Dubai Show: Biggest Ever

Its status grows as a world event, not just regional anymore. PAGE 8

Dubai is becoming the world’s leading city in exploring automating civil functions and infrastructure, beginning with its light rail network. Now it’s looking at autonomous air taxi service, automated police flycycles, and drones that can fight high-rise fires. —Page 56

Maybe A380 Order at the Show?

Will they, won’t they? That’s been the big question in recent days about a new order for A380s from Emirates, the world’s largest operator of the type. Current thinking is that they will, and they may announce a deal for some 30 aircraft here at the show. That achievement would be the crowning glory for super-salesman John Leahy, who will be retiring at the end of the year. All Emirates and Airbus would say beforehand was negotiations are in progress. —Page 4

U.S. May Consider F-35s for Gulf Nations

The U.S. government is in the early stages of discussions about selling the F-35 Joint Strike Fighter to the UAE and other allies in the Persian Gulf, according to top brass. America could offer the aircraft to the UAE and special allies who all are working toward the same goals, says U.S. Air Force Vice Chief of Staff Gen. Stephen Wilson. —Page 4
IT REINVENTS FLEET PLANS AND TRANSFORMS BUSINESS PLANS

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The U.S. government is in the early stages of discussions about selling the F-35 Joint Strike Fighter to the UAE and other allies in the Persian Gulf, according to top brass.

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 Barack Obama administration due to Washington’s commitment to maintaining Israel’s Qualitative Military Edge.

But soon, U.S. President Donald Trump could offer the aircraft to the UAE and other Gulf nations.

“Specifically the F-35, as we look at their requirements here in the Gulf, they share many of the same adversaries and challenges,” said U.S. Air Force Vice Chief of Staff Gen. Stephen Wilson at a press conference here Nov. 10. “So we’d look to provide capabilities. The discussion is ongoing now with the new administration on selling F-35s to partner nations that need them and require them.”

Bilateral discussions on arms sales are closely held, but Wilson confirmed that the U.S. and Gulf partners, including the UAE, have begun discussions on potential deals for the F-35.

“We’re always evaluating capabilities, what’s the optimum capabilities that our partners need?” Wilson said. “As we look here in the Middle East we share common threats, so we’re looking at options on who we’d share those with in the Gulf.”

Wilson spoke here just days ahead of the start of the Dubai Airshow, the largest aerospace exhibition in the Middle East.

—Lara Seligman

Dubai 30x30 Will Lean Out UAE Aerospace

The Dubai 30x30 fitness challenge isn’t just coinciding with the Airshow - it has been enthusiastically embraced by the region’s aerospace community.

The challenge, issued by Crown Prince Sheikh Hamdan bin Mohammed bin Rashid, to get everyone in the emirate to do 30 minutes of exercise for 30 days from Oct. 20, has been taken up by Dubai Airports CEO Paul Griffiths and deputy CEO Jamal Al Hai, who have posted a video online of them racing through the terminal building.

https://www.youtube.com/watch?v=GaFbrtbvA47c

The initiative comes after some sobering studies highlighting burgeoning public-health concerns in the UAE. A 2016 survey by the Dubai Health Authority found that 36% of men and 30% of women were overweight, and the International Diabetes Foundation reckons almost 20% of the UAE population is diabetic. Lifestyle change remains the best way of tackling these problems, and 30 days is reckoned to be long enough to engrain a new habit. —Angus Batey

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Like Its Waterfront: Dubai Show Just Gets Bigger

It’s not all about money. (OK – it’s mostly about money.)

The naysayers may be warning visitors not to expect the multi-billion-dollar airliner orders that the Dubai Airshow has become accustomed to, but this is still going to be the biggest and best event since it all started in 1989.

“We are looking forward to an exciting and successful Dubai Airshow 2017,” said Michele van Akelijen, managing director of show organizers Tarsus F&E LLC Middle East. “The Dubai Airshow truly represents the center of the aerospace industry and we are pleased to welcome the industry’s key players from around the globe.”

If the dollars don’t stack up, the exhibitors certainly do. There are 1,200 here from all corners of the globe and all sectors of the aerospace industry, while some 72,500 no-less-diverse trade visitors are expected during five business days. Nearly a third of exhibitors are from Europe and 40% from the Middle East, plus many from farther afield. In addition, around 10% of exhibitors hail from the Americas.

New attractions this year are the feature pavilions and conferences: the Space Conference and Pavilion with speakers including Apollo 15 Command Module Pilot Col. Al Worden, USAF-Ret; Cargo Zone, the UAS Summit and Airport Solutions, which has been re-launched as part of the Airport Solutions Global Series.

Having proved popular at three previous shows, the Gulf Aviation Training Event (GATE) is back but expanded to include panel discussions on maintenance and crew training, in addition to pilot training. Futures Day, aimed at inspiring the next generation of aerospace professionals, will also return on the final day (Thursday) in conjunction with leading UAE universities.

Dubai has drawn in 100 first-time exhibitors for this Airshow, including Rockford Xellerix, the UAE’s only independent provider of wiring, interconnect and system solutions for the defense, aerospace and marine industries. An unexpected presence is the Japanese Ministry of Defense; while from Canada comes MRO provider Vector Aerospace. Others include Aerospace Maintenance Solutions from the USA, Nordic Aviation Capital from Ireland and D. Marchiori from Italy.

Flying displays will animate the crowd; static displays will activate the checkbook. More than 160 aircraft are in the purpose-built static exhibition, including Airbus A380s from both Emirates Airline and Etihad Airways; the Motor Sich re-engined versions of Mi-2 and Mi-8MSB-T helicopters; business jets such as a Gulfstream G650ER and Bombardier Global 6000; and Turkey’s Anka MALE-class UAV.

An important first-time static exhibitor is the regional company, Calidus, showing its all-new B-250 Bader light attack aircraft and the more peaceful TX-C touring airplane. Counter-insurgency aircraft are attracting the interest of several Middle East air arms, and this year’s show could develop into an undeclared mini-market for the type.

The Japanese presence is to showcase the new Kawasaki C-2 military jet transport, which has just entered service with the Japan Air Self-Defense Force and could also tempt some regional air arms into purchases. Antonov’s new An-132D twin transport nominally hails from Ukraine, but is listed in the show as the Taqnia An-132 to stress the fact that it is intended for assembly in Saudi Arabia, beginning in 2020.

In this year’s flying, the regular UAE Al Fursan aerobatic team will have stiff competition. The Russian Knights are back in their first year with newly acquired Sukhoi Su-30Ms, while China is showing the August 1st team with their Chengdu J-10A fighters. Running them close for spectacle will be the Beriev Be-200 Altair jet-powered firefighter, giving displays of “water bombing.”

There will also be helicopters, including the TAI T129 ATAK combat machine performing for the first time at the Dubai Airshow, and a large number of military aircraft such as the U.S. Air Force’s Lockheed Martin F-16, and the UAE’s Dassault Mirage 2000.

For the third time, Dubai’s Airshow is taking place at World Central airport (DWC; Al Maktoum International Airport), to which it moved in 2013 to leave the main International Airport at DXB free from interruptions. The show begins on Nov. 12 and closes on the 16th.

How will this year’s Airshow measure up? Final figures have yet to be established, but as a guide, the 2015 event recorded 66,343 trade visitors, 1,103 exhibitors from 61 countries, 254 delegations from 68 countries, 103 chalets, 24 outdoor pavilions, 150+ static and 28 flying aircraft, all in 645,000 sq. meters of exhibition space.

And orders announced amounted to US$37.2 billion. That’s your target, Dubai Airshow 2017. —Paul Jackson
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UAE’s Latest Aircraft Introduced by Calidus

To be unveiled today at 10 a.m. is the newest aircraft program in the United Arab Emirates.

Occupying a central position in the static aircraft park, Calidus LLC is an industrial machinery and equipment company located in Abu Dhabi, which has branched into aircraft manufacture with two related designs - civil and military.

Both are on view at the Airshow, the beefy-looking B-250 Bader unveiled here today.

Surrounded by weapons that can be hung on its seven hardpoints, and additionally fitted with an electro-optical sensor turret under the forward fuselage, the B-250 is offered for close air support; intelligence, surveillance and reconnaissance; counter-insurgency; and advanced training.

It looks like a slightly larger version of Embraer’s Tucano - which is not surprising, because both are from the drawing board of the Brazilian, Joseph Kovács. And it does the same jobs at a more economic price, says Calidus.

The four-seat T-Xc, here in prototype form, hails from the same Brazilian stable, and though designed to replace aged Neiva T-25 Universals in South America, it has obvious applications as a utility and touring machine.

Both aircraft were airlifted to the Airshow by a UAE Air Force Boeing C-17 Globemaster III, but Calidus is expected to announce plans for further production to be in the UAE. This, and more, will be revealed when the aircraft are formally unveiled today, adding a new chapter to an already interesting story. —Paul Jackson

And Thereby Hangs a Tale...

It is not only ladies who are coy about their age. The B-250 Bader is a little older than it would, at first, seem.

In 1983, in Brazil, Joseph Kovács put down on paper some ideas for a two-seat aerobatic touring aircraft, which would be like a baby version of the Embraer’s Tucano he had masterminded for Embraer (and is still in production as the EMB-314 Super Tucano, by the way). Design of the Kovács K-51 Peregrino (Peregrine) began in earnest in 1988, but it was not until Nov. 28, 1998, that the prototype flew.

Though promising, the aircraft failed to find a sponsor willing to fund production and, even, a kitbuilt version did not see light of day. Undeterred, Kovács schemed a larger K-52, for which the K-51, by then with over 200 flying hours to its credit, was deemed the proof-of-concept.

Meanwhile, also in Brazil, the Novaer company was formed in 1998 by the late Luiz Paulo Juanqueira, formerly head of Embraer’s equipment division, its main function being an aircraft component supplier. A subsidiary of the Geometra company, it became a prime contractor for the landing gear of the (Super) Tucano and also worked on design of Everett Jets EV-20 (the reconfigured, former VisionAire Vantage) business jet.

In October 2007, Novaer acquired the services of Kovács and rights to his designs, leading to 2009 proposals for a developed, side-by-side seat version of the K-52 (Project T-Xc) as potential replacement for the Brazilian Air Force’s T-25 Universal and a U-Xc four-seater that was first known as the Pilgrim. In December 2014, the T-Xc became the Sovi (Ictinia Plumbea, the Plumbeous Kite) and the U-Xc was dropped. Also schemed was a Sovi MTP (military turboprop) with a bubble canopy.

With the assistance of Brazilian government development funding, the new, four-seat Sovi first flew on Aug. 22, 2014, partly thanks to the state holding company Santa Catarina, taking a minority stake in Novaer in 2013, with the intention of building a local factory, to open in 2018, on condition that funds were obtained for certification. The aircraft shown in Dubai is the original airplane, repainted although still carrying its Brazilian registration PP-ZKV and type designation N-210.

In a parallel development, U.S. Aircraft Corporation was formed in Ohio in 2004 as a subsidiary of an aerospace abrasives company, having foreseen the need for nations friendly to the U.S. to have a new counter-insurgency aircraft.

This prescience did not extend to its design for the aircraft it designated A-67 Dragon. The Missouri-based Golden Aviation company built a prototype that first (and last) flew on Oct. 6, 2006, when the undercarriage partly collapsed on landing.

A completely new A-67 Dragon was produced by dint of re-designating the K-52 in its tandem seat form, but the initiative terminated through lack of support until now. —PJ
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Largest international presence at Dubai Airshow; more than half of states represented.

Is the U.S. aerospace industry making a serious showing at the Dubai Airshow? The fact that there are three state pavilions within the U.S. pavilion itself confirms a priority turnout to do business with the Middle East. In all, more than 120 U.S. exhibitors are here, with the single message, “Ask America.”

In total, 26 states are represented, three of them (Missouri, North Carolina and Washington) in such numbers of companies that they qualify for their own mini-pavilions. And there are VIPs visiting this week to speak for the whole aerospace sector, not least of whom is special guest Apollo 15 Astronaut Al Worden, who makes his UAE debut as an advocate for science, technology, engineering and mathematics (STEM) careers.

Among his many personal appearances during the week, Worden will be a featured speaker at the show’s Space Conference on Tuesday, Nov. 14.

America’s national effort is mainly within the new 1,400-sq.-meter USA Partnership Pavilion, organized by Kallman Worldwide Inc., in coordination with numerous government agencies, including the departments of Commerce, Defense and State. This is Kallman’s sixth consecutive Dubai Airshow – its 10th overall – and first under the new USA Partnership Pavilion banner, which President and CEO Tom Kallman says, reflects a global trend.

“Now, more than ever, success in international trade comes from partnership and teamwork,” said Kallman. “The new USA Partnership Pavilion sharpens our focus on helping advance America’s national interests and security by building stronger relationships with our international customers. Many of our exhibitors – from publicly traded stalwarts to small and medium-sized enterprises [SMEs] with fewer than 500 employees – already have significant business partnerships and operations in the region. In the years to come, many more will.”

More than 10% of Pavilion exhibitors are new to market; 20% are new to the show.

USA Partnership Pavilion exhibitors are featured in Kallman’s online Dubai Airshow Visitor Zone at kallman.com/dubai-airshow-2017. This features a searchable directory, plus interactive tools, to help trade visitors plan ahead (and follow up), and to connect interested industry professionals around the world to the show, even if they can’t go.

To heighten awareness and interest in Pavilion exhibitors, Kallman is introducing new content and thought-leadership initiatives at the show to “inform and inspire” the exhibitor-visitor conversation, an example being the presence of astronaut Worden.

The Newsstand, an on-site information center adjacent to the Meeting Point Exhibitors Lounge, features a live, scrolling display of real-time show and market headlines on a centerpiece flat-screen monitor, flanked by take-away publications from the industry’s top publishers, including ShowNews.

Since 1963, Kallman has facilitated the representation of more than 10,000 companies, associations and government agencies at nearly 1,000 industry and professional events in 46 countries. The company is a strategic partner of the U.S. Department of Commerce, and in 2016 received the AmCham Abu Dhabi “Falcon” Award for its organization-wide commitment to building sustainable business relationships between the U.S. and the UAE.

“The U.S. is the biggest international exhibitor at the Dubai Airshow because it’s the world’s biggest aerospace and defense industry supplier, but that’s no guarantee buyers will look to work with American companies over others,” said Kallman. “As the organizer of the USA Partnership Pavilion, we have a responsibility to advocate not only for our exhibitors, but for our nation in this highly competitive global marketplace.”

National pavilions are a patriotic expression of collective industry pride, presented in the spirit of global partnership, Kallman insists. From nation to nation, they’re an invitation: “Come see our country’s new equipment, products and services. Show us yours. Let’s work together.”

“There should be no question that the U.S. aerospace and defense industry is committed to international trade and investment. We bring smart technologies and ideas to the table, and we have the most skilled professionals ready to do the work.”

