weekly to 17 domestic and 53 international destinations. “Since its launch [in 2007], Flynas has successfully carried more than 38 million passengers from its bases of Riyadh, Jeddah, Dammam, and Abha,” it said.

Saudi Arabia’s Flyadeal committed to an all-Airbus A320 fleet when it scrapped orders for 30 Boeing 737 Max jets in July. The deal was part of an increased Saudi Arabian Airlines order for 100 aircraft signed at the Paris Air Show in June. “This order will result in Flyadeal operating an all-Airbus A320 fleet in the future,” Flyadeal said.

Another regional LCC to feel the effects of the Max situation is Cairo-based fly-Egypt, which has leased three 737 Maxs to 17 sustainable development goals under agenda 2030.

Her keynote address echoed ICAO’s advocacy for the benefits of aviation as they related to the achievement of the UN’s 2030 Agenda for Sustainable Development. ICAO promotes awareness of the various ways in which the international connectivity established through civil aviation directly supports 15 or the 17 sustainable development goals under agenda 2030.

The ICAO Middle East region has been one of the fastest-growing in the world for passenger and cargo traffic since 2011,” said Liu, who also noted that regional air carriers continue to record 4 to 5 percent growth rates for passenger and freight traffic and that a 10 percent increase in tourist arrivals by air occurred last year. “Aviation presently supports more than 2.4 million jobs and contributes $130 billion [in the Middle East region]. Each of your states has the primary responsibility to ensure that sufficient infrastructure, human resources, training, and other capacities are in place to accommodate and manage forecast growth.”

Liu urged that ensuring that local and national aviation planning aligns with SARPs and is structured on the basis of the targets established in ICAO’s global plans for aviation safety, air navigation capacity and efficiency, and aviation security.

I CAO helps Mideast unlock sustainable development goals as growth accelerates

International Civil Aviation Organization (ICAO) secretary general Fang Liu underscored the value of the organization’s safety, security, strategies, and sustainability standards and recommended practices (SARPs) during the recent fifth meeting of the directors general of civil aviation in Kuwait City.

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Dubai Airshow and Mideast aerospace

In 2017, the Dubai Airshow hosted 279 delegations from 76 countries. “[The total figure] is going to go up” this year, according to van Akelijen, who emphasized the importance of military aircraft. Sheik Mohammed himself is understood to have issued personal invitations to 84 ministers of defense from around the world.

Four conferences are taking place during the airshow: Cargo Connect, Global Air Traffic Management, and, at the show’s Space Pavilion, Tech Talks and Women in Aviation. Apollo 15 astronaut Col. Al Worden will be giving a presentation at Space Tech Talks. The Air Chiefs’ conference, for defense top brass, took place off-site on the eve of the show yesterday. “We split [the conferences] out over two days, but only half days, morning sessions, so that everybody can still enjoy the flying display and have the meetings and networking that they need to do,” said van Akelijen.

The five-day spectacle will also see up to 165 aircraft on static display, afternoon displays from the UAE’s aerial acrobatics team Fursan Al Emarat (Knights of the Emirates), and several other civilian and military aircraft.

Fighting Falcon joins Dubai show display

This U.S. Lockheed Martin F-16 is just one of the dozens of military aircraft on static display at this year’s Dubai Airshow. On the ramp where U.S. aircraft park, the F-16 shares space with other military aircraft that include the A-10 Thunderbolt II, F-15 Strike Eagle, AWACS E-3A Sentinel, E-2 Hawkeye, F-35 Lightning II, and helicopters such as the Chinook, Black Hawk, and Apache.

Saab GlobalEye number three made the type’s public debut at Dubai Airshow 2019. The aircraft is in full mission fit and is involved in mission system verification tests and some initial crew training duties.
Embraer fleet flies to Dubai Airshow
by James Wymanbrd
Embraer’s Executive Jets division (Pavillion A47; Static S13) is showcasing at the Dubai Airshow its Praetor 500 and Phenom 300E business jets. Their backlogs were bolstered by last month’s firm order from U.S. fractional fleet operator Flexjet for a combination of 64 Praetor 500 and 600 mid- and super-midsize jets and Phenom 300E light jets, together worth almost $1.4 billion.

