Emirates Orders 787-10s, Airbus Awaits A380 Deal

Emirates placed a US$15.1 billion surprise order for Boeing 787-10s on the opening day of the Dubai Airshow, but negotiations about a similarly sized commitment for more Airbus A380s were continuing with no announcement expected until at least Monday.

The carrier ordered 40 Boeing 787-10s that will be delivered from 2022 onward. Chairman/CEO Sheikh Ahmad bin Saeed Al Makhtoum said no engine choice had been made, but that a further announcement would be made “very soon.” He added that some of the 787-10s would be used to replace older aircraft, likely early Boeing 777s, with others to be used for growth. —Page 10
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The company and the UAE Armed Forces inked a US$1.65 billion support upgrade contract for the UAE’s Block 60 F-16 Desert Falcon fighter jets.

Maj. Gen. Abdullah Al-Hashimi, executive director of the military committee at the Dubai Airshow, said the upgrade would deal with obsolescence issues in the Block 60 aircraft that were ordered by the UAE in 2000.

"Lockheed Martin is proud of our 40-year partnership with the United Arab Emirates," said a company spokesman. "We are honored again with the trust and confidence the UAE Armed Forces has placed in us to continue to support their nation’s F-16 aircraft."

The UAE’s F-16s have been described as some of the most advanced F-16s operating anywhere in the world and were the first to be equipped with an active electronically-scanned array radar and conformal fuel tanks. The aircraft have been heavily used by the UAE supporting operations over Libya in 2011 and more recently in the Saudi-led air campaign in Yemen.

The deal with Lockheed Martin made up the lion’s share of the AED6.515 billion worth of contracts announced on the first day of the show and UAE officials have promised there are more contracts to be announced over the coming days.

Other contracts announced include a US$53 million contract with Abu Dhabi Aviation to continue helicopter emergency medical services and search and rescue capability using the Leonardo AW139 helicopter. Leonardo was also awarded a US$11.9 million contract for the modernization of VIP helicopters. UAV manufacturer Insitu was awarded a US$12 million logistics support contract for unmanned air vehicles operated by the Emirati armed forces. —Tony Osborne
Boeing: Positive Middle East Market Outlook

Boeing is confident that political turmoil and recent and ongoing troubles at the big three Gulf carriers will have no impact on its business in the Middle East.

“We see a lot of customer engagement, it is quite busy,” Boeing Commercial Aircraft’s Vice President Sales for the Middle East, Russia and Central Asia, Marty Bentrott, said ahead of the opening of the Dubai Airshow.

Emirates has slowed down its expansion significantly with key markets weakening in the past two years. Qatar Airways is suffering from the closure of most of the airspace surrounding its home base in Doha as a consequence of a diplomatic spat with neighbors - the airline also is not attending the Dubai Airshow for the same reason. And Etihad Airways is in the middle of a strategy review that saw it dump its two European affiliates Air Berlin and Alitalia. The airline also posted a massive loss in its last fiscal year.

But Bentrott said that Boeing has seen no cancellations of orders and only routine “adjustments of delivery positions here and there.” He pointed at Emirates Airline’s half year results released just days ago, which featured a massive recovery of profits for the carrier, though partly due to favorable currency effects. Bentrott still insisted that “things are feeling better than six months ago.”

He also does not anticipate any change in airline and consequently aircraft demand in Saudi Arabia as the country changes political course and clamps down on corruption in wide areas of the economy.

Instead, Boeing is “excited about the "Vision 2030,” which targets economic diversification in the coming years, according to Ahmed Jazzar, president Boeing Saudi Arabia.

Bentrott also sees “nothing but tons of interest and excitement” in the proposed new mid-size aircraft (NMA) that Boeing has been studying and presenting to airlines. Middle East carriers traditionally require good belly freight capacity, which is not the focus of current NMA studies. But there have been “no concerns about cargo capabilities in the region.”

—Jens Flottau

Iomax Debuts Eagle-Eyed Archangel

IOMAX, THE MANUFACTURER of the distinctive Archangel light attack aircraft, is debuting its Block 2 model aircraft here at the Dubai Airshow.

The Block 2 model, which is derived from the Thrush S2R-600 agricultural aircraft, differs from the earlier Block 1 and Border Patrol Aircraft (BPA) with the addition of the large L-3 Wescam MX-25 electro-optical camera system under the fuselage.

The new sensor radically increases the platform’s ability to reconnoiter from stand-off ranges.

The aircraft has also undergone some minor modifications to adjust its center of gravity.

The Block 2 is the focus of the company’s first Foreign Military Sales request from Egypt. Iomax is currently funding a U.S. Air Force Non-Defense Military Aircraft (NDMA) certification and airworthiness assessment of the Archangel, which paves the way for the sale of the platform through the FMS process.

“The Block 2 with the MX-25 is a game changer,” says Seamus Flatley, the VP for business development at Iomax, “The platform is attracting significant interest across the world.”

To widen the customer base, the company has also developed an unarmed version of the Block aircraft capable of performing intelligence, surveillance and reconnaissance missions only. These are being targeted at the African market where several nations would face restrictions on the sale of an armed variant.

The Archangels already have a formidable operational record: The combined fleet, including those operated by Egypt, Jordan and the UAE, has dropped around 4,000 weapons since the type entered service.

The original batch of AT-802-derived BPAs operated by the UAE have now been largely replaced with Archangels with the AT-802s handed to other regional air forces. At least six were gifted to Jordan while 12 have been handed to the Egyptian Air Force.

The UAE is currently mulling a top-up order for Block 1 Archangel aircraft.

Iomax is continuing to develop the Archangel concept. One option is to install Leonardo’s Osprey electronically scanned array radar in the Archangel’s wingtips.

—Tony Osborne
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A top UAE air force general stressed the importance of information sharing between international partners on the battlefield at a gathering of air chiefs around the world, just a day after U.S. military brass confirmed the U.S. is considering selling the network-centric F-35 to Gulf allies.

“From desert landscape to dense urban environment, we’re faced with an adaptive enemy… there is a need for a constant flow of information to ensure timely and precise targeting,” said Brig. Gen. Rashed M. Al Shamsi, deputy commander UAE air force and air defense, at the Dubai International Air Chiefs conference Nov. 11. “Real-time access of intelligence, surveillance and reconnaissance can only be possible when provided and shared as a part of the larger network.”

Rashed’s comments came just hours after U.S. Air Force Vice Chief of Staff Gen. Stephen Wilson confirmed that the U.S. government is in the early stages of discussions about selling the F-35 to allies in the Persian Gulf.