The U.S. message is that, whatever else might be happening in the world, the aerospace sector is increasing in size, presenting fresh opportunities for international collaboration. Over the past 22 years, the UK has had five prime ministers; France and the U.S. have each had four presidents, South Korea six and the Philippines five. Despite these upheavals since 1995, global military spending has grown from US$1 trillion to nearly US$1.7 trillion, according to the Stockholm International Peace Research Institute. And Deloitte says commercial aircraft production has increased 120.5% since 1996 to keep pace with passenger and freight demand.

How can exhibitors and visitors of the Dubai Airshow use these trends to their mutual advantage? Don’t ask me; Ask America.

—Paul Jackson
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With four different types in the static display, Austria’s Diamond Aircraft Industries features strongly in the Dubai Airshow line-up.

Perhaps the least familiar of these exhibits is the DART-450, which is making only its third appearance at a major aviation event since its first flight on May 17, 2016. The Diamond Aircraft Reconnaissance Trainer, Motor Sich AI-450S turboprop, is the company’s first venture with overtly military overtones, and it is here, says Diamond’s CEO, Christian Dries, because the Dubai Airshow “holds great potential for selling to both Africa and Asia.”

On the question of customers, Dries is tight-lipped, claiming that it is “too early” to talk of interested countries, while conceding that “we will sell to all we are allowed to.”

There’s no conflict between the DART-450 and the several light armed aircraft at the show because, “the DART-450 is not an attack aircraft but designed for training and surveillance.” And, adds Dries, “We don’t do attack aircraft, so our products are cheaper.”

Diamond didn’t “do” rotary wing, either, until it recently announced a four-seat training helicopter, the DART-280 (this time standing for Dart Aircraft Rotary Trainer). The 280 is in the early stages of design and won’t be actively promoted here – but Dries will be available on Stand A07 to handle serious enquiries.

Both popular twins, the DA42 and DA62, are on show. Surveillance and survey applications of the former have been around for a while, but this year Diamond is demonstrating a DA62 mocked-up with cameras, thereby launching a parallel series of aircraft for both civil and military duties.

Following a Chinese takeover of the Canadian division of Diamond, there has been some re-assignment of production lines for twins. “The DA42 will be built in Austria and China,“ confirms Dries, “the DA62 in Canada from 2018 – and possibly still in Austria; it’s a popular aircraft and we haven’t decided yet.”

Finally, Diamond’s DA50 Super Star - a four/five-seat single that has been a long time coming because of delays in provision of engines – makes up the foursome. “The DA50 is available, today, with the French 260-hp SMA diesel” confirms Dries, this to be augmented by a 380-hp Lycoming and a 450-shp Motor Sich AI-450 turboprop.

Although announced earlier, the turboprop version is awaiting Ukraine becoming a member of the European Aviation Safety Agency and, thereby, extending EASA certification to the AI-450. This will happen “by mid-2018,” Dries predicts. —Paul Jackson

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Aircraft From Around the World Flock to Dubai

One of the strongest-ever international turnouts of 160 commercial and military aircraft can be seen here at the Dubai Airshow. They will range from a new light-attack turboprop from the UAE, through China’s J-10 fighter, to a transport aircraft that is to be produced in Saudi Arabia. Many are appearing here for the first time.

**Calidus B-250**
United Arab Emirates (UAE) company Calidus is to introduce a new Super Tucano-class light-attack aircraft, listed by the show organizers as the B-250 Bader. This is believed to be a tandem-seat, turboprop-powered derivative of Brazilian company Novaer’s T-Xc piston-powered two-seat trainer and four-seat general-aviation aircraft that is also to be displayed by Calidus.

**Chengdu J-10**
China’s Chengdu J-10 fighter will make its Dubai debut, the “August 1st Air Demonstration Team” of the People’s Liberation Army Air Force flying both the early-model J-10A and two-seat J-10S. The F-16-class single-engine canard-delta fighter has previously appeared internationally at the 2013 MAKS show in Moscow and 2015 LIMA show in Malaysia.

**Air Tractor AT-802U**
Touted as a low-cost alternative to expensive unmanned aircraft for surveillance and strike, Air Tractor’s AT-802U is a rugged agricultural turboprop that has been turned into a two-seat light-attack aircraft that can carry a payload up to 8,000 lb. and fly for up to 10 hr. The UAE Special Operations Command flies armed AT-802s.

**Antonov An-70**
Antonov is listed as bringing the An-70 to Dubai, as the Ukrainian manufacturer looks for customers in the Middle East and elsewhere to restart the long-stalled airlifter program. Similar in size to the Airbus A400M, the four-propfan aircraft first flew in 1994, but only two have been built. Antonov is now proposing an upgraded An-77 variant.

**Cirrus SF50 Vision**
Alongside the Cirrus SR22 operated by its flight training academy, Dubai-based Emirates Airline is listed by the show organizers as displaying the U.S. manufacturer’s SF50 Vision Jet. Cirrus began deliveries of the single-engine personal jet in December and says it has deposits in hand for more than 600. The company is aiming to produce 100 or more a year.

CONTINUED ON PAGE 18
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Continued from Page 16

**Diamond Aircraft DART-450**
Austria’s Diamond Aircraft Industries is bringing a strong lineup to the Dubai Airshow, with the DART-450 all-composite turboprop trainer/reconnaissance aircraft making its show debut. The DART-450 flew for the first time in May 2016. Diamond will also display the single-engine DA50 and its four-seat DA42 and seven-seat DA62 turbodiesel twins.

**Grob Aircraft G520T**
Germany’s Grob Aircraft is displaying both its G120TP turboprop basic trainer and the unique G520T high-altitude reconnaissance and surveillance aircraft. The G120TP began training UK military pilots in August as the Prefect, while Grob is developing the updated G520NG with a Pratt & Whitney Canada PT6A-67A turboprop, replacing the original Honeywell TPE331.

**Iomax Archangel**
Iomax developed the Archangel surveillance/attack aircraft for the UAE Air Force and Air Defense, using the rugged Thrush S2R-660 agricultural aircraft as the basis. The aircraft has a new tandem-seat crew station with Esterline CMC Electronics Cockpit 4000 displays, 1,600-shp Pratt & Whitney Canada PT6A-67F turboprop, L3 Wescam MX15i sensor turret, and it can carry an array of precision weapons.

**Kawasaki C-2**
Kawasaki’s C-2 airlifter will make its international show debut in Dubai amid reports that the UAE has expressed interest in the twin-turboprop transport aircraft. The C-2 entered service with the Japan Air Self-Defense Force in mid-2016, and a sale to the UAE could mark Japan’s first sale of military aircraft since its ban on defense exports was lifted in 2014.

**Motor Sich Mi-8MSB-T**
Ukraine’s Motor Sich will display the upgraded Mi Mi-8MSB-T medium helicopter. The upgrade replaces the widely used Mi-8’s Klimov TV2-117 turboshafts with its own TV3-117VMA-SBM1V Series 4E engines, increasing hot-and-high performance, one-engine-inoperative power and reliability. Motor Sich will also display an upgraded Mi-2 helicopter.

**PAC JF-17 Thunder**
Amid unconfirmed media reports of Middle East interest in the lightweight fighter, Pakistan will display the JF-17 Thunder at Dubai. The single-engine fighter was developed by China’s Chengdu Aircraft and the Pakistan Aeronautical Complex, where aircraft for the Pakistan Air Force are produced. A more-advanced JF-17 Block 3 with active, array radar is planned.

**Safat 03**
Sudan’s Safat Aviation Group is no newcomer to the Dubai Airshow; its first attendance was in 2013, but its Safat 02 light helicopter and Safat 03 basic trainer will return this year.

Continued on page 20
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The 02 is a Ukrainian Aerocopter AK1-2, a two-seat piston-powered helicopter, while the 03 is based on the Yugoslavian UTVA 75.

**Sukhoi Su-35**

With Russian media asserting the UAE could announce an order for the powerful fighter at the show, Sukhoi will display the Su-35 at Dubai. The signing of a preliminary agreement for 24 aircraft was reported in February, but has not been confirmed. The Su-35 is the latest member of the Su-27 Flanker family, with phased-array radar, thrust-vectoring engines and other upgrades.

**Taqnia An-132D**

One of the most significant aircraft programs in the Middle East will make its debut in the region at Dubai. The An-132D transport is being developed by Antonov and Saudi Arabia’s Taqnia Aeronautics and King Abdulaziz City for Science and Technology. A modernized and Westernized development of the An-32, the An-132D is to be produced in Ukraine and Saudi Arabia, targeting a global market for 300 aircraft.

**TAI T129 ATAK**

Against a background of previous interest from Bahrain and Jordan, and negotiations underway with Pakistan, Turkish Aerospace Industries’ (TAI) T129 ATAK combat helicopter will make its debut at the show. Based on the Leonardo A129, the T129 is in production for the Turkish Army. TAI will also display its Hurkus turboprop trainer, Anka-S unmanned aircraft and a mockup of its T625 utility helicopter.
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Gulf Airlines Will Grow Faster

After years of rapid growth, Gulf airlines may be facing some challenges, but the Middle East remains a major market for commercial aircraft. This is reflected in the strong turnout of aircraft from Airbus, Boeing, Bombardier and others being displayed here at the Dubai Airshow.

**Airbus A350-900**

Airbus’ presence at the 2017 Dubai Airshow will be headlined by the A350-900, which has secured at least seven customers across the Middle East and North Africa. These include Abu Dhabi-based Etihad Airways, which is awaiting the delivery of 40 A350-900s and 22 stretched A350-1000s. Airbus will also display the A319, as well as the A400M and C295 military airlifters.

**Boeing 737-8**

Boeing’s re-engined 737 MAX will be on display at Dubai in the form of a 737-8 operated by local airline FlyDubai. The Emirates sister carrier ordered the aircraft at the 2013 show and became the first Middle East airline to operate the latest 737 when it took delivery of the first of 76-8s at the end of July.

**Boeing 787-10**

With a 30-aircraft order from Etihad Airways and the potential for an eventual widebody-twin competition at Dubai-based Emirates Airline, Boeing is taking a 787-10 out of its flight-test program to bring it to the show. The “double-stretch” 787-10 first flew at the end of March and is scheduled to enter service in the first half of 2018.

**Bombardier CS300**

Having made its Dubai debut at the 2015 show, Bombardier’s C Series is returning to the Middle East buoyed by the announcement that Airbus plans to take control of the program toward the end of 2018, bringing its sales, procurement and support muscle. The larger CS300 version of the all-new 100- to 150-seat narrowbody aircraft will be on display at Dubai.

**Sukhoi Superjet 100**

Sukhoi’s Superjet 100 will return to the Dubai show still in search of customers in the Middle East, and with a reorganization underway at home in Russia that is merging Sukhoi Civil Aircraft Co. with Irkut, developer of the new MC-21 narrowbody, to create an Airbus-style Civil Aviation Division under government-owned United Aircraft Corp.
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Embraer’s Slattery Sees Potential in Middle East

Embraer Commercial Aviation CEO John Slattery sees great potential in the Middle East for regional jets, particularly the E2-family of aircraft Embraer currently is developing.

“...want to get some E2s flying into the region as quickly as possible,” Slattery tells ShowNews in an interview. “We need to deliver the E2 on time.”

Slattery believes Embraer’s aircraft are perfectly suited to the Middle Eastern aviation market. Airlines in the region underutilize larger-gauge aircraft, sacrificing load factors and, ultimately, yields.

In the Middle East, almost 80% of regional flights depart with fewer than 150 passengers, and only 21% have more than 150 passengers, Slattery says. “Forty-two percent of intra-regional flights depart with load factors below 70%,” he says. “They are flying aircraft that are more expensive on a trip basis, and they’re leaving 30% of the aircraft empty.”

The problem in the region is that operators are using aircraft that are too large for the missions they need to serve. “As airlines continue to add larger-gauge equipment with higher trip costs, they’re all under pressure to not increase frequency,” Slattery says.

Most markets in the Middle East would be better served with smaller aircraft and greater frequency, he says. “If you reverse engineer [average passenger traffic] onto an Embraer 190 or 195, you’d be flying with over 90% load factor,” Slattery says. “With that, trip costs would be 20% lower.”

Slattery admits that this phenomenon – overcapacity – is not limited to the Middle East, but it is particularly prevalent here. “It certainly seems to be a philosophy that has been adopted there now,” he says.

In addition, because load factors and yields are low, airlines are ignoring potentially lucrative markets. Without going into specifics, Slattery notes that 40 markets in the Middle East do not have direct air service, and several markets served by airlines have less-than-daily operations. By rightsizing and matching demand to capacity, airlines can unlock the potential of these markets, he says.

Embraer predicts the market for 100- to 150-seat aircraft in the Middle East could be as many as 350 aircraft over the next 20 years. Of that, he thinks Embraer could deliver between 70 and 150 aircraft.

“Sixty percent of the markets that are served are served with less-than-daily service, Slattery says. “When you’re flying with a low load factor, you may be flying with lower yields from the lower load factor and...by definition flying massively higher trip costs,” he adds. “It is likely that you are limiting...frequency.”

In time, Middle East operators will focus on lower trip costs, and higher yields, he predicts. “That’s what they’ll embrace more directly in the coming years and decades. The true concept of regional productivity and regional aviation.”

This evolution will allow Middle East carriers to “develop existing mature markets that are just simply not big enough on the passenger trip-per-day,” Slattery says. Now, “airlines are eating a lot of dollars in the air by flying aircraft that are too big and too heavy.”
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Leading The Situational Awareness Revolution
Arms Makers View a Lucrative Fighter Market

A wave of fighter modernization across the Middle East and North Africa is proving to be a boon for industry both East and West. And it is fair to say that without the Middle East market, some Western fighter aircraft types would have faded into history.

Production of the Lockheed Martin F-16 Fighting Falcon has been kept alive by Iraq’s order for Block 52 model F-16IQs, and Bahrain looks set to sign up to a Foreign Military Sales (FMS) deal for upgraded and new-build F-16Vs before year-end.

And production of Boeing’s F-15 Eagle has been massively bolstered by Saudi Arabia’s order for 84 new-build F-15SA (Saudi Advanced) Eagles. An extensive upgrade program will bring the country’s existing F-15S aircraft up to the same standard.

Meanwhile, Kuwait’s April 2016 order for the Eurofighter Typhoon has prolonged production until at least 2023, rather than its original end date of 2018.

These purchases have been driven by the need to modernize and increase capacity in the face of new threats, as well as by the call to work more closely with allies. Middle Eastern air forces are taking on a greater expeditionary warfare mission than the defensive stance they took before.

Saudi Arabia and the United Arab Emirates (UAE) are prime examples of this. A decade ago, their fighters were rarely seen beyond their borders, but the introduction of new airlift capabilities and tanker aircraft such as the Airbus A330 Multi-Role Tanker Transport – in service with both – has given each nation a global reach.

Several times a year, fighters from Saudi Arabia and/or the UAE cross the Atlantic to participate in the multinational Red and Green Flag exercises at Nellis AFB, Nevada, building up closer relationships with international air forces. This year alone, Saudi fighters have also deployed to Sudan and Pakistan for joint exercises.

In the Saudi-led operation against the Houthi rebels in Yemen, the UAE has established a base just across the Red Sea in Assab, Eritrea, from which it flies Dassault Mirage 2000s. Reports suggest that UAE Mirage 2000s may also be flying from Al-Khadim airbase in Libya in support of the Libyan National Army forces fighting in the area.