The Praetor 500 and 600—upgrades of the Legacy 450/500—have both now achieved “triple certification,” with recent EASA and FAA authorizations added to Brazil’s ANAC approval.

With maximum ranges of more than 3,300 nm and 4,000 nm respectively, the Praetor 500 can link Dubai and London, London and New York, or Jakarta and Tokyo, while the super-mid 600 pairs New York and Paris or Sao Paulo and Miami.

Both aircraft offer six-foot, flat floor cabins and full-sized wet galleys with granite flooring. The aircraft also incorporate Embraer’s ceiling-mounted upper tech panel, which displays flight information and provides cabin management features through the Honeywell Ovation Select cabin management system.

The Praetors also offer optional high-speed connectivity through ViaSat’s Ka-band satcom, with speeds of up to 16 Mbps and unlimited IPTV streaming. Onboard comfort is enhanced by proprietary turbulence reduction technology and cabin altitudes of only 5,800 feet at the jets’ 45,000-foot maximum altitude. Both Praetors incorporate full fly-by-wire flight controls, the only mid- and super-midsize jets so equipped, according to Embraer.

The Praetors’ flight decks feature the newest edition of Collins Aerospace’s Pro Line Fusion avionics, along with options including air-traffic-control-like situational awareness with ADS-B In, predictive windshear and vertical radar, head-up display with enhanced vision system, and inertial reference system.

Embraer is also exhibiting in Dubai an E190-E2 regional airliner and, from its Defense & Security arm, an A-29 turboprop single and KC-390 tanker/transport.

MENA Aerospace, AeroGulf sign helicopter agreement
by Peter Shaw-Smith
Bahraini aviation and aerospace services provider MENA Aerospace (Stand 347), has unveiled a new partnership with Dubai commercial helicopter operator AeroGulf Services. The cooperation agreement will be signed officially at the Dubai Airshow on Tuesday.

Under the deal, MENA Aerospace will complete a contract for the purchase and sale of four Bell helicopters valued at $2.7 million. The collaboration will allow both companies to expand their helicopter maintenance and support services, as well as helicopter upgrade projects in the region.

Additionally, the agreement allows MENA Aerospace to extend satellite approvals for AeroGulf, which will help both companies offer cost-effective maintenance solutions, using a MENA Aerospace hangar in Bahrain and associated facilities, according to the company.

“With this agreement, we can add to our expert capabilities by offering economical solutions for helicopter maintenance, both regionally and internationally. It will also allow us to support government and military helicopter maintenance, as well as provide labor support,” said Mohammed Juman, managing director and founder of MENA Aerospace.

“AeroGulf has been a pioneer in the industry in Dubai and in the UAE, [counting] more than 40 years of experience in the field. Having the opportunity to expand our services abroad and collaborate with MENA [means] great projects [can be expected], not only covering Bahrain but the entire GCC [region] and North Africa,” said Fahad Khoyer, CEO of AeroGulf Services.

MENA Aerospace also signed an agreement with California’s CSDS Aircraft Sales and Leasing, an aircraft trading company active in both commercial and business aviation. With the deal, MENA Aerospace hopes to be able to provide financial solutions for CSDS Aircraft’s sales and leasing business in the Middle East, using its network of clients and service capabilities.

“We will be working closely with them to explore and promote various business opportunities, with regards to aircraft purchase and sales,” said Juman. “CSDS can benefit from our extensive capabilities, including cargo and commercial aircraft operations and [our] air operator’s certificate.”
LIGHTER WINGS AREN’T THE ONLY THINGS THAT MAKE FALCONS SO EFFICIENT.

Smart design concepts, from lightweight structures to hyper-efficient aerodynamics and advanced digital flight controls, bring greater efficiency to every Falcon generation. And though the latest Falcons are larger and fly farther and faster, they still save on fuel, which in turn lowers emissions. **Fly smart. Fly Falcon.**