“Specifically the F-35, as we look at their requirements here in the Gulf, they share many of the same adversaries and challenges,” Wilson said at a press conference in Dubai on Nov. 10. “The discussion is ongoing now with the new administration on selling F-35s to partner nations that need them and require them.”

The Israeli Air Force is currently the exclusive operator of Lockheed Martin’s stealth fighter in the Middle East region. Abu Dhabi has reportedly asked repeatedly for a classified briefing on the program but was rebuffed by the Obama administration due to Washington’s commitment to maintaining Israel’s Qualitative Military Edge.

But now, the UAE seems to be positioning itself to become the first Middle East customer aside from Israel to field the F-35. The U.S. government frequently touts the stealth fighter as a supercomputer whose ability to vacuum up vast quantities of information and distribute that data seamlessly throughout the force is a gamechanger for air warfare.

“We shouldn’t have called it an airplane, we should’ve called it a supercomputer,” Wilson told Aviation Week on the sidelines of the air chiefs conference on Nov. 11.

Rashed emphasized that the UAE plans to invest in network-centric warfare, including cybersecurity, although this “will not come cheap.”

“Cyber and information networks as well as the security of air and nighttime air defense will continue to remain a priority over the coming years,” he said. “As we look at the future we need to ensure fast, reliable and secure information networks.”

For the UAE, fielding the “fifth-generation platform” would be a step toward achieving network-centric warfare, Rashed told Aviation Week on the sidelines of the conference.

However, he stressed that the discussions about buying the new fighter are still in the early stages.

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Top UAE Air Force General Positions for F-35

Textron Airland is debuting the production standard ScorpionJet here at the Dubai Airshow.

The production-standard aircraft features a slightly more swept (4 deg.) main wing and all moving horizontal stabilizer. The prototype Scorpion’s horizontal stabilizer was fixed and had a basic elevator. The modernized design also features simplified landing gear.

Internally the aircraft uses a modified Garmin G3000 avionics suite that features a large, high-definition display complemented by two high-definition touch-screen controllers.

During the long journey from Kansas, the Scorpion stopped off in Saudi Arabia, a country that had previously expressed an interest in the platform. Several flights were performed from King Faisal air base near Tabuk. A stop was also made in Jordan.

The first production-standard aircraft made its first flight in December, and the company has now completed three production-standard aircraft. The aircraft appearing here is the second of the pre-production aircraft.

—Tony Osborne

Textron’s Scorpion flew here from Kansas.

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—Tony Osborne
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Emirates Launches New First Class on 777

Emirates Airline is launching a new first class product for yet-to-be-delivered Boeing 777-300ERs and the 777X fleet. It will be the first to offer interior compartments without windows, where the outside view is projected onto virtual windows on the inside walls.

The airline presented the new product on board the latest Boeing 777-300ER, delivered on the opening day of the Dubai Airshow. First class now features six fully enclosed cabins with sliding doors following a four-year process of studies and negotiations among others to satisfy regulatory authorities pressing to ensure emergency evacuation, air flow and other issues are respected.

Because of the additional space the suites take up, 777 first-class cabins are reduced from eight to six seats. The compartments are arranged in a three-abreast configuration. Emirates worked with Mercedes-Benz, among others, in the interior design. The new layout required extensive modification to the cabin, including the ceiling in the first-class section.

One of the new features is virtual windows for the middle seat – passengers will be shown the outside view live through screens on the side-walls with cameras filming the outside.

The new product will be available on nine 777-300ERs by the end of 2019. Emirates plans to use the aircraft across the network, but initially to Brussels and Geneva. Chicago, Perth and Brisbane are to be added later. However, Emirates Airline President Tim Clark noted that the Australia routes require the equivalent of 2.5 aircraft therefore limiting the number of destinations that can be served. Emirates has not yet made a decision whether the product will be retrofitted to the in-service fleet of 777-300ERs and, if so, to how many aircraft.

With the new product installed, first-class seating will be reduced from 14 to 11 seats on the A380. “Eventually the product will be ubiquitous,” Clark said.

—Jens Flottau

Honeywell, Emirates Deal on A380 and 777 Spares

Honeywell Aerospace and Emirates have agreed on a Component Service Solutions contract that will see the avionics specialist maintain aftermarket parts on the airline’s Airbus A380 and Boeing 777 fleets. The contract runs through 2031 and has been designed to help Emirates minimize downtime and costs.

“One of our goals is to increase the lifespan of Honeywell aircraft components and reduce airline operating costs,” says Randy Anderson, president for Honeywell Aerospace for the EMEA and India region.

“With our 24/7 aircraft on-the-ground support and 24-hr. critical shipment of Honeywell avionics and mechanical parts, Emirates can benefit from a significant reduction in departure delays and cancelations, which will help Emirates’ commitment to on-time arrivals.”

The contract covers both avionics and mechanical parts. Honeywell says the company’s strengths in component exchange and repairs will reduce disruptions to the airline’s operations, and that their services will reduce Emirates’ maintenance costs while increasing reliability.

—Angus Batey

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Emirates Airline President Tim Clark
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Emirates’ surprise order for 40 Boeing 787-10s comes after a four-year process since Emirates canceled an earlier order for 70 Airbus A350s. The carrier had been evaluating its twin widebody requirement since then.

Following the launch order for the Boeing 777X – a total of 150 aircraft – Emirates was studying what aircraft could be used for shorter sectors up to 10 hr. of flight time. It evaluated the 787-9/-10 and the Airbus A350-900, including the regional variant of it. The fact that the 787-10 commitment for 40 aircraft is much smaller than the original 70 raises the question whether Airbus can still hope for another A350 campaign for longer routes and/or higher capacity.

On the other end of the spectrum, Emirates has started to closely cooperate with FlyDubai on shorter sectors, which may have also been a factor for the reduced requirement. That Emirates committed to the Boeing 787 now came as a surprise to many in the industry. Emirates Airline President Tim Clark said at the Paris Air Show in June that a decision on the 787/A350 campaign had been deferred. Negotiations between Emirates and Airbus about a follow-on order for the A380 continued on Sunday. Airbus officials were asked to come to an announcement around noon in Dubai, at the same time that the Boeing deal was announced but then had to leave without agreement. Emirates said no further announcements were planned for the day.

Emirates has 100 A380s in its fleet and 42 more on firm order. Sheikh Ahmed said Nov. 3 that he hoped negotiations for a further order could be concluded by the time of the Dubai Airshow. Industry sources said a deal could still be possible in the coming days, but that negotiations were extremely tough. Airbus desperately needs further A380s to fill upcoming holes in production over the next few years.