The Royal Saudi Air Force has deployed F-15s to Turkey’s Incirlik airbase in support of the U.S. led-operations against the Islamic State group.

The Saudi-led coalition has also included fighters from Egypt, Kuwait and Morocco. In 2015, Jordanian and Israeli deployments to a Red Flag exercise, revealing a high level of trust and cooperation between the two countries, as the Jordanian fighters refueled from the Israeli tankers en route to Nevada.

Europe, Russia Court UAE Fighter Sales

Europe and France have fought for several years to replace the UAE’s fleet of Mirage 2000s fighters, with the Eurofighter consortium promoting the Typhoon and Dassault the Rafale, but it is unclear whether there has been any real progress.

The UAE reportedly desires involvement in the F-35 Joint Strike Fighter program, but this is unlikely to happen in the near future, given that Israel has only just begun receiving the type. The Israeli lobby in Washington has been highly effective at ensuring that advanced types do not reach its neighbors until five to 10 years after Tel Aviv does.

However, Russia contends that it is making inroads in meeting Emirati requirements. In February, Russian officials announced that Moscow and Abu Dhabi would work together on the development of a fifth-generation fighter, and Russian media assert that the UAE could sign a deal for Sukhoi Su-35 fighters during the Dubai Airshow.

Elsewhere, Russia has made progress in getting back into Egypt, where a new fleet of Mikoyan MiG-29M/M2s – also known as MiG-35s – is being delivered, adding yet another type to Egypt’s burgeoning fighter inventory. In the last 36 months, Egypt has also taken delivery of its first Rafales and Block 52-model F-16C/Ds. It is unclear what Cairo plans to do with its aging fleet of MiG-21s, Chengdu F-7s, Mirage Vs and 2000s.

In the coming years, it is likely that countries such as Morocco and Tunisia will be open to new fighter sale campaigns. Although Morocco has introduced the F-16 to its inventory, it is unclear whether there will be replacement programs for the Mirage F1 and the Northrop F-5, both of which remain in frontline service. The latter continues to serve Tunisia as its primary frontline aircraft, but a replacement will likely have to come online in the next 5-7 years. — Tony Osborne
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Turbulent Times for Gulf Carriers

Emirates, Etihad and Qatar Airways are slowing down their growth, but they will stay hugely important customers for Airbus and Boeing.

Inside some of Europe’s legacy carriers the good mood is back. After all, won’t all the recent difficulties the big three Middle East carriers have run into directly lead to the end of their growth and therefore many of their rivals’ problems? And conversely, should the big two aircraft manufacturers Airbus and Boeing not be really worried because their dominating widebody customers may fall by the wayside?

It is easy to see why one might think the times of aggressive expansion are over. There would be many reasons: Low oil prices driving down demand in the region’s economies, the temporary laptop ban, the diplomatic spat between Qatar and its neighbors, the anti-Gulf lobbying campaigns in the U.S. and Europe, Etihad’s decision to pull the plug at Alitalia and Air Berlin, Emirates first-time decision to defer deliveries of some incoming Airbus A380s, low yields, low load factors in not just a few markets, massive losses in the case of Etihad Airways and massively reduced profits at Emirates.

“I don’t see it,” says Daniel Roeska, airline analyst at Bernstein Research. “The growth peak of 2014-2016 may be behind us, but there is still as much additional capacity coming in over the next several years as is flying today.” And while John Strickland, an airline consultant, says whether 2017 may turn out to be a “pivotal year of change” for the big three, he still considers the logic of the hubs’ position and network to be intact.

Clearly, Emirates, Qatar Airways and Etihad have entered a new stage in their development. For some years it seemed like all three developed in parallel. Led by Emirates with its first-mover advantage, the airlines grew networks as fast as they could, and ordered multiple billions of dollars worth of aircraft as their home countries tried to build airport infrastructure to keep pace with the rapidly growing requirements. Emirates (Chalet A31-33 and Stand 010) is now not only by far the most important customer of the Airbus A380: The airline launched the Boeing 777X program along with Etihad, Qatar Airways (and Lufthansa). In terms of long-haul network development, Qatar and Etihad largely followed the path that had been defined by Emirates years earlier leading to sometimes explosive capacity growth in many markets that all three started to serve. Qatar and Etihad accompanied that build-up with the growth of their narrowbody fleets, a segment so far untouched by Emirates. The underlying ideas and the business drivers were similar – using the airlines as tools to enable general economic and trade growth in Qatar, Abu Dhabi and Dubai.

Their order books are impressive. Emirates has firm orders in place for 44 additional A380s, 15 Boeing 777-300ERs and 150 777Xs. Etihad is awaiting deliveries of 40 A350-900s, 22 A350-1000s, 54 more 787s, 25 777Xs and one 777F. Qatar Airways is awaiting 12 777-300ERs, three 777Fs, 60 777Xs and 30 787-9s, plus 30 A320neos, 16 A321neos, 24 A350-900s, 37 A350-1000s and two A380s.

But over the past year or so, the three have discovered that each carrier has its own issues to deal with: Etihad (Pavilion S19) essentially halted its partnership strategy and is still in the process of redefining what its future plan will be. Qatar Airways cannot really have a clear vision for the long term because management is busy dealing with the ongoing diplomatic crisis and the widespread airspace closures for Qatar-registered aircraft in the region. And even Emirates is going through a period of some consolidation, having started the new process of closer integration with FlyDubai.

All the factors lead most observers to the conclusion that this year’s Dubai Airshow will only see a limited amount of aircraft orders, making it vastly different from earlier events used as stages to display power, optimism and the ambition to develop global networks at the expense of other carriers. —Jens Flottau

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Airbus Military Improves A400M, Looks to Future

With several embryonic pan-European development programs on the horizon, Airbus Defense and Space is looking to position itself to lead on them. But it also faces a big task on completing development on existing programs such as the complex A400M airlifter. ShowNews caught up with Dirk Hoke, Airbus’ CEO for the defense and space business.

With the restructuring of the defense side of the business and the spin-off of Hensoldt, is the business now where you want it to be? And is there more to do?

The overall architecture is now pretty much in place. But in areas with rich possibilities for innovation and disruption then we may have to build new structures. For instance, in unmanned, where we have activities straddling defense and commercial, and some fairly traditional military programs but also ambitious aspirations in commercial data services, then it is clearly a work in progress.

The A400M had a difficult year in 2016, particularly in terms of delays with capability development. Where are you with developing those, has 2017 been a more positive year and what is the outlook for 2018?

In terms of operational capabilities, we’re making good progress in all the key areas – air-dropping, paratrooping, self-defense and helicopter air-to-air refueling. But what is really exciting is the examples we have seen very recently of the A400M beginning to realize its true potential in service. The UK, France and Germany were up and running on hurricane relief operations in the Caribbean quicker, and with bigger and heavier loads than they could ever previously have achieved. And we’re also seeing the A400M being deployed on unprepared runway operations in Africa. So the promised transformation of European air mobility with the A400M is starting to become a reality. As for the program in general, discussions with our launch customer nations are continuing.

Where are you with getting more export customers for the A400M?

We have been talking to a number of nations for a while and we are optimistic that we can achieve export orders for this fantastic aircraft. However, I would not want to speculate on the timing of such export orders coming in.

As we are here in the Middle East, can you talk about some of the opportunities you see here in the region, opportunities for follow-up sales and new business? Is an A400M sale in this region a realistic possibility?

We have a strong market presence in the Middle East and North Africa right across our product range, including the C295, tankers and combat aircraft. It’s no secret that we have been active with A400M marketing here, and we would certainly hope for some fruit from that.

We hear a lot about new technology disrupting the commercial world, urban air mobility, electric aircraft, but where is this disruption going to come from in the defense world?

I suspect the combat arena provides many opportunities. We have already seen the advent of, for example, stealth and ultra-precise weapons transforming warfare in the last couple of decades. But unmanned vehicles alongside manned fighters has vast potential that has barely been explored yet, and wideband, secure communications – including space-based – is going to change dramatically the role of real-time intelligence sharing.

The European council of ministers meeting in July set out plans for the EuroMALE UAV to be a twin-turboprop platform and there was expectation that development would begin in 2018. Is that still the case, and if so what sort of work will Airbus do on the platform?

The twin-turboprop configuration is the basis for a series of trade-off studies that are being conducted by us and our partners Leonardo and Dassault, plus the nations, right now. That will lead next year to the preliminary design review. But the final workshares are under discussion between all the parties involved.

The Airbus Aerial business has had a busy time in North America following the recent hurricanes. Can you tell us about that work? How is the market taking to this new business model and what is to come? What opportunities are there for expansion?

Immediately after the hurricane we began offering imagery of the affected area, right down to individual addresses, to insurance companies to enable them to settle claims extremely quickly. That’s a big benefit for the companies and also for the businesses and individuals suffering losses. We were also able to support utility companies in assessing damage to their infrastructure and planning repairs – so it was a very encouraging insight into how we can develop that business.
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European Airline Signs for 61 CSeries

An unnamed European airline has signed a letter of intent (LOI) for 61 Bombardier CSeries aircraft. The agreement is for 31 firm orders and 30 options, Bombardier says.

“The LOI is subject to execution of a purchase agreement, which is expected before year-end,” the company says. The order could be worth as much as US$2.4 billion at list prices, and up to US$4.8 billion if all options are exercised.

The order ends an 18-month sales drought for the CSeries since Delta Air Lines placed an order for 75 aircraft in 2016. Other than a 45-aircraft order from Air Canada, Bombardier has notched just a handful of orders for the CSeries since the Delta order.

The new deal is a shot in the arm for the once-beleaguered CSeries program, which was rescued last month by Airbus taking a majority stake in the program in a no-cash deal that stunned the industry. Airbus says it will assemble the aircraft for U.S. customers in Mobile, Alabama, in a move that could resolve a decision by U.S. officials to subject it to U.S. tariffs if made by Bombardier in Canada. Boeing had complained, and the U.S. Commerce Department agreed, that Bombardier had been pricing the aircraft way below the cost of production.

After the deal closes, Airbus will own 50.01% of the CSeries program; Bombardier will hold 31%; and the government of Quebec, which had invested $1 billion in the program in 2015, will have a 19% stake.

Bombardier has warned customers that CSeries deliveries this year could slip to 20-22 aircraft, down from an expected 30-35, due to production ramp-up issues for Pratt & Whitney’s PW1500G geared turbofan engine. Pratt will make cash advances to Bombardier to support excess CSeries inventory and is working with the airframer to reschedule deliveries.

The production slip could reduce revenues at Bombardier’s commercial aircraft unit by $300-500 million.

The Airbus deal could benefit the CSeries program by bringing the European airframer’s clout to bear on the supply chain. Some analysts believe supply-chain costs could drop 30-40% thanks to Airbus’ muscle. JP Morgan believes that decreasing procurement costs by 10% would add six points to the program margin.

Not including the newest order, Bombardier has 360 firm orders for the CSeries, with a backlog, mostly for the larger CS300 variant, and a backlog of 341 aircraft, according to the company’s website.

—Madhu Unnikrishnan

CSeries Cements Link Between UAE and Latvia

The Bombardier C-Series has begun operational service in the Gulf region. The first flight by one of the jets – a CS300 operated by airBaltic – touched down in Abu Dhabi on the morning of Oct 30 and was given a water-cannon salute.

The 145-seat aircraft is providing a four-times-per-week direct service between the UAE and Riga, Latvia. The Latvian airline is the launch customer for the CS300, and has so far received seven of the 20 aircraft it has ordered. The airBaltic service between Riga and Abu Dhabi operates on Mondays, Wednesdays, Fridays and Sundays.

Among those on board the first flight was Hanah Al Aleeli, the UAE’s ambassador to Latvia. The first UAE ambassador to a Baltic nation, she took up her post in January, when the embassy was first opened.

The move followed the establishment of a Latvian embassy in the UAE in 2014, since which time trade between the two nations has increased five-fold.

—Angus Batey
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Raytheon’s JPALS Brings Precision Landing

A cutting-edge system primarily developed to help fighter pilots land fast jets on aircraft carriers is making its Dubai Airshow debut this week – and it is being marketed for use on land.

What appears to be this counter-intuitive proposition is being made by Raytheon, whose JPALS (Joint Precision Approach and Landing System) is in development for the U.S. Navy, which will use it to help F-35 pilots land on carrier decks. The system, which uses GPS data to provide pilots with a landing spot measured in centimeters, will also be part of the landing technology utilized by the MQ-25 unmanned tanker program, regardless of which aircraft is selected.

Raytheon’s contract with the U.S. Navy was let in 2008: the carrier-borne iteration of JPALS is currently in test, and is scheduled to achieve initial operating capability in 2019. Clues to the system’s utility on land go back to the roots of the program in the 1990s, when the U.S. Department of Defense published a precision-landing requirement. In 1996, following the deaths of all 34 people on board a USAF Boeing T-43A which crashed on a non-precision approach to Dubrovnik, efforts intensified to field a system that offered that capability in a deployable form.

“The way we attacked this was to try to solve your hardest problem first,” says David Ray, vice president of business development for Raytheon’s information, intelligence and services division. “If you think about an aircraft carrier that’s moving, experiencing cloud, fog and other weather conditions, with a runway that’s only so long – to be able to land with pinpoint accuracy is difficult. But once you’ve got that framework, you’re able to leverage the capability across the board.”

So far, the system has been flown on F-35 and F-18 aircraft, but it can be retrofitted to any platform. The hardware is mainly contained in the shipboard or ground-based package, which Ray describes as “Humvee-sized”: Some modification may be required to the aircraft, but usually only to software of equipment already carried on board.

“The JPALS unit can talk to whatever aircraft can receive its waveform,” says Raytheon consultant and F-18 pilot Brooks Cleveland. “They need GPS, which almost every airplane these days has; they need an inertial navigation system, which, again, most have; they need some spare processing power, typically found in the mission computer; and then the key piece is a radio that can recognize the JPALS waveform. That’s not a new radio: It’ll mean a software upgrade, or perhaps a chip in an existing radio.”

The need for a new waveform has been driven by security requirements. The links between the JPALS unit and the aircraft are encrypted, and designed to have a low probability of being observed or intercepted by a third party. Unlike the hemispherical radio frequency “bubble” produced by a radar-based system, Cleveland says JPALS’ RF footprint is “virtually non-existent.” To further minimize any chance of detection in a deployed ground operation, the unit can be placed up to 20 mi. away from the desired landing site.

JPALS is capable of guiding up to 50 inbound aircraft simultaneously, from ranges of up to 200 mi. Ray points out its utility in sandstorm or brownout conditions, which the company believes will be of interest to potential customers in the Middle East.

“This is tailor-made for special-forces-type missions,” Cleveland says. “The landing site doesn’t even need to be a flat surface if you had it on a helicopter. It can provide an approach to spots typically unreachable by aircraft: it can build a curved approach based on very precise GPS, which allows us to go lower, and in tighter spaces than previously seen.”