Azerbaijan Airlines has signed an agreement for five Boeing 787-8s, adding to the two of the type the carrier already operates, and the carrier is the first airline to sign a landing-gear exchange program with Boeing.

In addition, the carrier has committed to buying two very-large freighters, either the 747-8 or the 777 Freighter. The details of the freighter deal have yet to be determined. Boeing Commercial Airplanes CEO Kevin McAllister said in a signing ceremony at the Dubai Airshow. The carrier could either purchase two 747-8 Freighters, two 777 Freighters or one of each. Neither company released a timeline for when the freighter agreement will be finalized.

The deal for all seven aircraft is worth US$1.9 billion, McAllister said.

Boeing also announced that Azerbaijan is the launch customer for its 787 landing-gear exchange maintenance program, which allows carriers to return landing gear to Boeing for new landing gear. Neither the terms nor the length of the deal were revealed.

In 2014, Azerbaijan Airlines became the first customer in the Commonwealth of Independent States to operate the 787. The carrier ordered its first Boeing aircraft – 757s and 767s – in 1999, President Jahangir Askerov said.

—Madhu Unnikrishnan

Azerbaijan Inks Deal for 5 787s, 2 Freighters

Sheikh Mohammed bin Rashid, vice president, prime minister and ruler of Dubai, glanced at a mural of Sheikh Zayed bin Sultan Al Nahyan on the side of an Emirates Boeing 777-300ER here at the show. The design celebrates the 100th year since the birth of the founding father of the UAE.
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Rolls-Royce Opens Customer Service in Abu Dhabi

Rolls-Royce is opening a customer service center in Abu Dhabi, the fifth in its global network of regional facilities.

The aim of the regional customer-service centers is to put Rolls-Royce personnel on the ground, closer to customers, in order to address operational issues more quickly. “With such a global operation, the logic statement is really the need to be as local as we can be,” says John Kelly, Rolls-Royce vice president-customers, Middle East and Africa.

“We need to be local to respond in the right way, and we need to be local to resolve issues, and underpinning all that...through being local, is the power of our relationships, the fact that we can develop an empathy and a true understanding of our customers, not only their operation, but their environment and how they’re operating.”

Rolls-Royce has engines on 469 aircraft – both in-service and on-order – in the region, operated by 34 airlines. Etihad has 31 Airbus A330s in its fleet and 62 A350s on order. Emirates has Rolls-Royce engines on 52 Airbus A380s; Gulf Air, on 10 Boeing 787s; and Saudia on 20 A330s. “We have a long heritage in the Middle East,” says Kelly. “We have a lot to build upon, and a lot to go for, in terms of opportunity.”

In Africa, Rolls-Royce has engines on 231 in-service and on-order aircraft. “We have a lot of existing presence across that continent, and in terms of developing aviation markets, we have a significant presence,” says Kelly. “We’ve got presence that’s seen phenomenal growth.”

The Abu Dhabi customer-service center will be staffed with on-wing service technicians as well as account management, customer service, marketing and customer management personnel.

The Abu Dhabi center will be local to respond in the right way, and we need to be local to resolve issues, and underpinning all that...through being local, is the power of our relationships, the fact that we can develop an empathy and a true understanding of our customers, not only their operation, but their environment and how they’re operating.

The Abu Dhabi center will build on Rolls-Royce’s experience with its Singapore center, the first regional facility, Kelly says. “We can be [to the customer] as we said, in a matter of hours, various, and the face time, which is extremely important, particularly in this region, to develop the level of understanding, and connection with our customers,” he says. “I’ve mentioned those matter in fast decisions, and fundamentally, we are looking for an improved understanding of our customer, both in terms of their operation, their future direction and how we better serve them.”

The Abu Dhabi center will move into an “iconic” building, Kelly says. Looking like a coin stood on its edge, the building is close to Abu Dhabi Airport and has easy access to Dubai Airport. “With the connectivity through those airports, we can be with any of our customers in a matter of hours,” Kelly says.

Rolls-Royce is at Stand 1028 at the Dubai Airshow.

—Madhu Unnikrishnan

Rolls-Royce Marks 1 Millionth Hour for Trent XWB

ROLLS-ROYCE HAS HAD a busy 12 months leading up to the Dubai Airshow, the company says. The year has been marked by the first flights of three of its engine types. The Boeing 787-10, new at the show this year, is powered by the Trent 1000 TEN engine. Last year, the company saw the first flights of its Trent XWB-97 engine, which powers the Airbus A350-1000, as well as the Trent 7000, which powers the Airbus A330neo. “The Dubai Airshow comes at the end of a significant period for us where we’ve worked closely with both Airbus and Boeing to achieve three first flights,” says Eric Schulz, president of Rolls-Royce Civil Aerospace. “Achieving this goal underlines our position as a leading engine provider for new generation aircraft.”

The Trent XWB, which powers the A350-900 here at the show, saw its one-millionth flight hour in October, Rolls-Royce says. The engine has had dispatch reliability of 99.4% through October and no inflight disruptions.

“We are incredibly proud to bring our Trent XWB to the show and celebrate this latest milestone,” says Dominic Horwood, Rolls-Royce director-customer and services, Civil Aerospace. “Not only is it the most-efficient large aero engine flying in the world today, it is also the fastest-selling widebody engine ever, with more than 1,600 already sold.”

Rolls-Royce has 4,000 engines installed on in-service aircraft worldwide. It expects to have 8,000 engines in service by 2027. The company expects to power half of all widebodies in 10 years.

The company has a full-scale engine at its Stand 1028 at the Dubai Airshow. —MU
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Al Worden, command module pilot of the Apollo 15 moon mission in 1971, now describes himself as “Colonel, USAF-Retired” - but that final word should not be taken literally. At the age of 86, Worden is currently to be found jetting around the Middle East on a tight schedule of talks and meetings that would tire a far younger man.

But his main theme is not the moon; it is mankind’s logical next step toward the stars: Mars.

“No one country will be able to launch a mission to Mars,” Worden told ShowNews, “it has to be a cooperative effort.” That, of course, means the world working together, rather as it does in a smaller way aboard the International Space Station.

“Cooperate; that is the vital message,” stresses Worden. Clearly, the world needs the skills to accomplish this mission; and that is Worden’s related message: STEM. Persuading young people to study science, technology, engineering and math has been Worden’s aim for many years. And applying those skills “in the most exciting industry in the world” (aerospace) brings its own rewards, as his life history makes abundantly clear.