The system’s reliance on GPS may leave it susceptible to jamming – not of the links between the unit and the aircraft, but of the signals from the GPS satellite constellation. The U.S. DoD has recognized GPS resilience as a potential area of vulnerability, and as part of its mitigations it has contracted with Raytheon (Chalet A13, A14 and Stand 1176) for the delivery of a next-generation GPS ground station.

“Our customers will tell you that that’s one of the hardest problems we’ve had to tackle across the DoD,” says Ray. “I think the architecture that we’re delivering as part of the upgraded GPS will be able to meet those needs and provide more resilience against those low-end jam threats. And because JPALS is going to be accessing the GPS system, as GPS moves to the next-generation system it will make JPALS much more resilient.”

—Angus Batey
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**ACJ’s Comfortable Cabin Calls the Curious**

Demonstration of a “best in class” cabin is the lure deployed by Airbus Corporate Jets (ACJ) to tempt visitors to view the statically displayed ACJ319 that is normally operated by Comlux on VVIP charter work. Enquire at Booth 552 for an appointment.

The ACJ319 is the entry-level to a comprehensive corporate jet family, now ranging from the ACJ319neo to ACJ350 XWB and beyond. All requirements and sizes are catered for. Comlux’s aircraft is certified to carry 19 passengers, and features a cabin with a lounge and two private rooms – each of which can be arranged to serve as a lounge/office or bedroom.

“All business jets save time and deliver convenience, but only Airbus corporate jets provide ‘best in class’ comfort, space and freedom and, what’s more, they have similar operating costs to traditional business jets,” says Airbus Chief Operating Officer, Customers John Leahy. “And the new ACJneo family brings even more range to fly ‘your world above the world,’” he adds.

Flying eight passengers 6,750 nm/12,500 km or 15 hr., the ACJ319neo will bring much of the world within nonstop range. Complementing it is the ACJ320neo, which will fly 25 passengers 6,000 nm/11,100 km or 20 hr., while the ACJ350XWB will fly them 10,800 nm/20,000 km or 22 hr.

More than 180 ACJs are in service on every continent, including – stresses Airbus – Antarctica, where an ACJ319 has flown charters to an ice runway. ACJ standard features include the protection and simplicity of fly-by-wire controls; benefits of Category 3B autoland; and time and cost-saving centralized maintenance on all systems.

—Paul Jackson

**DC Aviation Opens Second Hangar Here**

DC AVIATION AL-FUTTAIM (DCAF) today will open a second hangar in the Aviation District of Dubai South. With the opening, the company - a joint venture between the German business-jet operator DC Aviation and Dubai-based Al-Futtaim group - has more than doubled its capacity on the site. The announcement also confirms the growing utility of Dubai South as a business-aviation hub in the region.

“We committed to Dubai South at a very early stage, in December 2010,” DCAF managing director Holger Ostheimer said. “From day one, we were fully aware of the tremendous potential the site offered us and since we commenced operations in November 2013, we have multiplied our levels of activity, and have been able to attract a wide range of clientele.

“The opening of the second hangar fits in with our expansion plans and enables us to meet the growing demand for business and private jet operations at Dubai South for years to come.” Khalifa Al Zaffin, executive chairman of the Dubai Aviation City Corporation, described the opening as “another milestone to better serve [Dubai South’s] customers and partners in one of the most promising aerospace hubs around the world.”

DCAF has received approval from the UAE’s General Civil Aviation Authority to carry out line maintenance on the Dassault Falcon 7X. This adds a third manufacturer to a list of aircraft the company is approved to maintain, which includes Bombardier’s Challenger 604/605, Global 6000, Global 5000 Vision Flight Deck and Global Express, and Airbus’ A320 family. DCAF’s managed fleet of six aircraft comprises two Globals, three Challengers and one Falcon 7X.

DCAF has partnered with Lufthansa Technik to provide maintenance services in the hangar space. LT’s local subsidiary, Lufthansa Technik Middle East, is another long-time Dubai South resident but does not have apron-side access at its facility on the site.

—Angus Batey
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Lufthansa Technik Wins Its First 787 Completion

German VVIP completion expert Lufthansa Technik has long sought to land the complex modification and completion of a Boeing 787-8 Dreamliner for a head of state or a super wealthy individual. Now it has.

“This will be a very beautiful VVIP aircraft with a very beautiful interior design,” says Wieland Timm, senior director sales VIP and special mission aircraft at Lufthansa Technik. He says he is very optimistic the market response will lead to the signing of a second Boeing 787 BBJ next year or in 2019.

Cabin modification and completion of a 787 is a daunting prospect for the completions industry due to working with a composite fuselage instead of traditional aluminum structure. Although 11 Dreamliners have been delivered to completion centers only four have been finished for customers to date. Work progresses on the others, and another couple in VVIP service are in fact airliners with largely standard interiors.

Lufthansa Technik had earlier been selected by an undisclosed customer to perform comprehensive cabin engineering services and initial parts provisioning for the entry into service of a Boeing BBJ 787-8 that came from another completions center. The engineering services consisted of Service Bulletin and Airworthiness Directive monitoring, and development and tracking of required maintenance planning data, as well as parts and components adapted to specific customer needs.

The company has been promoting its expertise on the 787 as it supported the entry into service of the type with Lufthansa. It is, says Timm, the only company that can complete a VVIP 787 and offer full worldwide support for the aircraft in service.

To date, Lufthansa Technik has provided technical services to more than 100 Boeing 787s from various commercial and VIP 787 operators.

Timm says the campaign to win the 787 for an undisclosed customer in a region “more in Asia” was relatively short, and it will be the first to be completed outside the U.S.

Lufthansa Technik is here at Booth 1156. —John Morris

Farnborough: ‘Airbus Airport’ Augments Its Attractions

EFFECTIVE IMMEDIATELY, TAG Aviation’s Farnborough Maintenance Services Centre (TFMS) is offering line maintenance support services to its Airbus A320 Corporate Jet (ACJ) series customers who use TAG Farnborough Airport, west of London, UK – the only London gateway airport dedicated exclusively to business aviation.

TFMS will be able to provide customers with on-site support, ranging from daily and weekly checks, to undertaking ad hoc troubleshooting.

The move by TAG has been prompted by an upturn in movements of ACJs at Farnborough since the company made efforts to attract more widebody business aviation types. Air traffic of all kinds at the airport increased 6.3% between January and October 2017, compared with the same period of the previous year. And in 2016, there was a 5.5% rise in large aircraft movements alone (ACJs, BBJs and their like), prompting TAG to offer expanded passenger handling facilities for their greater complements.

“Many of these large aircraft operate to and from the U.S., Middle East and Asia. We have recently invested in additional customer facilities to cater for this increasing demand and are now able to offer large groups of passengers and individuals comfort in separate lounges,” comments Brandon O’Reilly, TAG Farnborough Airport’s CEO.

“With a growing number of ACJs landing at TAG Farnborough Airport, extending our maintenance capabilities in this way is a logical step forward and further complements our already extensive list of supported aircraft types,” says Cyrille Pillet, TFMS managing director and VP maintenance operations, TAG Aviation Europe.

And Farnborough is not just the site of a biennial, weeklong air show. TAG Airport handles approximately 25,000 flights per year and offers 240,000 sq. ft. of heated hangars and 1.2 million sq. ft. of ramp space.

—Paul Jackson
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Is your idea of “inflight entertainment” watching a movie? If so, Windspeed Technologies is on Stand 1390 with an offer of an immediate upgrade to the 21st century.

Windspeed’s SkyDeck is a system designed to provide an exhilarating view of the aircraft’s external environment while in flight, from a semi-external location. Intended for both executive jet owners and the airline industry, it is promoted as an additional source of revenue for the latter, as passengers could be charged on a pay-per-view basis. Boeing, for one, is reported to have taken an interest.

While the engineering might be challenging and the certification process raise some eyebrows, the concept is simple: a transparent blister on the top of the fuselage, with one or two seats immediately below, according to the size of the airplane. In the bigger, passenger airliners, up to widebody size, access would be via a staircase or elevator.

The company has done its homework and assessed the effect of the modification from several viewpoints. Initial concerns were the potential interference with the aircraft’s tail performance, but a “teardrop canopy” design mitigates that. Furthermore, since the SkyDeck will usually be toward the rear, added drag – hence fuel burn penalty – will be “small to negligeble”.

SkyDeck is designed to withstand all load conditions, including flight loads and bird strikes. The canopy will be made of similar high-strength materials to those of supersonic fighters. A potential provider has already been approached. Installation weight will not be an issue with the larger types of business jet.

Also explored have been the problem of fogging, which will be resolved with an anti-condensation film on the surface of the canopy. In addition, the canopies come with a UV-protection coating. The requirements of ingress/egress by the certifying authorities will be built into the design of every SkyDeck application.

The only thing that’s missing is a pair of .303 Browning machine guns for this “mid-upper turret.”

—Paul Jackson

Jean Boulle: Diamond Luxury at Greater Heights

ALL THAT GLITTERS is not gold – but it might be diamonds.

It was born earlier this year with the unimaginative name C-FNXK, but the Bombardier Global Express (Global 6000) in the static display at Dubai would be better named “Lucy” – because it is indeed “In the Sky with Diamonds.”

Luxembourg-based Jean Boulle Luxury announced the launch of the world’s first aircraft finished with the Sun King Natural Gem Diamond Coating at the Geneva business aircraft show this May. That unveiling followed closely on the announcement that AkzoNobel was to produce an aviation-grade version of the coating for the private and commercial jet markets.

Applied to the Global Express by STTS, an expert in aerospace painting and sealing, the coating dramatically alters the luxury vehicle’s visual appearance while maintaining full functional capabilities. “This result[s]... from much hard work in both the development and certification processes,” said Bertrand Boulle, CEO of Jean Boulle Luxury. “The visual impact on this demanding application is simply stunning. We are delighted to showcase our product with STTS, which has demonstrated effectively how the Sun King Natural Gem Diamond Coating works on a large scale.”

Frans Groot of STTS adds: “We are proud to be working with Jean Boulle Luxury on this innovative natural gem diamond coating solution.”

Be dazzled by the Global Express in the static display, or see samples of the coating on Jean Boulle’s Stand S86. Who knows? You might take a shine to it.

—Paul Jackson
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Ameco, the Sino-German joint venture repair, maintenance and overhaul (MRO) giant, is seeking new customers in the Middle East for its broad array of maintenance services.

In this region, Beijing-based Ameco now provides heavy maintenance for Iraqi Airways’ fleet of widebody aircraft. Ameco also provides MRO for Qatar Airways, Etihad Airways, Royal Jordanian Airlines and Saudi Arabian Airlines.

The company says it is expanding its customer base in the Middle East.

“Ameco is dedicating itself to meeting customers’ maintenance needs and promoting brand image through the comprehensive and one-stop maintenance services,” says Zhu Xiao, executive vice president and chief marketing officer of Ameco. “In future, on the basis of business cooperation on aircraft, engines, components and landing gear, Ameco will seek more cooperation opportunities on new maintenance services to reach a full coverage on products and services.”

In the two years since it restructured in 2015, Ameco has integrated Air China Technics with Ameco Beijing (Stand 955). Lufthansa Technik retains its 25% shareholding, although its financial investment in the company remains unchanged. Air China has a 75% stake in the integrated company. The MRO has a maintenance network that spans China and operates in Beijing, Chengdu, Chongqing, Hangzhou, Tianjin, Hohhot, Shanghai, Guiyang, Guangzhou, Wenzhou and Wuhan.

Ameco services include line maintenance, aircraft overhaul and painting, engine and APU overhauls, component maintenance, and business jet completion and maintenance, among other services. The MRO has 160 stations in and outside China and is licensed by the Civil Aviation Administration of China (CAAC), the Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA).

Ameco has been developing new capabilities, the company says. These include modification and retrofit, including developing parallel lines for Boeing 757 passenger-to-freighter conversions. Ameco also is planning narrowbody passenger-to-freight conversion capability.

Ameco says it sees “rapid growth” in the International Aero Engines V2500-a5 engine overhaul business and now can maintain thrust reversers on that engine as well as on the CFM65-5B, CFM56-7B, CFM56-3 and Rolls-Royce Trent 700.

The work on these engines is in addition to what Ameco calls “stable business growth” on Pratt & Whitney PW4000 and Rolls-Royce RB211 engine overhauls. The company also is targeting work on new aircraft, including the Boeing 787 and Airbus A350. For these types, Ameco is developing its component, landing gear and generator capabilities, the company says.

Ameco is ready to provide maintenance services for the Boeing 737MAX family, the Airbus A350 and A320neo family of aircraft, and the MRO should be ready to provide neo and MAX C-checks in the next “one to two years.”

Its landing gear products cover the Airbus A320 family and A330 and the Boeing 737NG, 737CL and 747-400, and a new landing gear overhaul capability is in preparation.

Ameco can provide completions on large business and VIP jets, including the Airbus A330, Boeing 737 and 747 and the 747-8. The company has invested in a new workshop for business jet completion and maintenance. It recently completed China’s first heavy maintenance on an Airbus A319 business jet and two Boeing business jets, it adds. China and the Middle East are the two largest markets for VIP jet completions, and Ameco is targeting growth in this part of its business.

For airframe overhaul, Ameco has added new customers from countries such as Germany, Czech Republic, Russia/CIS, Turkey, Iraq and Hong Kong.

—Madhu Unnikrishnan
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Emirates Flight Training Academy Opens

With the airline industry growing at an exponential rate, the need for training professional pilots is crucial. Emirates is taking a giant step to addressing the demand for pilots with its Dubai-based Emirates Flight Training Academy, which officially opens here on Monday.

“Emirates has long been the catalyst for establishing Dubai as an international center of aviation. With the predicted need for thousands of commercial pilots over the next decade, the launch of the Emirates Flight Academy is another example of Emirates’ leading position and commitment to the future of aviation in the UAE,” says Adel Al Redha, Emirates executive vice president of engineering and operations.

The Academy, located on its own private airport and campus on the edge of Dubai World Central Airport, will act as the dedicated training center for Emirates’ prestigious National Cadet Pilot Programme. Emirates’ AED500 million (US$136 million) investment in the Flight Training Academy included construction of the new facilities, a fleet of 22 Cirrus SR22 and five Embraer Phenom 100EV training aircraft, a maintenance hangar, simulators, its very own lighted runway and a small FBO (fixed base operation).

Capacity will ramp up in a couple of years to 600 students on campus, with an annual intake of around 160 to 180 a year for courses that will last up to three and a half years.

The facility will have 56 classrooms, and a restaurant that can prepare up to 1,500 meals per day.

There are two intake streams for the Emirates Flight Training Academy: The first is the UAE National Cadet program, which has been ongoing for 25 years now. Cadets previously used to complete their ground school training in Dubai and take up flight training at international locations, but Emirates Flight Training Academy cadets will complete 100% of their training in Dubai. Cadets graduating successfully from the UAE National stream enter Emirates’ fleet as first officers.

The second intake stream for the academy includes other international cadets, but they have no guarantee of joining the airline. They can, however, go through the normal recruitment process for pilots within Emirates or they can apply to other airlines.

To date, the Academy has taken delivery of the first of its Phenom jets, and six of the 22 Cirrus SR22s. It will have 10 aircraft by the end of the year. Its first intake of 153 students has already started.

The school spent one year assessing different aircraft, including twin-engine turboprops, but selected the Phenom because of its airliner characteristics that stemmed from Brazilian manufacturer Embraer’s airline culture, explained Capt. Abdulla Al Hammadi, vice president, Emirates Flight Training Academy. “We decided to go into the jet because that will make an easier, smarter transition to a bigger aircraft. It’s very similar to the airliners, especially with the functioning of cockpit avionics.”

In traditional cadet programs, students move from single-engine piston aircraft to twin-engine piston aircraft before transitioning to jet airplanes. With the Emirates Flight Training Academy, students move from the single-engine piston Cirrus SR22 directly to the jet-powered Embraer Phenom 100E. This eliminates an extra step in becoming a commercial pilot and gives cadet pilots an enhanced curriculum during single-engine training, as well as more experience flying jet aircraft before being trained as an official Emirates pilot.

The two-year project to build the Academy stemmed not so much from addressing pilot shortages but from a desire to become a world leader in training quality, he notes. The graduation of 180 cadets a year will make but a little dent on the world’s need for half a million new pilots over the next 12 years, but it will ensure that Emirates gets the best of the best. “Our focus on the interim is more of enhancing the training; making sure that we have a better standard than the rest of the academies available around us. That was our focus,” he says.

Last year the academy signed an agreement with Boeing to collaborate on a comprehensive training curriculum and software infrastructure based on the Peters Software system for managing cadet learning and training flight operations. Cadets will learn with highly interactive digital content delivered in purpose-designed classrooms and on personal tablets.

—John Morris

The spacious academy can accommodate 600 students.
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Rosoboronexport’s Backlog Reaches $45 Billion

Russia’s arms exporting company JSC Rosoboronexport (a subsidiary of the Rostec state corporation) has built up a defense order backlog worth nearly US$45 billion, the company’s director general, Alexander Mikheev, told ShowNews.

“This year, we signed contracts worth over US$10 billion. They are included in a combined order backlog that has reached US$45 billion,” Mikheev points out.

There is no slowdown: Rosoboronexport is planning to export defense materiel in line with the numbers reached in recent years, he says. Since the beginning of the year, foreign customers have received hardware worth approximately US$9 billion.”

“We notice a growth of demand for combat aircraft,” he says. This year they will make up more than 50% of Rosoboronexport’s delivery volume.

“In accordance with our forecasts, the global growth of demand for combat aircraft and air defense systems will remain unchanged in the medium term, and Russia will preserve and even beef up its leadership in this segment. With the introduction of advanced competitive products to the market, the company expects growth in order volumes driven primarily by Asia-Pacific, Arabic Eastern and Latin American countries.”

According to Mikheev, the annual share of aviation has accounted for no less than 40% of the combined volume of the company’s exports in the last five years.

He points out that multirole fighter jets, combat and combat-transport helicopters, armored vehicles, artillery systems, surface-to-air missile systems and air defense assets, and electronic hardware were among the top-requested materiel offered by Rosoboronexport. Moreover, projects related to licensed manufacturing of military equipment, conducting of joint research-and-development works and space activities have been evolving in recent years.

The countries of Northern Africa, Near East and Asia-Pacific regions account for most of the company’s exports, with India and China remaining the traditional partners with Russia for military technical cooperation. At present, the list of products offered by Rosoboronexport on the global market includes a large number of Russian weapons successfully tested in Syria, including naval and ground systems that have been in high demand traditionally. However, the demonstration of their capabilities in Syria has boosted the interest of potential foreign customers, he says. —Nikolai Novichkov

Syrian Experience Integrated Into MiG-35

THE COUNTER-TERRORISM operation of Russia’s Aerospace Forces (VKS) in Syria has demonstrated the high combat efficiency of Russian-made aviation equipment in action. In particular, both Russian and Syrian MiG-29 fighter jets have been involved in the combat.

The Syrian MiG-29s that had been brought into service in the late 1980s were among the first to engage the terrorists. In Autumn 2016, Russia’s Naval Aviation started combat missions in Syria, piloting the new MiG-29K/KUB fighter jets, and the MiG-29SMT combat aircraft were stationed at the Humaymim airbase this autumn. The gained operational experience is now being introduced to advanced aircraft.

“Since the beginning of the conflict in Syria, the MiG-29K/KUBs and the MiG-29SMTs had been accomplishing reconnaissance and bombing missions following the reconsidering of their functions and role in modern combat. Since the deployment of Russia’s air group in the Syrian Arab Republic, the MiGs practiced the usage of all the existing guided and non-guided air-to-surface weapons in all the available modes,” Anastasia Kravchenko, the official representative of the MiG Russian Aircraft Corp., a subsidiary of the United Aircraft Corp., told ShowNews.

The cumulative experience is incorporated in the MiG-35 program, on the pre-production prototypes of which the most sophisticated developments and technical solutions are being tested. The preliminary flight tests of the MiG-35 stand in stark difference to those of the MiG-29SMT and the MiG-29K/KUB programs, owing to the changes of the aircraft’s working mode against ground targets, a substantially reinforced protection suite and assets to detect an enemy, and the introduction of a number of other technological solutions.

The MiG-35’s armament suite has been reinforced with advanced air-launched weapons, including long-range ones that allow target engagement at stand-off ranges. The fighter’s new target detection and early warning systems that comprise an optical locating station, an active electronically scanned array (AESA), an integrated radar and other subsystems have demonstrated their capabilities to work in more than 50 modes during their trials. An extended armament suite, including guided and non-guided air-to-air and air-to-surface missiles fitted with various guidance systems, has been successfully tested.

The MiG-35’s air-to-surface weapons have been shored up with the systems that allow the usage of the weapons against the targets lased by either a new-generation onboard laser or an external ground or aerial laser. “Despite the fact that the study of the new fighter’s capabilities will be a lengthy process, the decision to incorporate the MiG-35 aviation complexes will be made at an early date,” she pointed out. —Nikolai Novichkov

The MiG-35 now has a combat-proven weapons suite.
So successful has the aircraft become that Beijing-based Deer Jet, the Dream Jet’s operator, will take delivery of a second one in the first half of next year.

UAS, the Dubai-based flight support and charter solutions provider, will market the charter aircraft for luxury travel to its Middle East and European customers.

Last December, Deer Jet acquired a major shareholding in UAS and named it the flight support partner for the Deer Jet fleet of 90 aircraft. That alliance has significantly enhanced both companies’ capabilities and is accelerating strategic goals, Deer Jet says “to revolutionize international business flight experience.”

“The Dream Jet is an exquisite aircraft, unlike anything else available on the planet,” says UAS co-owner, founder and CEO Omar Hosari. “We have already begun successful charter flights for the Dream Jet in the past few weeks, and we are confident that this aircraft will continue to surpass the expectations of even the most demanding clients.”

Deer Jet’s first Dream Jet is operated on the Guernsey aircraft registry (2-DEER), under the AOC of BAS Guernsey. The price to charter the 787 Dream Jet is RMB 500,000 per hour (about $70,815).

Over the past few months, the Dream Jet has attracted international attention throughout its “Dreams Encounter the World” tour. UAS has supported Deer Jet and its one-of-a-kind aircraft at displays and viewings by ultra-high-net-worth individuals and royal family members in cities including Hong Kong, Shanghai, London, Dublin, Seattle, Marrakesh, Doha and Paris.

Zhang Peng, Chairman and President of Deer Jet, said “the 787 Dream Jet embodies our brand motto of ‘Making Travel and Art.’” Deer Jet already has operations in the Middle East, serving the area with a fleet of long-range BBJ, Gulfstream 550 and 450 aircraft.

“The size and diversity of our fleet can effectively serve the Middle East, Europe and the global market. We believe that Deer Jet’s operational capabilities coupled with UAS expertise in trip support will create the best flight experience for our customers worldwide.”

Deer Jet is a subsidiary of Chinese travel and luxury conglomerate HNA Group, which also owns Hainan Airlines. HNA CEO Adam Tan is on the record with the goal of driving HNA Group into the top 10 conglomerates in the world. And with a second Dream Jet, also to be operated by Deer Jet, it will have the largest Dream Jet fleet anywhere.

Deer Jet selected highly experienced pilots and stewards from Hainan Airlines to form its ‘Dream Team’ crew and further trained them with seven-star hospitality service standards to assure delivering the best-in-class travel experiences for every passenger on board.

The 787 Dream Jet is capable of comfortably flying up to 30 passengers nonstop for 18.5 hr., farther than Los Angeles to Mumbai. In line with its concept of “Making Travel an Art,” Deer Jet customizes the style and color of the cabin with handpicked amenities and bespoke collections of precious crystals, cushions, silverware and porcelain.

Deer Jet is also launching exclusive bespoke travel packages aboard the 787 Dream Jet, starting with the “Hong Kong to Tahiti Dream Journey” featuring a seven-night charter package including complimentary accommodation at the Presidential Suite of St. Regis Bora Bora Resort. Deer Jet plans to add more itineraries in the future.

UAS International Trip Support is based here in Dubai.

—John Morris
The Gulf region may be about to become the epicenter of a new aviation revolution. As hybrid airship technology continues to mature, plans are advancing to bring this new breed of aircraft to the Middle East, both for commercial applications and in military or security-oriented roles. ShowNews speaks to two companies active in the sector.

Airships Arabia

“I’m excited at the prospect of helping everybody realize what they’ve been missing by not using airships very much for the last hundred years,” says Gregory Gottlieb. “Don’t forget, the first airship flew in 1784, before the Wright brothers were even a twinkle in their parents’ eyes. So this technology has never really been fully exploited. Together with the manufacturers, and the other operators around the world, we’re hoping to change that.”

A former British Army officer, Gottlieb became involved in the lighter-than-air sector in the 1990s, during a Master’s degree course at the Royal College of Science at Shrivenham. He ran a number of airship programs—some still classified—for the UK’s defense ministry, including the operational deployment of a Skyship 600 in 1997 and an aerial surveillance operation, using an airship and staffed by British soldiers, during the 1996 Olympic Games in Atlanta, Georgia. He left the military in 1998 and, after a succession of jobs in the renascent lighter-than-air industry, set up Airships Arabia in the UAE last year.

“The catalyst for the decision to create Airships Arabia was the progress being made by Hybrid Air Vehicles [see opposite page] and by Lockheed Martin to develop hybrid airships,” Gottlieb says. “This technology has potentially changed the game in a significant way, because any conventional airship will be cumbersome when it gets close to the ground. That degree of ground-operation difficulty can be reduced, but not eliminated—whereas with a heavier-than-air aircraft that uses a significant proportion of helium lift to contribute to its performance, those ground-handling and ground-management problems largely go away. It’s that change in the technical environment that, in my view, makes the use of hybrid aircraft viable commercially.”

Logistics applications will emerge as the aircraft increase in size and payload capacity, and will offer customers “moderately impressive tonnages, burning an order of magnitude less fuel than current fixed-wing aircraft, and at an hourly operating cost that we anticipate being a fraction of either a helicopter or a fixed-wing airplane of a comparable capability—not that any have a comparable capability,” Gottlieb says. But it is in passenger operations he believes hybrid airships will prove their worth first.

“Because a hybrid airship has the ability to land on any reasonably flat surface, we’ll be able to carry up to 50 or so passengers from the middle of a city to the middle of another city, in a reasonably straight line, in comfort, being able to read the paper and have breakfast, or just stare out of the huge windows and enjoy the view while the traffic jams below are back-to-back,” he says. “For a bit more than the cost of a taxi journey on the same route we can profitably carry commuters between Dubai and Abu Dhabi in about 45 or 50 min. We’re also looking at other city pairs across the region, and we’re working with other future operators to consider other city pairs farther afield.”

Although both HAV’s Airlander 10 and Lockheed’s P-791 are technology demonstrators, and neither company has yet begun building a production aircraft, Gottlieb is convinced of the technology’s potential. The strongest barriers to adoption of hybrid airships are, he argues, to do with perception.

“In Arabic there’s one word to describe everything from a party balloon to a tethered aerostat to a hot-air balloon to a manned airship,” he says. “So when you’re speaking in Arabic and you use that word, people make an assumption that everything’s the same—and it really isn’t. So a big part of this is education. We need to help everybody understand what it is we’re talking about, what’s different about it, and why it is desirable—both for them and for us.”

In the absence of a hybrid airship to fly in the UAE, Airships Arabia are investigating other options to progress this educational work. The company will be making a significant announcement at the Airshow on Tuesday that is intended to help bridge the awareness gap.

“There’s a lot of worry about airships that is unjustified,” Gottlieb says. “And of course, the best way to move beyond those concerns is to actually show people how safe they are, and how readily they can integrate into an existing air-traffic environment.”
Hybrid Air Vehicles

Just as Airships Arabia has found that perception of what hybrid airships are and can do presents an obstacle to their adoption for commercial roles (see opposite page), the British company Hybrid Air Vehicles (HAV) believes the same is true when it comes to military or security applications.

“We’re in an education and shaping phase at the moment, designed to get the customers understanding the technology and where it is,” says Simon Evans, the company’s defense and security business-development lead. The company currently has one aircraft - the Airlander 10 - that is going through certification with the European Aviation Safety Agency. The pre-production aircraft flies from the company’s headquarters at Cardington in Bedfordshire, and access to test flights is helping HAV make converts to the airship cause.

“We had representatives of a UK government agency who procure aviation services [visit Cardington],” Evans says, “and they looked at it and said: ‘I didn’t realize it could do all of this, and we would be very interested in taking things forward.’ We’re trying to get over that lighter-than-air technology in a manned role that is not about a Hindenburg or a zeppelin in the early 1900s. This is a new technology that is game-changing in capability.”

HAV’s decision to focus on military and security applications rather than commercial or civil use does not imply any lack of belief within the company on their system’s capabilities outside the defense and security arena. Rather, the history of the Airlander product - it began life as the U.S. military’s canceled LEMV (Long Endurance Multi-intelligence Vehicle) program - means the sole aircraft built so far had military use in mind from the beginning.

“The technology needs to prove itself in the market, as a hybrid aircraft,” Evans says. “And the standard that we would look at initially would be looking at the military application, because it was optimized for persistent endurance. Its fuel consumption and the undercarriage design is all optimized around the aircraft being in the air for a long time. The undercarriage, for instance, is a major element there: It is not designed to be used regularly, because in a manned military application the aircraft can stay airborne for up to five days; and at the moment it obscures a little bit of the view.”

There is also a sense that thinking of the Airlander as a passenger-carrying vehicle may limit the thinking of those who might be looking for other capabilities from a future air system. Evans - who points to Saudi Arabia’s interest in tethered aerostats for border security as evidence of applicability for hybrid airships in the Gulf region - stresses the breadth of potential applications on an aircraft with Airlander’s combination of load-carriage capacity, available onboard power and space, and persistence.

“You can carry a lot of different sensors, so you start to get a greater utility in the minds of government and military agencies,” he says. “It could do three or four different jobs while it’s up in the air. It can do more things, and therefore it becomes a lot more attractive, because it could do the role of two or three current air platforms.”