Worden will address the conference in the Space Pavilion at the Dubai Airshow at 12.35 p.m. on Tuesday, his talk titled “We Have Not Been Here Before. We Are Going to Mars Together.” Students in schools and colleges throughout the UAE will hear Worden repeat his message in a series of talks he is giving next week. “We can’t predict where our passions will take us, but we can all agree, no industry enables mankind to reach as far as aerospace. We all live on planet Earth; it is the home of our species; [the Mars mission] is the beginning of a long-term journey.” —Paul Jackson

Saudi Arabia Invests in Virgin Galactic

The Saudi Arabian government three weeks ago signed a partnership agreement with Virgin Group under which it will invest around US$1 billion into the company’s space services in return for an unspecified but “substantial” stake in Virgin Galactic, The Spaceship Company and Virgin Orbit, alongside Virgin Group and its backer Abu Dhabi’s Aabar Investments, now part of Mubadala.

The funding move, which includes an option for US$480 million of future additional investment in Virgin’s space services, comes as Virgin Galactic readies for powered flights of its suborbital SpaceShipTwo (SS2) and as Virgin Orbit prepares for captive carry tests of the LauncherOne rocket. Although long delayed by development issues and the 2014 crash of the first Scaled Composites-built SS2 during testing, powered flights are expected to resume later this year with the start of commercial operations by Virgin Galactic likely in 2018. Virgin Orbit is following a similar timeline with initial drop tests of LauncherOne expected next year.

The Saudi stake will be held by the government-run Public Investment Fund (PIF), which includes a portfolio of domestic and international investments, diversified across sectors, geographies and varying assets. The PIF acts as Saudi Arabia’s main investment arm, and its involvement with Virgin follows approval by Crown Prince Mohammad bin Salman Al-Saud, the deputy prime minister of the country as well as the chairman of the PIF. Strategic guidance for the partnership was provided by Saudi Arabia’s Ministry of Economy and Planning, which sees the partnership as a key element of the country’s Vision 2030 plan to develop a diversified economy in 2030.

Virgin Group founder Richard Branson says the company is “just months away from Virgin Galactic going into space with people on board and Virgin Orbit going into orbit and placing satellites around the Earth.” Referencing longer-term plans to develop a follow-on liquid-fueled, rocket-powered SS2 derivative for long-haul, high-speed passenger flights around the world, he adds the investment “will enable us to develop the next generation of satellite launches and accelerate our program for point-to-point supersonic space travel.”

—Guy Norris

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A UNITED TECHNOLOGIES COMPANY
Raytheon Trials Cockpit Alerts for Cyber Threats

From inflight internet access for passengers through to preventing unauthorized access to logistics networks, the cybersecurity challenges facing aviation are as varied as they are difficult to guard against.

One obviously critical area is the flight deck: And, even though flight controls are kept entirely separate from other internet-connected systems on board aircraft, the potential for unauthorised access remains real. This is why Raytheon is working to develop an intrusion-detection system for cyberthreats to avionics. At the Dubai Airshow this week, the company is showcasing a 3-D demonstration of how such a system may look.

“This is a company-funded effort, and we think it’s applicable to both commercial and military,” says David Ray, vice president of business development within Raytheon’s information, intelligence and services division. “We’ve built a capability that is helping the pilot understand when they have a cyberattack, by issuing a warning similar to a low-fuel warning or an engine-out warning. And we’re also looking at ways we can remediate that problem while in flight.”

The system, which Ray says is presently at around TRL 4 (technology readiness level 4) but which the company intends to get to product-demonstrator standard within the next three years, works by detecting unauthorized access to the avionics bus. A notification is then pushed to the pilot’s display, with sufficient detail to enable a decision to be taken on whether remediation is possible to conduct in the air, or whether the aircraft should return to base.

A key preoccupation during the ongoing development is around how such a system will interpret each incident. An intrusion may not have any effect whatsoever on the functionality of the aircraft, so an incorrect diagnosis – either by the pilot or by the system itself – could result in the needless cancelation of a flight. Similarly, what appears at first to be an inconsequential cyberevent may turn out to be a very damaging attack, and a failure to get back on the ground may result in the loss of the aircraft.

Says Brooks Cleveland, an airline pilot who also flies F-18s in the U.S. Navy Reserve and consults as an aviation specialist for Raytheon: “I just want to know if there’s something going on I need to pay closer attention to. Not to the point that it tells me exactly what – although that would be nice – but just enough to get the hair on the back of my neck to stand up.” –Angus Batey

Raytheon Brings Cyber Centers to Middle East

AMONG THE OFFERINGS showcased by Raytheon at the Dubai Airshow this week is the company’s suite of cybersecurity center configurations. The Washington D.C.-based information, intelligence and services (IIS) division has developed a three-tier portfolio that can be applied at different levels, ranging from small companies up to entire nations.

“We’ve created a set of standard cybersecurity offerings for our international customers, and we’re focused on the Middle East right now” says David Ray, vice president of strategy and business development within IIS. “The standard Response Center provides a strong level of monitoring and incident-response capability to an existing infrastructure. We’ve tailored and scaled this to single entities – customers that may have tens of nodes associated with their environment.

“The Enterprise Response Center [ERC] scales to tens of thousands of end nodes,” he continues. “So think of an MoD that has multiple agencies under it: They employ an ERC at the MoD level with nodes across multiple agencies inside of that. They can incorporate cross-site information sharing, and analysis labs where they can examine malicious code, do forensics and things of that sort, to really get into understanding their threats, so they can be more proactive in how they defend against them.

“And our last standard offering is the National Response Center,” he adds. “Think of it as the difference between protecting an MoD and protecting the entire country. That’s where you have to really get into the big-data analytics, and national-level monitoring and response. It’s a very exhaustive capability.”

Regional and national approaches can differ significantly, making it more challenging for providers to design systems that will give comparable results for different users around the world. The Raytheon cyber center model addresses this by ensuring specific requirements and existing capabilities can be integrated seamlessly, and to provide training to help end users generate their own bespoke capability.

“Standing up Raytheon Arabia in Saudi Arabia, and Raytheon Emirates in the UAE, is not only about creating a much more focused presence with our customers,” says Ray. “We’re partnering with companies in those countries to train, and to really help them understand how we’re delivering our solutions.”

–Angus Batey
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Gulfstream Highlights Special Missions Capabilities

Nearly one-third of Gulfstream’s fleet of 170 business jets operating in the Middle East and Africa have been put to use in far more utilitarian roles than one would expect. Instead of being dedicated to the world of luxury transportation, 50 of them are laboring in the usually less-glamorous label of “special missions.”