There are risks associated with pursuing this kind of strategy when trying to identify a first customer for a new type of aircraft. The platform’s versatility may make it appear to lack specific applicability for a forthcoming requirement; and militaries that have already purchased bespoke systems to carry out specific tasks may not believe they need another platform that can duplicate some - or all - of that capability. Evans argues that economics will provide a compelling reason for potential customers to consider the Airlander.

“If you look at payload versus cost of procurement and cost of operation, Airlander is orders of magnitude more efficient than existing platforms,” he says. “It’s about winning over the contexts of traditional thinking.”

And, like Arabian Airships’ Geoffrey Gottlieb, Evans sees practical demonstrations as being the key to unlocking hybrid airships’ potential.

“It’s all well and good having Powerpoint slides,” he says, “but the only way we’re going to be able to [win over doubters] is through capability demonstrations. The aircraft we have now is ready, in its certification process through EASA, to do capability demonstrations, with payload on board, to customers or interested parties, and to explore what it could actually do in the context of a concept of operations for them.” —Angus Batey
Dubai Pushes for Unmanned Aviation Leadership

It has long been a technology leader, but the United Arab Emirates - and Dubai in particular - is racing ahead of the global pack when it comes to deploying unmanned aircraft. The city-state is involved in a number of ambitious programs that will - if they transition successfully from aspiration to reality in the timescales envisaged - see it become the world’s leading center for unmanned aircraft technologies.

The spate of recently announced programs (see panels) is more credible from Dubai than it might have been had the announcements been made elsewhere, given the emirate’s long-standing interest in, and support of, other UAS applications and initiatives.

At the time it was launched, in 2014, the UAE’s Drones for Good Award was an outlier. To the extent that unmanned aircraft technologies were discussed at all by the wider public, the perception was negative. Media coverage was dominated by lethal drone strikes and privacy worries. Today, the narrative has shifted decisively. Curiosity has replaced concern. Drone tech is cool.

Drones for Good was designed to highlight positive uses of UAS by inviting entrants to showcase socially progressive applications for them, with large cash prizes on offer. It has since expanded into two separate categories: The first is open, as it has been since 2014, to entrants from around the world, while the second, introduced in 2016, is only for entrants based in the UAE - a reflection of the growing diversity and maturity of the Gulf’s UAS industry.

Entrants to Drones for Good have shown how unmanned air technologies have few limits when applied to problem sets that would pose a considerable challenge to manned aviation. Competitors have showcased systems that clear fog from airport runways and plant tree seedlings, as well as an aircraft optimized for construction inspection roles that can stabilize itself during high winds by attaching cords to nearby surfaces.

The UAE’s embrace of unmanned transportation systems does not begin and end with Drones for Good. The first line of Dubai’s driverless Metro system opened in 2009. Dubai’s tram system is also driverless, and last year saw the first journey by a self-driving car between Abu Dhabi and Dubai. But it is in aviation where the unmanned challenges remain greatest, and where Dubai looks to establish a lead over the rest of the world.

In 2014, the Zephyr UAS - a solar-powered, lightweight, large-wingspan aircraft manufactured in the UK by Airbus - successfully conducted a flight trial in Dubai that resulted in a number of significant firsts for the integration of unmanned air traffic alongside traditional manned aviation. The aircraft, which takes several hours of circling in a column of airspace to reach its operating altitude of around 70,000 ft., was launched in close proximity to Dubai International Airport, in a flight run by Airbus but performed under both the permission and the observation of the Dubai Civil Aviation Authority. This proved the concept of operations for the Zephyr, under some of the most exacting deconfliction conditions it is likely to encounter; three years later, it remains the only flight by the platform as close to a major airport.

The ultimate in unmanned aircraft operations may well be the use of autonomously piloted systems to carry people. It is perhaps little surprise that this application is on Dubai’s wishlist. Here, ShowNews looks at some of the programs currently in place in the emirate that are seeking to push at the boundaries surrounding unmanned flying.

Dubai Air Taxi

Toward the end of September, the Dubai Road and Transport Authority (RTA) announced that a maiden concept flight had taken place near Jumeriah Beach Park by an 18-rotor, nine-battery aircraft developed by the German company Volocopter. This was the first practical step taken toward a stated goal of performing a quarter of all individual journeys taken in Dubai by autonomous transport systems.

The Volocopter 2X was selected for the flight trial, though the RTA is also in discussions with a Chinese firm, Ehang, whose Ehang 184 has been flown in test conditions in the region for several months. The apparent decision to favor the German aircraft is likely because it conforms to more stringent German safety standards. The other key difference between the two platforms is payload capacity: The eight-rotor Ehang 184 can carry only one person, while the Volocopter 2X is designed to carry two.

The aspiration for the program as a whole is that the air taxis would be hailed using a smartphone app, and availability of the system will be integrated into the rest of the emirate’s public transport infrastructure. Work to integrate the flights will involve the Dubai CAA and the UAE’s General Civil Aviation Authority, and is being overseen by the U.S. consultancy JDA Aviation Company.

Issues to be addressed are numerous, from deconflicting the autonomously piloted air taxi from helicopters, enabling the system to navigate around unmapped or temporary obstacles such as cranes and powerlines, to ensuring that journeys - which may be unplanned until the moment the customer enters the aircraft and selects their desired destination on the onboard touchscreen - are transparent to, and flown in conjunction with, extant air-traffic control procedures. The project has been given a five-year timeframe to take the concept from the initial flight trial to a daily operational capability.

Volocopter CEO Florian Reuter has said that the aircraft will eventually feature a sense-and-avoid capability, though it is unclear when this will be available - the company’s website simply lists this feature as “possible,” while noting that “available
UAV technology can be integrated into the Volocopter. As yet, no full sense-and-avoid solution for a UAS has been brought to market. However, it is possible that there may not be a need for a fully featured sense-and-avoid system: Much will depend on what the emergent regulations will require such a system to do - and drafting of these regulations forms part of the work that the Dubai air taxi program has been established to carry out.

**Flying Police Motorbike**

Given their track record in eye-catching vehicles - this is, after all, a police force whose patrol-car fleet includes models from Ferrari, Lamborghini and a 430 kph Bugatti Veyron, and which in May announced that it was deploying a robot officer to undisclosed “high-density areas” of the city - it is perhaps little surprise to find the Dubai Police Force embracing the concept of a hoverbike. The force has tested the Hoversurf Scorpion 3, and released video of trials flights of the machine during the GITEX show in Dubai last month.

Hoversurf is headquartered in San Francisco, but the company’s website says its R&D center is in Moscow while its eventual production facility will be in Dubai. It is selling the electrically powered Scorpion 3 - which is available in both hoverbike and cargo-carrying unmanned variants - as buyer-assembled kits. Prices start at $55,000 for the cargo version and $59,900 for the hoverbike, with final prices dependent on the individual customer’s specification and requirements. Delivery time is estimated as between six and 18 months. An aircraft can be reserved with a $2,000 down payment.

The Dubai Police Force appears to be considering the Hoversurf for emergency response roles. It is able to fly at up to 5 m and has a range of around 6 km, making it potentially suitable for getting a police officer - or, in cargo configuration, some emergency equipment - to the site of an accident that has caused gridlock for road traffic.

**Firefighting Tiltrotors and Jet-Packs**

Another star of GITEX was a full-scale mockup of an unmanned tiltrotor aircraft called DroFire. The six-rotor aircraft is being produced by UAE firm DigiRobotics, which has signed an agreement with the Dubai government’s Civil Defense authorities.

When and if the DroFire program becomes an operational reality, Dubai will see a fleet of the aircraft hangared in the city, ready to respond in the case of fire breaking out in a high-rise building. In a concept video released by the company, a controller will drag-and-drop an aircraft icon onto the appropriate point on a map-based interface, and the aircraft will autonomously launch and transit to the relevant building. Once there, it will disperse foam.

In January, Dubai Civil Defense released a video showing a demonstration of a firefighter using a powerful variant of a jet-ski to reach a simulated burning car on a bridge over a river. The device used water pressure to lift the firefighter above the surface of the river and level with the bridge, while carrying a hose, with which the fire could be doused.

At the Dubai Airshow in 2015, Martin Aircraft of New Zealand announced it had signed a memorandum of understanding with Dubai Civil Defense to explore the use of the Martin Jetpack in a high-rise firefighting scenario. Development and testing of the aircraft continues. Since a brief mention in a November 2016 posting on its website that the company was working with “potential customers” in territories including the UAE, no further details have been made available, and Martin is not exhibiting in Dubai this year.

—Angus Batey
More A380s for Emirates?

Emirates and Airbus are in the final stages of negotiations for another significant A380 order. Will it be announced here at the show?

“I hope we will be able to do it,” Emirates Chairman and CEO Sheikh Ahmed bin Saeed Al-Maktoum said in Hamburg on Nov. 3 as the airline took delivery of its 100th A380. “We are still in negotiations” he said, adding that “we remain committed to the program.”

Emirates (Chalet A31-33 an Stand 1010) has placed orders for 142 A380s, of which 100 had been delivered by the first week of November.

Preparation for a new order comes as the airline faces slowing growth, which is expected to be in single digits in the coming years.

In 2016, Emirates took delivery of 36 aircraft (20 A380s and 16 777s), but it also retired 29 aircraft, mostly older 777-200s and -300s. This year the airline plans to take 22 aircraft and has so far retired nine: one 747F and eight older 777s. In its financial year 2017 (ended in March), the airline’s traffic grew by 8.4%, but that growth came at the expense of load factor (from 76.5 to 75.1%) and yield, which is now 20% below where it was in 2014. And the group’s operating profit was down 71%.

Furthermore, the airline late in 2016 for the first time decided to defer A380 orders. Six aircraft that would originally have been delivered this year are moving from 2017 to 2018 and six more from 2018 to 2019.

But the big question is whether Airbus manages to convince Emirates to buy into the A380plus. The project was presented in June – its main features are an increase in maximum takeoff weight from 575 to 578 tons and a densified, re-arranged cabin that makes space for 80 additional passengers. Emirates’ initial response has been cautious and Emirates Airline President Tim Clark has rejected key items of the cabin changes such as the removal of the forward staircase.

Clark at one stage had pondered an order for up to 200 more had Airbus launched the re-engined A380neo.

There is, however, a not insignificant group inside Emirates that is critical of the A380 exposure, according to an industry source. They argue that the airline should instead focus on expanding the 777 fleet to generate higher profits, taking advantage of both the lower costs and ability to control yields with a smaller degree of capacity expansion. Nonetheless, one observer believes Emirates may buy 10 or 20 more A380s at the airshow as a token that it sticks to the program.

The other big fleet decision is whether Emirates will order either the A350 or the 787 for sectors up to 10 hr. around Dubai. The airline has been studying that case for years, having canceled its initial order for 70 A350s in 2014. Clark recently indicated that no decision is imminent.

To understand Emirates’ fleet scenarios, it is important to keep in mind that Dubai’s air transport strategy has dramatically changed. Ever since sister carrier FlyDubai was launched in 2009, the two airlines have operated with no integration. But now they have been tasked with close integration of systems, operations, commercial and network.

There are major issues to be addressed in terms of the fleet and operations. FlyDubai operates narrowbodies with a cabin product that has not been in line with Emirates’, although the airline has moved away from its original low-cost concept and now offers a business-class cabin. FlyDubai has 58 737-800s and took delivery of the first of 76 737-8s in July. The two carriers have to decide to what extent alignment is needed.

Including a large fleet of 737s in the broader Emirates world raises questions about what number of either A350s or 787s will be needed as many sectors up to 6 hr. could conceivably be covered by the 737 fleet. Separately, the airlines need to figure out ways to transfer passengers in Dubai. FlyDubai still operates from the low-cost Terminal 2 on the other side of the two runways, whereas Emirates mainly uses the big Terminal 3.

The FlyDubai project is a huge grabber of management attention for an airline that has already imposed upon itself a deep self-review of processes and IT systems. The two projects mean that the airline is, for the first time since its launch in 1985, tasked with integrating with another carrier and a fundamental process restructuring at the same time.

And where the FlyDubai integration leads is not yet clear. One underestimated side-effect is that FlyDubai can no longer move to the new Dubai World Central Airport as intended and therefore cannot free up space for Emirates at what is already an extremely congested Dubai International Airport (DXB).

His Highness Sheikh Ahmed bin Saeed Al-Maktoum, Emirates’ chairman and chief executive, officiated the ceremony. He was joined at the event by Sir Tim Clark, president of Emirates Airline; Tom Enders, Airbus CEO; Dominic Horwood, Rolls-Royce director – customer and services; His Excellency Ali Ahmed, UAE ambassador to Germany; and Frank Horch, senator for economy, transport and Innovation of the Free and Hanseatic City of Hamburg.
**Etihad: Shrinks Back; Will It Become a Boutique Airline?**

Etihad, the smallest of the big three Gulf carriers, is undergoing the most fundamental change in its new era following the involuntary departure of its long-standing CEO James Hogan.

Most importantly, Etihad (Pavilion S19) effectively abandoned its contentious partnership strategy by cutting ties with Air Berlin and Alitalia. Little more than two months after Etihad dropped its financial support, Air Berlin ceased all flight operations. Alitalia continues to fly, but only because of a government loan nearing US$1 billion. Over the years, Etihad sunk multiple billions into the affiliates, in many cases with no conceivable benefit. In 2016, the airline posted an enormous US$1.87 billion loss, equivalent to almost 20% of group and 40% of airline revenues.

At the same time, it is facing renewed pressure in its own network as demand in core markets has become weaker. The airline has already decided to reduce capacity in some long-haul markets including U.S. destinations.

But its future strategy is still a work in progress: The new permanent CEO Tony Douglas is starting in January. But there are more factors to take into account. Consultants have done work on the new plan. Industry sources say key elements include a renewed focus on digital sales, a push for higher yields and less dependence on transfer traffic.

“They are on their way to becoming a boutique airline,” says an industry source. The results of the studies have not yet been implemented. One reason is that Douglas has not yet started. Another lies in Abu Dhabi’s so-called Aviation Sector Development Committee, which is now led by Sheikh Diab bin Mohammed Bin Zayed Al Nahyan, the powerful son of Abu Dhabi’s even more powerful Crown Prince Sheikh Mohammed bin Zayed Al Nahyan. Abu Dhabi has not really had the kind of integrated aviation strategy known from Dubai so far, but the committee is supposed to change that and Sheikh Diab is supposed to become the Sheikh Ahmed of Abu Dhabi, sources with inside knowledge of the plans say. But the committee has not given the formal go-ahead for Etihad’s change of course yet.

Aviation integration in Abu Dhabi’s case means primarily better aligning the airport and the airline. The airport is causing massive concerns. The midfield terminal is the core of the expansion with capacity of 30 million passengers per year, more than the airport handled in 2016. Under construction for years, its opening was scheduled for September but has been delayed by around two years well into 2019 because of severe issues of building the architecturally ambitious roof and glass window front, sources say. The continued absence of the midfield terminal means Etihad is for the time being unable to further develop its hub wave structure, simply because the airport does not have the capacity. “That is the best excuse in the world” for stalling growth, says one observer.