The various roles that fall under the special-mission heading include everything from VIP government transport to high-end surveillance. Among the former, the company delivered two G550s in VIP configuration to the Polish government earlier this year. Having G550s already in service may give the type an advantage, with the Polish Air Force also eyeing new maritime patrol and airborne surveillance requirements.

Gulfstream special-mission jets have also been configured as medical transports, with several active in that role in the Gulf region. The medical services department of the Saudi Arabian defense ministry operates a program, simply called Medevac, with the Gulfstream G450 its fixed-wing platform of choice.

Special missions capabilities are highlighted here on Gulfstream’s Stand 1268.

The plush standard business jets that Gulfstream has brought to Dubai and is showing in the static represent the standard-bearers of the company’s current range. The G280 and G550 are joined by the flagship 7,500-nm-range G650ER. The G550 will be replaced by the currently in-test G600, but the type remains durably popular: In July, Gulfstream announced the 550th delivery of the Collier Trophy-winning ultralong-range jet.

Testing of the G500 and G600 is proceeding apace, with the fifth and final G600 test aircraft making its maiden flight in late August. The company has found both aircraft to be performing better than anticipated. Fine-tune changes to both platforms during the respective test programs have yielded significant range increases. The Mach 0.85 cruise range for the G500 is up to 5,200 nm (from 5,000), while for the G600 the figure is 6,500 (from 6,200). At Mach 0.90, the G500 range increases by 600 nm to 4,400, while the G600 range reaches 5,100 – up some 300 nm on the company’s original projections.

This news will interest potential customers in the Middle East, where range is a key requirement. The G500 has already completed a 4,690-nm flight (from Las Vegas to London, in a little over 10 hr.). Deliveries to launch customers are expected in 2018 for the G500, with G600 deliveries commencing the following year.

VistaJet Targets Middle East for Expansion

**BUSINESS JET OPERATOR**

VistaJet has doubled its Middle Eastern business this year, and aims to increase its growth in the region with new approvals to operate in Saudi Arabia.

The company hopes to capitalize on what it says is a trend in the region from fractional jet ownership or full ownership of business aircraft. VistaJet has seen its flagship Program membership double in the Middle East this year. Program membership is a multiyear subscription that allows members the highest-level access to VistaJet’s fleet. The company is pitching the Program membership as an alternative to business jet ownership.

The overall Middle East business aviation market is expected to grow by 9% this year. The market has changed, VistaJet says, so that now 70% of business aviation traffic in the region is corporate, rather than personal. VistaJet believes its globally uniform product and operations worldwide positions it to capture more of the changing Middle East business aviation market.

“We’re delighted to announce today’s results as VistaJet continues to provide a valuable proposition for business leaders and an alternative to aircraft ownership,” says Thomas Flor, VistaJet founder and chairman. “With our extension to operate in and out of Saudi Arabia, this will further enable business leaders to travel seamlessly throughout the Middle East and to the rest of the world.”

The company recently received approval to operate in Saudi Arabia. That country provides the largest share of VistaJet’s business in the Middle East, at 39%. The United Arab Emirates’ share is 30%, with 7% each from Qatar, Kuwait and Egypt.

VistaJet flies to 1,600 airports worldwide, and 68 airports in the Middle East. Dubai is its largest base in the region, with customers most frequently flying from there to Nice, Moscow, Mumbai and London.

VistaJet operates a fleet of more than 70 Bombardier business aircraft, including Global 6000s, Global 5000s, Challenger 850s and Challenger 605s. All of its jets sport a uniform livery and cabin and allow customers to tailor the inflight experience.

Rhone Capital recently invested US$150 million in the company, which has a valuation now of US$2.5 billion, VistaJet says.

**Madhu Unnikrishnan**

**Angus Batey**
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The company, which has taken orders for almost 3,000 CFM56 and Leap engines so far this year, is accelerating production and building 20 Leap engines per week as part of efforts to meet delivery commitments to Airbus and Boeing. These have been slowed by parts yield issues and, in the case of the Leap-1B for the 737 MAX, disrupted by inspections following the discovery earlier this year of cracks in a batch of low-pressure turbine discs.

Although CFM conducted extensive early “run-at-rate” practice production runs of the Leap engine ahead of the planned ramp-up, these did not expose the issues as expected, says CFM executive vice president Allen Paxson. “We didn’t fully contemplate the yield variation, but we are now working through this at GE and Safran shops as well as throughout our supply base.”

Paxson adds that “toward the end of the year we will be back on plan with both airframers and should have closed that gap.”

On the eve of the Dubai Airshow almost 100 Leap-1A-powered A320neos were in service with 16 operators while Boeing had delivered 37 Leap-1B powered 737-8s to nine operators.

“We expect 225 aircraft to be delivered by year end with 46 operators,” says CFM executive vice president François Bastin. “We are well on track to deliver between 450 and 500 engines by the end of the year and in five years we will have more Leaps in the fleet than it took with the CFM56 over 30 years.” The fleet is expected to reach one million flight hours in the first quarter of 2018, a tally that the CFM56 took “years” to reach, he adds.

—Guy Norris

Japan’s C-2 Appears at Dubai Airshow

A KAWASAKI HEAVY Industries (KHI) C-2 airlifter is appearing here at the Dubai Airshow during a deployment termed a flight training exercise but obviously intended also to market the type.

A second mission a week later will take a C-2 to New Zealand, where the government expects to acquire transport aircraft for delivery in the early to mid-2020s.

During deployment to Dubai the C-2 will also visit Djibouti, where the Japanese armed services, the Self-Defense Forces, are building up a capacity for regional disaster response.

“The Ministry of Defense intends to actively use the Self-Defense Forces’ foothold in Djibouti, which is situated in a geopolitically important location, as a key overseas transportation hub,” the ministry said last month, announcing the C-2 deployments. Despite the reference to the strategic value of a Djibouti base, Japan is most unlikely to be contemplating any kind of power-projection presence there.

The aircraft can appear at Dubai only because Japan ended a decades-old ban on military exports in 2014, though it still will not sell to countries that violate international treaties or U.N. resolutions, or those engaged in conflict.

The C-2 and the related KHI P-1 maritime patroler are perhaps the two products for which Japan has the greatest hopes in the international market.

The Japanese air force began receiving C-2s in June 2016 after a protracted development program; 30 are required for airlift and one, a converted prototype, for electromagnetic intelligence.

The twin-engine aircraft, comparable to the Airbus A400M Atlas in size, has a gross weight of 120 metric tons (265,000 lb.). It is powered by the General Electric CF6-80C. The type is not designed for rough field operation.

—Bradley Perrett
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IDEAS BORN TO FLY™
Anka-S

The Anka-S is a development of the Anka medium-altitude, long-endurance unmanned air system that first flew back in 2010. As well as boosting altitude and endurance performance over the original Anka-A model, it is equipped with a satellite-based beyond line-of-sight (BLOS) communications system allowing surveillance operations to be performed over the horizon. Operational Anka-S models will be fitted with the Aselsan-developed Common Aperture Targeting System (CATS) high-definition electro-optical camera payload at the nose. It will also be equipped with VHF/UHF radio relay capability, allowing it to act as a communications node for troops on the ground. With growing interest in an armed capability, TAI has also added hard points, allowing the Anka to fire the Roketsan Cirit lightweight laser-guided rocket and the company’s Small Micro Munition (SMM) also known as MAM-L - a small 50-lb. (22-kg) laser-guided munition.

Ten examples of the Anka-S have been ordered by the Turkish Air Force.

Hurkus

The Pratt & Whitney Canada PT6-powered Hurkus trainer is Turkey’s first EASA-certified production manned fixed-wing aircraft. Having made its international debut at the Paris Air Show, TAI is getting ready for flight tests of the Hurkus-B model, 15 of which have been ordered by the Turkish Air Force and kitted out with an Aselsan-developed avionics suite and BAE Systems LiteHUD. Flight testing is expected to get underway by the end of this year, and deliveries are expected to get underway in mid-2018. The company has also begun development of the Hurkus-C, a light attack version fitted with three hardpoints, for missiles, guided and unguided rockets, and bombs. The aircraft is equipped with an underfuselage electro-optical camera system to find targets and provide guidance for laser-guided weapons. The Turkish Land Forces have signed letters of intent to purchase 12 armed Hurkus trainers, and have options for an additional 12.

T625

TAI is displaying a mock-up of the T625 six-metric-ton medium utility helicopter. The T625 is the first commercial platform to use the Light Helicopter Turbine Engine Company (LHTEC) T800 engines, a powerplant selected for its commonality with the T129 ATAK attack helicopter. The T625 features a flat floor in the cabin that can be configured to seat up to 12 passengers. The aircraft also has tankage to carry 1,020 kg (2,248 lb.) of fuel. TAI also claims the aircraft will have a cruise speed of around 150 kt., while endurance will be around 3.8 hr. The T625 enters a highly competitive market, up against the Airbus H160, Bell’s Model 412, the Leonardo AW139 and the Sikorsky S-76.

Turkish Delight in Dubai

Turkish Aerospace Industries is showing off three aircraft in the static display while the T129 ATAK helicopter is participating in the flying display.
The T625 is likely to find its first orders from the Turkish military, which wants to replace the aging Bell UH-1 Iroquois, and the Turkish national police, which wants to base helicopters in many of the country’s major cities. First flight is planned for September 2018 with civil certification in Turkey by the end of 2020. European Aviation Safety Agency (EASA) certification will follow later.

**T129 ATAK**
Developed in conjunction with Leonardo, the T129 is a derivative of the AW129 Mangusta attack helicopter fitted with Turkish indigenous sensors, avionics and weapons. Some 59 have been ordered by the Turkish Land Forces, of which 24 have been delivered. The company is offering the aircraft to Poland and may be close to a sale in Pakistan where the type would replace older model AH-1 Cobras. TAI and the Pakistan Aeronautical Complex signed an agreement in May for closer cooperation, which could see the final assembly of the helicopter take place in Pakistan if ordered. Bahrain has also expressed interest in the helicopter. Several indigenous weapons have been integrated including the Roketsan UMTAS guided missile and the Cirit lightweight missile. The air-to-air version of the Raytheon Stinger can also be fitted.

—Tony Osborne
Space Filling Fast at Dubai South

Visitors to the Airshow cannot help but notice that there is a lot of desert out there around the Dubai South site. But Tahnoon Saif, vice president of Dubai South’s Aviation District project, warns any companies considering a large hangar to make their minds up soon: Despite all that empty space, the 7-sq.-km Aviation District is already starting to fill up.

“The big Code F hangars, which can accommodate 777s, 747s and A380s, we are running out of those,” he says. “We developed infrastructure for nine plots only. Out of nine we have already leased three, and we have one client who’s very close to a deal for a Code F plot. So, I think, in five years time, we will run out of Code F plots.”

The three customers already under contract highlight the kind of tenant the Aviation District is keen to attract.

“One of the plots is for DC Aviation-Al Futtair,” says Saif. “The second is Falcon Aviation – they are opening this facility for maintenance. The building is taking shape – already you can see the steel structure from far away. And just a month ago, STTS Finaero broke ground for their facility, a Code F paint shop.”

Of course, Dubai South is a long-term project, and there will be scope for further expansion. But the investment in infrastructure to provision for those nine large plots places a limit on what can be made available in the medium term.

“We spent around 600 million dirham on the airside infrastructure underground,” Saif explains. “Some people – very visionary operators – they saw that, OK, a government will not spend six, seven hundred million without real cause. So some of them came with us from the beginning. Others were just waiting to see how this will go – and, when they saw the project taking shape, they joined us.”

And so, as those early-adopter spaces are taken, the Aviation District is looking for its next tranche of investor-operators. As well as the nine spaces for large airside facilities, the Aviation District has 32 smaller Code C plots, of which so far only five have been leased – “our inventory’s huge for that,” Saif says – and the Aerospace Supply Chain initiative provides an abundance of 750-sq.-meter modular landside units.

The Aviation District is arranged around four business verticals – general/business aviation, commercial aviation, maintenance and training – and the site is seeing significant growth in each. The training vertical is anchored by the Emirates Training Academy, which on its own takes up some 23% of the District’s overall area. The VIP terminal anchors the business-aviation element and already has five tenant operators – three inside the terminal and two outside. One of those is Jetex, which is developing a double plot to hangar 737/A320-size business aircraft; another tenant will be announced before the end of the Airshow.

Extending the use of Al Maktoum Airport would appear to be key to Dubai South’s growth, but Saif says that an expanded commercial offering, while important, is not in itself essential to realizing the Dubai South developers’ vision.