The airport is not only an issue because it stifles whatever may be left of Etihad’s growth plans. It is also a huge cost factor. “The airport needs another round of financing that has not yet been approved,” an insider says. There is little doubt it will come, but the pain is visible.

This is where Tony Douglas comes in. The new Etihad CEO ran Abu Dhabi airport until 2014 before he left the country for some years. “Douglas is very knowledgeable as far as the airport is concerned and he speaks Arabic, which is not a detail,” a local source says. “But he does not know the airline.” That he was re-hired in the first place is a clear indication that Abu Dhabi aims at a more integrated strategy — the former airport CEO now runs the airline group. But it also means that Douglas “needs all the help that he can get” at Etihad. For now, Kevin Knight, who heads group strategy and is a former Hogan-aide, is a powerful force. And Douglas will also have to rely on the loyalty of Peter Baumgartner, a Swiss who is responsible for Etihad Airways.

And what about the long-rumored tie-up of Etihad and Emirates? “In that debate, we are where we were in terms of Emirates and FlyDubai five years ago,” an industry source says. He believes that nothing will happen before 2020 at the very earliest, if ever, regardless of the obvious benefits consolidation would bring. Competition, even on a personal level, persists. —Jens Flottau
Qatar Deals With Neighbors’ Blockade

Following the Qatar boycott of four of its neighboring countries (the United Arab Emirates, Saudi Arabia, Bahrain and Egypt), Qatar Airways was forced to re-deploy 20% of its capacity due to the inaccessibility of its single most important market, Dubai, and 17 other destinations it could no longer fly to.

Simultaneously, flight times to points in the west and south have become much longer because aircraft have to fly around closed airspace.

“There are some dark clouds,” Qatar CEO Akbar Al Baker said after the blockade took effect. “We will underperform, but not to the extent of our neighbors. We will continue to grow,” he said.

The carrier plans to shift growth from the affected markets to destinations in other regions. But it has become extremely difficult to judge the rate of its future expansion because the case has become so political and Qatar is likely to provide all the support needed to the airline, irrespective of business realities. At the same time, Qatar Airways of late has been relatively quiet by its standards about network changes.

“The [three big Gulf] carriers still cannot make decisions on their own rationally,” Bernstein Research’s Daniel Roeska says. “Their role for the economy as a whole is too important.” And global air travel still grows fast enough to sustain some momentum for the Middle East carriers even if local markets weaken and politics hurt.

Longer term, one issue not yet fully on people’s radar may become a permanent concern: With China extremely cautious to open up its market to Gulf airlines while driving its own airlines’ expansion, Qatar, Etihad and Emirates may not participate much in the most important growth market in international air travel.

—Jens Flottau

Qatar Airways Buys Into Cathay Pacific

QATAR AIRWAYS HAS purchased a stake of almost 10% in Cathay Pacific, as the Middle Eastern carrier looks to build its portfolio of airline investments.

Qatar bought 378.2 million Cathay Pacific shares from Kingboard Chemical Holdings Ltd., with the deal valued at HK$5.2 billion (US$661.6 million). The transaction closed on Nov. 6.

The deal gives Qatar a 9.61% holding in its Oneworld Alliance partner Cathay. Swire Pacific Ltd. is the largest of Cathay’s shareholders with a 45% stake, and Air China holds almost 30%.

Cathay Pacific would not comment on prospects for the two airlines to increase their network cooperation. However, in a statement issued after the deal was announced, Cathay said “we already work together closely as fellow members of the Oneworld Alliance and we look forward to a continued constructive relationship.”

The two airlines codeshare on Qatar’s flights between Doha and Hong Kong, and on Cathay’s flights between Hong Kong and Auckland, the Australian cities of Adelaide, Cairns, Melbourne and Sydney, Seoul, and the Japanese cities of Nagoya, Osaka and Tokyo.

Cathay has launched various recovery initiatives as it attempts to reverse recent financial losses. However, Qatar Airways CEO Akbar Al Baker described Cathay as “one of the strongest airlines in the world, respected throughout the industry and with massive potential for the future.”

The Cathay share purchase “further supports Qatar Airways’ investment strategy,” the Middle East carrier said. Qatar’s airline investments already include 20% of International Airlines Group, 10% of LATAM Airlines Group and 49% of Meridiana. Qatar had also intended to purchase a stake in American Airlines, but backed off that plan in August.

—Adrian Schofield

Airbus Says Middle East Fleet to Double

The Middle East airliner fleet will more than double over the next 20 years as carriers spend US$600 billion on additional aircraft, according to the latest forecast from Airbus.

The fleet will grow from the current 1,250 to 3,320 aircraft over the next two decades, it says, as traffic, on average, grows by an annual 5.9%, well above the global average of 4.4%.

Of the 2,590 new jets, only 520 will be for replacement and the rest for growth, Airbus believes. This demand includes 1,080 twin-aisle aircraft, with the same number of single-aisle aircraft (1,080), and 430 very large aircraft.

“Thanks to the A350, the A380 and also the A320 family, most people around the world are just one flight away from the Middle East,” says Airbus. “The region’s proximity to the world’s population and growth markets has been a key in its aviation success.”
As Saudi Arabia begins to open up, national carrier Saudia is undergoing its own slow transformation, which hinges on airport upgrades and internal changes.

For Saudia, the future is just across the runway. To the east side of Jeddah’s international airport lies a huge construction site and a reddish structure in the middle. When that structure is opened as the new airport terminal, Saudia’s development will take a giant leap forward.

Just taking fundamentals, Saudia Arabia’s government-owned airline should already be leading the Middle East region. It is based in an extremely rich country with 32 million people and 27 airports, the distances are long and ground transportation is often not a good option. Saudia has been constrained by the way it and the Saudi economy have so far been run and by severe visa restrictions that have made it difficult for foreigners to enter the country.

But change is near: “The country is going through a huge transformation and Saudia is part of it,” says the carrier’s CEO, Jaan Albrecht. He was brought in late last year on a three-year term and a restructuring mandate to prepare the airline for eventual privatization. Albrecht is well-known in the global air transport industry, mainly for his role as the CEO of Star Alliance, which he led for 11 years.

The change Albrecht refers to is Saudi Arabia’s attempts to diversify the economy and make the country less dependent on oil revenues.

Big investment in tourism is also planned. Crown Prince Mohammad Bin Salman just announced city project Neom, a US$500 billion investment based on advanced technologies. The path is similar to the one that has been taken by Dubai or Qatar, although movement is a lot more cautious and slower given Saudia Arabia’s conservatism. And some of the aggressiveness of Gulf hubs focused on connecting traffic may not be needed: The population base is big already and each year there are multiple millions of Muslims flying to Saudi Arabia for the haj and umra pilgrimages.

Saudia’s takeoff run has already started. Over the past two years the carrier has taken delivery of 60 additional aircraft and has, at the same time, retired early Boeing 777-200ERs. Of the 60, around 30 have been used for growth. In 2018, another 15 aircraft are arriving. Saudia currently has an active fleet of around 160 aircraft, and according to its SV2020 vision, the number is supposed to rise to 200 in the next three years. The airline will take 68 more jets on lease between now and 2017.

Jeddah airport is the one key constraint for the airline. It serves the country’s economic capital, but is far too small. Because of physical constraints Saudia can process only eight flights per hour through its South Terminal. There are no contact gates so passengers have to be bussed between apron and building for every flight. In addition to not satisfying local demand it is also impossible to offer meaningful connections.

When the new airport opens, Albrecht plans to build a hub with three main banks per day in Jeddah. Up to 35 movements per hour are possible, up from the current eight, therefore giving more than enough room for expansion. “We have not been prominently represented in [global alliance] SkyTeam, but the alliance has huge potential for us with the hub,” Albrecht says. “We can offer many international and 26 domestic destinations for code-share through Jeddah.”

However, the opening of the facility has been a moving target. Due to be completed in 2015, the opening date shifted to 2017, but now authorities say a soft opening will be doable in May 2018. Saudia plans to move all of its operations there by the winter of 2018/19. Judging from the state of the construction site, an opening one year from now will be an extreme challenge.

The other main issue is company culture. For decades, Saudia has been run as a government entity. Whether it was profitable at the end of the year was not important. “There are opportunities for improvement basically everywhere,” says Albrecht.

For anyone who doubts that change is needed, another look at the airport apron suffices: Not only can the new construction site be seen, but also a lot of aircraft of the emerging low-cost industry including FlyNAS Nesma, and Saudia’s own affiliate Flyadeal, which started flying one month ago.

—Jens Flottau
GA-ASI Pitches Companion Drones for Gulf Nations

As U.S. drone-makers await a change in U.S. export rules that may eventually allow the sale of armed unmanned aerial systems (UAS) to the Middle East, General Atomics Aeronautical Systems (GA-ASI) is proposing an alternative for Gulf nations: a wirelessly linked, manned-unmanned aircraft team (MUM-T) that provides both strike and surveillance capability while keeping pilots out of danger.

Many countries in the region have an interest in procuring armed drones, for instance GA-ASI’s iconic MQ-9 Reaper surveillance/strike, long-endurance UAS, but are limited by strict U.S. export rules, says Jim Thomson, company regional vice president of international strategic development. Aside from the U.S., U.S. drone-makers are only allowed to sell armed drones to two close allies, the UK and more recently Italy.

Restrictions on armed UAS export have caused tensions with Gulf customers, for example Saudi Arabia, Thomson says. The Saudis have expressed interest in the company’s Predator A-ISR (Improved Predator XP), the unarmed intelligence, surveillance and reconnaissance (ISR) configuration approved for export, but have yet to close the deal.

“They know that Predator can be armed and they are not getting permission to get it in that configuration,” Thomson says, adding that this perception caused some backlash. “[They say:] ‘If they are not going to give us the full capability then we will go elsewhere.’”

Such tension has led many potential customers to begin buying from U.S. competitors, Thomson says. For now, he is confident Gulf nations would prefer to buy U.S. drones due to their superior endurance and more sophisticated sensors. But advancement in technology will soon lead to steeper competition, particularly from China, he says.

“If they have a need for an armed UAV and it’s not available from the U.S., they are going to go buy it from somebody else,” Thomson says, noting that UAE, Saudi, Egypt, Jordan and more are already buying armed drones from non-U.S. sources.

Industry is looking to President Donald Trump’s new administration to eventually ease restrictions on arms sales, but the change won’t happen overnight. Thomson is hopeful that the administration may take the first step as soon as next year, allowing firms to sell a non-weaponized Category One system, such as the MQ-9B SkyGuardian maritime patrol aircraft, to a non-NATO, non-MTCR ally.

“I think the new administration recognizes that that we are losing U.S. jobs, losing the edge in being the leaders in unmanned aircraft systems,” Thomson says. “It’s very important that export policy be amended as soon as possible to enable us to support the defense and security needs of our allies and partners.”

—Lara Seligman

Enter the MUM-T

In the meantime, GA-ASI (Stand 1480) is offering a manned-unmanned teaming (MUM-T) solution as an alternative to armed drones for Gulf nations. This technology is one of the company’s big selling points here at the Dubai Airshow, Thomson says. The U.S. Army has been using MUM-T to wirelessly link its AH-64 Apache helicopters with GA-ASI’s Gray Eagle and Textron’s RQ-7B Shadow UAS for many years, says Thomson. The technology allows the Apache pilots to receive data from the sensors and payloads on a UAS as far as 40 mi. away on a screen inside the cockpit via a data link. The Apache pilot is able to watch in real time as the UAV tracks an operational target and then fly to the target for the dynamic engagement, keeping the helicopter out of harm’s way.

Most of the Gulf nations – Kuwait, Qatar, UAE and Saudi Arabia, for instance – already operate Apaches, Thomson says. The latest AH-64E model can be factory delivered with the MUM-T solution already integrated, an elegant solution with above-the-rotor antenna, he adds. The AH-64D models can be retrofitted in the field with the same modification. The older Apaches models can also be modified for MUM-T, as can other rotary aircraft such as UH-60M Black Hawks, but the integration is not as elegant.

This technology is now part of the baseline for the improved Predator XP, which has been approved for export to the Gulf countries, Thomson says. The new baseline includes an upgraded remote video terminal transmitter data link, which allows transmission of high-definition video from much greater distances.

An upgrade to the MUM-T technology will allow the Apache pilot to actually control the sensors on the UAS with his joystick, Thomson says. The Army currently has this capability, but it has not yet been approved for export.

—LS
Chinese gains could make it difficult for the U.S. to break back into Middle East UAV market.

Reluctance on the part of the U.S. to deliver armed unmanned air systems (UAS) to some of its key allies in the Middle East has resulted in a significant win for China.

Chinese UAS manufacturers have been rewarded handsomely with major contracts from several Middle East and Central Asian governments.

And China’s successes in those geographic areas have prompted it to explore other markets further afield.

In April, Avic demonstrated a model of its Wing Loong II, an MQ-9 Reaper-size air system at an exhibition in Mexico — right in the U.S.’s backyard. In June, it debuted at the Paris Air Show, displayed with an array of Chinese-produced weaponry. It is hard to determine the actual number of Chinese-made armed UAS now in service with countries in the Middle East, but the platforms are operational with the air forces of Iraq, Kazakhstan, Saudi Arabia and the United Arab Emirates (UAE), and reports suggest they have found their way into Egypt and Jordan as well.

Some of these countries have also used them in combat. Saudi Arabia has employed the systems during the air campaign over Yemen, while Iraq has flown them in its ongoing campaign against the Islamic State group.

The UAE has gone further and deployed several to Libya’s Marj District to support the Libyan National Army against Islamic fighters there.

All these nations had requested to purchase armed versions of the General Atomics MQ-1 Predator and MQ-9 Reaper, but were denied by the Barack Obama administration due to concerns that selling into the region would break the international Missile Technology Control Regime (MTCR) rules, which attempt to prevent proliferation of technologies that enable the creation of delivery systems for nuclear, biological and chemical weapons.

The UAE was granted permission to purchase unarmed exportable versions of the Predator, known as the Predator XP.

Beijing’s success in the region revolves around two almost identical air systems, both virtual copies of the MQ-1 Predator. These are the China Aerospace Science and Technology Corp. (CASC) CH-4, known as Rainbow, and the Chengdu or Avic Wing Loong I, designated GJ-1 in the Chinese People’s Liberation Army Air Force service. One analysis puts the price of a CH-4 system at one-fifth that of an MQ-1.

In October, it emerged that the Donald Trump administration had begun exploring the loosening of the MTCR and other arms protocols in order to facilitate the export of U.S.-manufactured UAS, but China’s stranglehold could be difficult to break.

In March, it was announced that CASC could open a factory to build as many as 300 CH-4 systems for the Saudi armed forces over the coming years.

—Tony Osborne
Gripen Returns to Dubai After 12-Year Absence

The Gripen has not been seen at the Dubai Airshow since 2005, but its presence this year does not mean the aircraft is being actively competed for fighter requirements in the region. Rather, according to Jonas Hjelm, head of Saab’s aeronautics business, the type’s overdue return to the Airshow is testament to the importance of the event globally.

The Dubai Airshow is one of the last few really, really big international airshows,” Hjelm says. “The reason we took Gripen this year was that it is a gathering place for many of our existing customers, but also, we hope, for our potential future customers from all around the world.

“We don’t today foresee any customers in the region,” he continues, “but a lot of the potential customers we see around the world we know will attend the Dubai Airshow. So that’s the basic idea behind us going there, even though it is a long trip, and it’s not an easy one to do.”

The Gripen taking part in the flying display this week is a Swedish Air Force aircraft, flown and operated by Saab air and ground crews. Saab declines to give details of the route it took to get to Dubai.

The appearance comes toward the end of an important year in the Gripen program, with the highlight being the first flight, in June, of the Gripen E. The next-generation model is due to begin deliveries to its Swedish and Brazilian customers in 2019. Hjelm says the flight-test program has so far completed “13, 14” flights.

“So far, everything has followed the plan,” he says. “We’re even a little bit ahead. A couple of weeks ago we flew supersonic for the first time. We’re now getting some very good test data out of the program; we also have two more test aircraft that are now in production.”

As well as flight-testing the hardware, Saab has been focusing on development and testing of the Gripen E software. “We’re really taking a step for the Gripen E program when it comes to digitalization,” Hjelm says. “We want to make the Gripen E really future-proof. I won’t say that it’ll be like a smartphone, where you can just add and remove apps - but definitely we will take a huge step in making it much easier to upgrade in the future without touching the flight-critical parts.”

Nevertheless, it is the Gripen C that is flying at the Airshow this week, and despite progress with the E, Hjelm stresses the airplane’s continued relevance to the global market.

“There are a lot of countries, definitely in Europe, where Gripen C/D really is a strong contender,” he says, highlighting Slovakia, Croatia and Bulgaria. “In its current configuration, with the integration of the Meteor missile, the Gripen C/D is one of the most capable fighters you can actually acquire today. Yes, on the one hand, we are developing the next version: But we have a very, very good product that is actually for sale today, with a fairly short delivery time.”

—Angus Batey

Elettronica Introduces ADRIAN to Counter Drones

Elettronica, the Italian electronic warfare and cybersecurity specialist, is showcasing a range of new systems at the Airshow - including perhaps the most friendly sounding counter-drone system yet brought to market. Admittedly, in its long-form version, the company’s Anti Drone Interception Acquisition Neutralization system sounds like it will pull no punches: but it has been given the clubbable acronym ADRIAN.

ADRIAN has been designed to tackle the growing problem of small quadcopter-type aircraft being flown at public events, where they could represent a threat, and in proximity to other air traffic. The system combines a range of different sensors - including radar, electro-optical, acoustic, and radio-link interceptor - with a data-fusion identification system, and uses a jammer as its mechanism to defeat the target UAV.

The company is also demonstrating D-SINT, a cyber intelligence system involving both hardware and software tools designed to help commanders plan intelligence-gathering operations by analyzing unstructured data sets. This is a product of CY4Gate, Elettronica’s joint venture semantic with computing specialist Expert System.

Among the other technologies featured on Stand 956 will be the ELT/160 family of low-cost light radar warning receivers, the EDGE podded escort jammer and the Virgilius multiplatform EW architecture.

—AB

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Jet Aviation and joint venture partner the Al Mulla Business Group are opening a new FBO facility at the shared VIP terminal in Dubai South. The new facility will not replace Jet Aviation’s existing FBO at Dubai International Airport.

Representatives of Jet Aviation and the Al Mulla Business Group will host a grand opening ceremony for the FBO at the Dubai Airshow on Nov. 13.

“We are firmly committed to our customers in Dubai and the region, which our new Dubai South FBO demonstrates,” says Hardy Butschi, vice president and general manager of Jet Aviation’s MRO and FBO operations in Dubai. “We also continue operating our award-winning MRO and FBO facilities at Dubai International Airport and are extending our maintenance approvals to support line maintenance services through the Dubai South FBO.”

The new FBO is expected eventually to handle half of Jet’s Dubai traffic, which currently totals about 15,000 movements a year.

The Dubai South FBO will be a 600-sq.-meter facility with three customer lounges, a conference room, a crew rest and operations center, two prayer rooms and shower facilities, Jet Aviation says.

“We are very pleased to begin operations at Dubai South and look forward to welcoming customers to our new FBO where they can expect to receive the highest quality services in the comfort and style to which they are accustomed with Jet,” says Stefan Benz, senior vice president-regional operations for Europe, the Middle East, Africa and Asia.

Jet Aviation is exhibiting at the Dubai Airshow at Chalets A11-A12.

Separately, Jet Aviation received EN9110 certification for its maintenance facility in Dubai. In addition, to this certification, the facility got European Aviation Safety Agency, Federal Aviation Administration and United Arab Emirates General Civil Aviation Authority approvals for Airbus Corporate Jet Family maintenance work and EASA approval for Bombardier BD 700 series maintenance.

“We work very closely with both OEMs and authorizing agencies to ensure a broad array of quality services for multiple aircraft types is available to our customers,” Butschi says. “These new approvals extend the scope of our service offerings at both airports in Dubai across several registrations and attest to our commitment to Dubai and the region.”

—Madhu Unnikrishnan
It may be missing from the flying display at the Airshow this year, but the Eurofighter Typhoon remains a vital aircraft to the region’s militaries. Yet, as Saudi Arabia continues to stall on an additional order for the type and the UK defense ministry hopes Qatar’s recent statement of intent will become a firm order, it is Kuwait that will achieve a notable first, when Typhoons equipped with Leonardo’s Captor-E active electronically scanned array radar are delivered in 2019.

“The first nation that will fly operationally with Captor-E will certainly be the Kuwait Air Force,” says Paul Smith, a former RAF pilot who is now a capability manager on the program for BAE Systems. “But the radar is also a partner-nation deliverable, and has been underpinned by test by many of the partner nations.”

The first phase of flight tests of Captor-E concluded earlier this year, and Smith says everyone has been pleased with the outcomes.

“There’s been some really good results,” he says. “Given that it was very much the first software load, it has built on many different national and multinational e-scan programs that we’ve been supporting for some years. We’ve had really good long-range tracking results, and already some good Synthetic Aperture Radar imagery coming out of the radar.”

The initial test phase was conducted in the UK, with flights from BAE’s facility at Warton. Captor-E testing is about to ramp up, with an additional aircraft joining the program.

“We have currently one flight-test asset working out of the UK,” Smith says. “That’s going to be very shortly joined by the second Captor-E flight-test asset that will be working out of Manching in Germany. We’re going to start running a couple of programs in parallel.”

Smith stresses that Captor-E has been designed with a long service life in mind.

“What we’ve done with the Captor-E is to design as much potential into the hardware as possible,” he says. “We’ve got the main structure of the hardware right - it’s the largest antenna in any of our competitors, generating the most power, with the most flexibility of the wide-field-of-view antenna; but in terms of realizing extra capabilities, like communications, like passive use, electronic attack, all of the more complex surface-tracking techniques - we’ll iterate those as we go forward. This hardware has almost limitless potential in terms of further development.”

—Angus Batey

**Typhoon Completes Brimstone Flight-Test Program**

Fielding of MBDA’s Brimstone low-collateral, moving-target missile on the Typhoon moved closer this month when BAE Systems announced the nine-jettison, nine-firing flight-test program had been successfully completed. The program “covered a range of specific release scenarios, testing at various heights, speeds, levels of G-force and in different positions on the aircraft wing and in the launcher,” according to a company statement released Nov 2.

Integrating the Brimstone capability on the Typhoon forms part of Project Centurion, a UK program to transition capabilities from the Tornado to the Typhoon before the former aircraft goes out of service with the Royal Air Force in 2019. It is also part of the Typhoon’s P3E (Phase Three Enhancements) package, so will potentially be available to other Typhoon users.

RAF test pilots have been involved throughout the trials program, even conducting one of the firings.

The RAF’s test pilots are cleared to operate BAE-owned aircraft under a sharing and dual-operation scheme; one of the RAF operational test pilots has fired Brimstone.

The test asset flying Captor-E in the UK is a Tranche 1 Typhoon, even though the radar has been designed primarily for Tranche 3 aircraft. Smith says this proves integration on earlier aircraft is possible, though the complexity of the task - and the costs of installing the capability on aircraft that may be nearing their life limits - will mean it is unlikely to be an option many users will pursue.

“Tranche 3 is built for Captor-E, while Tranche 2 aircraft need some relatively minor changes to make them Captor-E-capable,” he says. “But you can fit it to Tranche 1s - it’s just more work.”

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**IPA 6, an instrumented Typhoon test aircraft, takes off from BAE Systems’ Warton plant in September carrying three Brimstone missiles.**
BAE’s Broadsword Chops Down Soldiers’ Burden

Lightening the load for the dismounted soldier has been a consuming preoccupation of armies and their suppliers across the globe for many years.

Numerous soldier-system modernization programs have been established to address various aspects of dismounted combat capability, and reducing the physical burden the individual soldier has to carry has been a fundamental objective of all of them.

Now, an innovative product from BAE Systems offers significant weight-reduction benefits while also tackling another concern: the increased requirement for power and data distribution between different electronic devices. The applicability of the solution extends beyond its potential military utility, with emergency services, police forces and other first responders likely to be interested in the system.

The product – called Broadsword Spine – has been made possible by the development of a fabric capable of conducting both data and power.

“It’s very thin, with no cables or wires in it at all,” says Ruth Nichols, BAE’s Broadsword program manager in BAE’s Military Air and Information division. “It’s purely the textile, and the way it’s woven, using a special electronic yarn, that then combines the connectivity between the different parts.”

The fabric itself was developed by Intelligent Textiles Ltd., a British SME founded by an electronics expert and a master weaver, who made the initial prototypes of the fabric on a hand loom. They partnered with BAE to create the Broadsword product, though ITL remains an independent entity and owns some of the intellectual property. So much like ordinary cloth does the e-textile look, feel and behave that the finished Broadsword product’s versatility and capability sometimes can get overlooked.

“When people see it, they think, ‘It’s a vest,’” Nichols says. “It’s not a vest – it’s a power- and data-management system.”

BAE has produced a stripped-down version of the system, which it refers to as “the naked spine.” This is intended as a visualization of the functional parts of the Broadsword family rather than an actual product in itself. Examining it helps explain how the conductive textile enables the Broadsword capability.

“The straps have the e-textile incorporated, with a layer of environmental protection for it,” Nichols says. “There are connection points [at the end of each strap: see photo] and at the back there is a lightweight power- and data-management unit. That’s about the size of a Kindle. It then does all the hard work for you, in terms of understanding how whatever you connect to the system communicates, and also managing the power to those devices.”

The “naked” spine is inserted into a number of different variants that BAE has produced – one of which incorporates a wearable tactical Wi-Fi hotspot – and can be retrofitted to extant systems. Because the data and power conductivity is a function of the textile rather than of cables woven through it, connectors can be placed anywhere on the finished garment, without introducing any areas of inflexibility or additional discomfort. Several different connector types have been integrated.

As well as reducing weight and bulk by removing all cabling associated with soldier-worn equipment such as radios or tablet computers, the power-distribution capability means that Broadsword users will no longer need to carry multiple different battery types to run multiple devices. The system, which weighs around a kilo, can power devices across the 5-36V range.

“You can plug any battery in to power it,” Nichols says, “and you’re not having to carry multiple battery types. Also, if you were going on a particularly long operation, you can use multiple batteries, plug them into the system at different ports, and the power-management system will automatically switch and swap them around. That means you’re getting to utilize the full life of every battery.”

Although full environmental qualification is ongoing, the system has been bought by an undisclosed number of customers for trials, with feedback expected by the end of the year. Nichols says the company is ready to produce vests “on a large scale,” and is willing to work with customers who may require the basic Spine capability to be inserted into already-bought equipment. BAE is also willing to partner with vest manufacturers to compete jointly for future requirements.

“We have been going direct to end users in different target markets to start off with,” she says, “but we are open to working with systems integrators. What we see is that the open architecture, the USB 2.0 capability, the power you can get through the system, all makes it so versatile, that people are just going to want it in their equipment plans.”

—Angus Batey
Human Space Travel Is Critical for the Future of Humanity

This is an exciting time for the global space sector, as we move toward greater advances in space exploration. Space travel is no longer just an ambition but a necessity for human advancement. Not only from the tangible benefits to our lives that it has brought, but also for what it can do to inspire and uplift mankind. Sharing our success, educating the masses and giving back is what we will do. Achieving the unthinkable is what we aim to do, and being part of a global space community will help us achieve that.

Tangible benefits
People still to this day question why we invest time, money and effort on space exploration. The reality is, we would not live the lives that we live today if it were not for advancements in the space sector. Mobile phone cameras, GPS navigation, water purification and CAT scans have all become integral parts of our lives and we have the space industry to thank for all of them.

In health and medicine, space technology has helped create light-emitting diodes (LEDs), infrared ear thermometers and artificial limbs. In terms of transportation, we have created highway safety tools, anti-icing systems, video enhancing and analysis systems for public safety. Firefighter gear was also first developed for space programs. The breathing apparatus worn by firefighters for protection from smoke inhalation injury is one of the clearest transfers of space technology to civil-use applications.

To make our lives easier and better, investing in space technology is must.

No longer an option
To protect our lives and our planet, advancing space exploration is critical.

Climate change and resource scarcity are posing ever greater challenges to the human race. Earth is under threat from global warming and diminishing natural resources. Space exploration and education can provide solutions to these dangers.

We need to study the atmosphere of Mars to learn why it became dry and learn how to protect our planet from the same happening. The 100-year Mars colony plan will teach about new methods of nutrition, energy conservation and efficient transportation of humans and materials. This will bring substantial benefits and lessons to our lives for generations to come.

A global space community
Over the past three and a half years since its inception, the UAE Space Agency has succeeded in setting the foundation for what has become the largest space sector in the region in terms of investments and capabilities. We have established relationships with major international agencies including more than 20 MoUs and agreements signed with global space experts. We now hold major international events such as the Global Space Congress and the Global Aerospace Summit in February 2018, where we will once again welcome the world’s leading space players to Abu Dhabi to discuss how we can shape the future of space together.

Our strategy is based around international collaboration, knowledge transfer and exchange of ideas. For that reason we love welcoming space experts to our schools in the UAE to help raise awareness on the importance of STEM education. This month we are hosting a visit from Apollo 15 Command Module Pilot, Col. Al Worden, who is in the UAE for the first time. The visit, organized with Kallman Worldwide Inc., will advocate for STEM subjects as the fundamental tools of the trade for future exploration on Earth and in space. We will continue to work with the global space community and international space leaders to support our ongoing educational campaigns.

Inspire and uplift
Aside from the physical, tangible and future benefits – the rational side of the space sector – there is also something emotional and inspiring about space exploration. The overwhelming opportunity that it can bring and the fact that we still do not know that much about what could be out there presents fascinating adventures and incredible curiosity.

Our ambitious space program is exciting young people, and stimulating interest in areas such as astrophysics and cosmology.

By making great advances, we will unite our planet under a common goal – to make new discoveries and teach humans about the bigger picture of our existence in this universe.
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