“We cannot deny the importance of having Emirates and FlyDubai fully moved to this area,” he says. “But our key partners at this moment for the maintenance vertical, and especially for the Aerospace Supply Chain, are the cargo side. Having Emirates and the other cargo facilities at Al Maktoum was a key driver. Parts can be easily brought in for maintenance, then shipped out again. This was more important for us than having the other commercial airlines with passengers here.”

Development of the entire site continues – Saif expects that the additional four runways will be completed by 2027 – and connections between Dubai South, Jebel Ali and the Dubai Metro network, while still to be confirmed, remain likely. Visitors to the Airshow in 2019 can expect to see further changes in the area.

“In two years’ time you’ll see the always-promised masterplan on the ground,” Saif says. “You can see it, visualize it – a reality. You’ll see the whole ecosystem. Each vertical will be taking its own shape.

“It’s exciting times,” he adds. “I think aviation never took its opportunity in Dubai. We have the busiest international airport in the world, one of the best airlines in the world; FlyDubai is there, and Abu Dhabi and Etihad are just next door. But there was never anything to support those entities. Now this is taking independent shape, and at the end, will support all of those ecosystems.”

—Angus Batey

Dubai South features a luxurious VIP terminal.
On the flight deck or in the passenger cabin, there’s good news for all airliner occupants to be announced at the Airshow. Azerbaijan Airlines (AZAL) has selected Rockwell Collins to provide its global, high-speed broadband inflight connectivity, overhead inflight entertainment and a full suite of advanced avionics – including Rockwell Collins’ MultiScan ThreatTrack weather radar – for 10 Boeing 737 MAX aircraft. Deliveries are expected to begin by the end of this year.

Cabin connectivity services will be provided by Rockwell Collins’ CabinConnect wireless inflight connectivity and entertainment solution using Inmarsat’s Global Xpress satellite network. The system will be line-fit on the aircraft.

“The new connectivity service will enable AZAL passengers to surf the internet, use various instant messenger applications and social networks, listen to audio and check email via personal computers, tablets and smartphones,” says Mike DiGeorge, vice president, commercial aviation and network services for Rockwell Collins. “And for the flight deck, the high-speed connectivity will open up possibilities for pilots to access information such as synoptic weather through a secure server router to supplement their flight operations.”

Additionally, Emirates has opted to provide pilots with a technology that keeps eyes forward and focused on the outside world when flying their forthcoming Boeing 777Xs. Rockwell Collins’ Head-up Guidance System has been selected by the airline for the 150 aircraft on order.

Claude Alber, vice president and managing director, Europe, the Middle East and Africa for Rockwell Collins, said, “You add another level of safety by having two HGS displays on the flight deck, and it makes for a smoother transition for pilots moving from the right seat to the left seat.”

Also earmarked for Emirates’ new 777s are numerous Rockwell Collins systems, including the first-ever touchscreen flight displays for commercial air transport aircraft. In addition, Rockwell Collins is providing the integrated surveillance system with MultiScan weather radar, select flight controls and the Avionics Gateway secure server router, and communication and navigation radios on the 777X.

Emirates also selected the GLU-2100 Multi-Mode Receiver and Digital Radio Altimeter for its 777X fleet.
CEFA App Makes Every Flight a Training Opportunity

Spanish-born philosopher George Santayana coined the much-mangled aphorism that “those who cannot remember the past are doomed to repeat it.” At the Dubai Airshow yesterday, a French company and a Swiss airline captain showed how pilots can tap the lessons of the past through their aircraft’s flight data monitoring system (FDM – known as FOQA, or Flight Operation Quality Assurance, in the U.S.).

It was while working for a Swiss airline in the 1990s that Dominique Mineo realized that reports produced by FDM/FOQA systems were not easy for pilots or airlines to interpret. He wrote new software that used FDM outputs to create an animated playback, with visual representations of cockpit instruments. In 2000, he set up CEFA Aviation (Stand 378) in Alsace, France, to market this product. The company currently has more than 80 customers worldwide.

CEFA’s latest innovation is called Aviation Mobile Services. AMS combines cloud data storage with a tablet application that enables pilots to replay detailed animations of recent flights. AMS will work with any aircraft. Use of the app is private, encrypted and secure.

Pierre Wannaz, a captain on A330s and 340s for Swiss Air, first came across CEFA’s animations during his secondment as an investigator following a French air crash in the 1990s, and is now a senior advisor to CEFA. He argues that AMS offers a number of significant benefits for pilots. As an example, he describes an experience earlier this year, when he was in the cockpit of a Swiss A340, observing and instructing as a trainee pilot made his first takeoff in the type.

“If I had the possibility to see exactly what had happened – how did we fly? Where was the spoiler? Was it too much, or not enough? Could the pilot have raised the pitch a little bit more to be over the vortex, or not? – we would have had the facts to understand exactly what happened.”

—Pierre Wannaz, a captain on A330s and 340s for Swiss Air

The AMS animations include cockpit instrumentation as well as views of the environment and of the aircraft exterior.

The low tail clearance was picked up by the airline’s automated monitoring of flight data, and triggered an email to the crew. This was received three days after the flight, and because Wannaz had discussed it in the crew’s routine post-flight debriefing, no further action was taken. The information sent out was a table of second-by-second data points, with the low clearance highlighted.

“For me, the tail strike event wasn’t the problem – the problem was what happened thereafter,” Wannaz says. “We couldn’t start flying, and the end of the runway was coming. After I asked for more details, we found that, most probably, we were in the vortex of a preceding aircraft.

“Now: If I had the possibility to see exactly what had happened – how did we fly? Where was the spoiler? Was it too much, or not enough? Could the pilot have raised the pitch a little bit more to be over the vortex, or not? – we would have had the facts to understand exactly what happened.”

Had Wannaz and his crew had access to AMS on that flight, they could have downloaded an animation of the takeoff within minutes of the flight landing at Shanghai, rather than discussing tabulated data by email days later. While still in the cockpit, they could have debriefed the incident, in person and as a crew, and discussed how to avoid similar occurrences again in future.

“I’ve asked my colleagues, and they say that out of every 10 takeoffs, they’d maybe like to see one or two again,” Wannaz says. “But landings? I would say almost every pilot [would want to review] about half of their landings.”

AMS has been in use by All Nippon Airways on its Boeing 787 fleet since March. CEFA data shows that more than 10,000 animations were replayed by ANA’s pilots in the system’s first seven months of deployment.

“They have conducted a survey among the pilots, and about 90% of them are either satisfied, or very satisfied, with the service,” says Mineo. “It’s like a gift the company is giving to the pilot: ‘This is for you, for your own training – you can use it if you want, or not; it’s up to you.’ But in the end, both will get benefit out of it.”

—Angus Batey
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KTRV Offers New Armaments on Global Market

Russia’s JSC Tactical Missiles Corp. (KTRV) plans to export defense hardware worth almost US$1 billion this year, with a major focus on missile weaponry, says Director General Boris Obnosov. That should match or exceed current volumes, he told Show News.

KTRV is heavily investing in the development of new air-to-surface (AS) guided weapons, and recently demonstrated a new family of modular AS missiles, designated Kh-38MEh. The family comprises four missiles fitted with inertial satellite navigation, inertial thermal imaging, inertial active radar and inertial semi-active laser seekers, designated Kh-38MKEh, Kh-38MTEh, Kh-38MAEh and Kh-38MLEh, respectively.

The Kh-38MEh-family missiles have a range of 3-40 km. They also feature a target hit probability of 80% in a non-contested area and 60% in an electronically jammed area. The missiles can engage a wide range of armored, hard-skin and soft-skin single and group targets, as well as surface offshore objects.

KTRV is paying special attention to extending the range of its weapons. For instance, while the Kh-35Eh anti-ship missile (ASM) has a launch range of up to 130 km, its updated variant, the Kh-35Ueh, will reach 260 km. The maximum launch range of the Kh-31PD anti-radiation missile has been increased to 250 km from its predecessor Kh-31P’s 110 km.

The Kh-31AD air-launched ASM can engage a target at a distance of up to 160 km, while the previous model, the Kh-31A, can be launched at a maximum range of 70 km.

According to Obnosov, KTRV is also improving the jamming resistance of its weapons. Currently it is testing the newest Grom-Eh1 missile and a wide range of air-launched weapons for the Su-57 (ex-name PAK FA) fifth-generation fighter. “The Grom trials will be finished at an early date,” Obnosov says. “The development of the weaponry for the PAK FA has run into the practical stage, as we are making control flights and switching to the launches.”

The CEO emphasized the areas of development of its air-to-air missile weaponry: The range previously considered as short is becoming medium, a medium one is becoming long, and a long range is growing to beyond-the-horizon. “The main tasks in this area are to enhance the missiles’ jamming resistance, inflight overload capacities required to engage maneuvering aerial targets including unmanned ones, and firing range,” he said. The RVV-BD long-range and the RVV-SD medium-range air-to-air guided missiles have received the newest guidance systems with enhanced sensitivity and jamming resistance. As a result, their effective firing range has been extended dramatically.

According to Obnosov, experience with Russian-made guided bomb and missile weapons in Syria has dramatically improved their market outlook. “The newest guided aerial bombs are fitted with satellite navigation – in particular, the KAB-500S-Eh and the laser-guided ‘smart bombs.’ The KAB-1500LG-F-Eh used in Syria against the terrorists of the Islamic State has also generated interest. This has resulted in the strengthening of KTRV’s position in the rankings of global arms manufacturers.”

—Nikolai Novichkov

Bell 505 Earns EASA Spurs

Bell’s Model 505 JetRanger X has received its long-awaited European Aviation Safety Agency certification.

The European sign-off on Nov. 10 adds to a growing list of aviation regulators that have given the five-seat, Safran Arriel-powered light helicopter the green light, including Australia, Chile, Guatemala, Indonesia, Mexico, New Zealand, Peru, South Korea, Argentina and, most recently, Japan. U.S. FAA certification was awarded in June.

The first aircraft for a European customer is due to be delivered at the beginning of 2018.

The certification emerges less than a week after Bell inked an agreement with China’s Reignwood International Investment Group to purchase 50 Model 505s and establish a delivery and maintenance center in China. Reignwood is now one of the biggest customers for the helicopter, having already signed agreements for 60 aircraft. Reignwood now has 110 Bell 505s on order.

The helicopters will be used in the corporate, tourism and utility sectors.

—Tony Osborne
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Lufthansa Technik Middle East - the UAE-based subsidiary of the German MRO specialist - became the first firm to begin operations at the Aerospace Supply Chain area of Dubai South's Aviation District earlier this year. Now the company is already looking to expand beyond its two sites in Dubai.

“We’ve provisioned for expansion, and we have options available,” says Ziad Al Hazmi, LTME’s CEO. “At the moment we’re doing thrust reversers, inlet cowls, fan cowls, radomes - basically, everything to do with nacelles and composites.

“We’ve just got a C6 rating, which is interior equipment; and we’re looking at more components. We’re also looking at possibly providing our engine services from the region. We have teams that fly in to the customer. We’re evaluating whether it makes sense to increase that capability on a local basis.”

The company took up the facility at Dubai South in addition to its initial operating location at Dubai Airport Free Zone. (It also conducts on-airframe work under a cooperative agreement with DC Aviation in the latter’s apron-side hangar at Dubai South.) LTME plans to continue working from both sites.

“We’ve kept the Dubai Airport Free Zone facility,” Al Hazmi says. “It’s basically a material warehousing location, while the new facility at Dubai South is really focusing on the repair side. The material pool at DAFZ is actually a regional distribution center: We’ve got 787, 777, 320 and 350 parts - critical items to cover customers in the region.”

LTME has also been increasing its headcount to support the new work being generated across the two sites, and to gear up to support customer requirements in the region. The company now has over 30 staff across its Dubai sites, up from around 20 at the start of the year.

The idea of merging the two facilities into one - particularly as Dubai South grows as a regional hub for different companies and more air traffic begins using Al Maktoum International Airport - is one that has been considered, but for the moment, the plan is to retain both.

“We get this question from our board, and we also ask ourselves this question,” Al Hazmi says. “For the foreseeable future, we will keep the DAFZ location. It’s up and running, it has all the stock, and it has the systems in place to move parts in and out. And DAFZ has its advantages, from the flights coming in and out of there. So for the time being I think it’s working to our advantage.”

—Angus Batey

**Diamonds Are Forever Golden**

Henry Ford said you can have them in any color – as long as it’s black. Makers of composite aircraft used to limit customers to white because of structural reasons associated with heat-sink.

Two Diamonds in the static display prove that composites technology has moved on since its early days, and now a greater variety of colors is possible. The DA50 single-prop and DA42 twin stand out in their attractive – and expensive looking – all-gold paint schemes, while the DA62 twin sports a slate-gray top-coat to make the color point less flamboyantly.

And nearby, of course, is parked the Bombardier Global Express painted by Jean Bouille in a special coating containing diamond dust. Ostentation, thy name is “aviation.”

—Paul Jackson
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