

Show/News

DAY 1

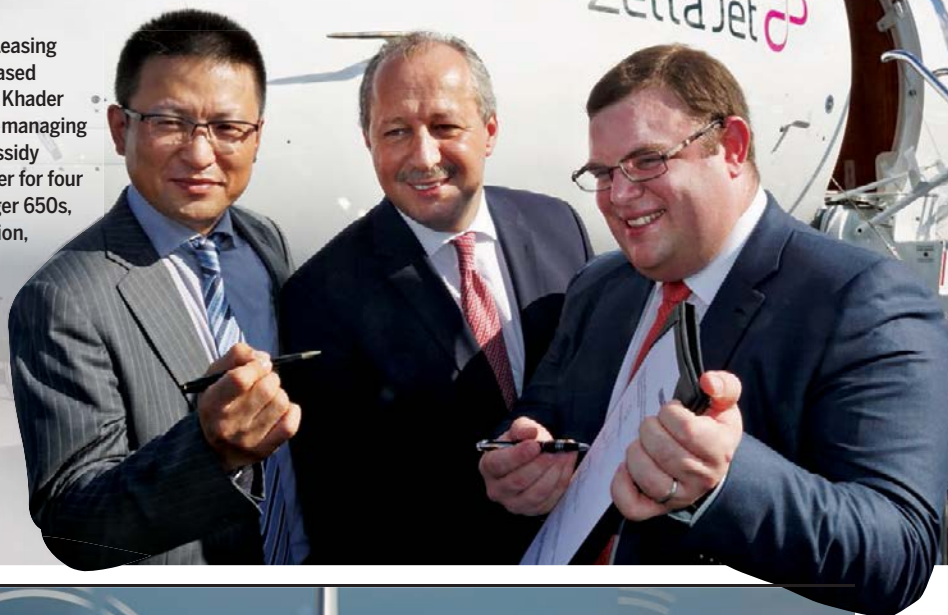
BUSINESS & COMMERCIAL AVIATION / AC-U-KWIK / AIR CHARTER GUIDE / AIRCRAFT BLUEBOOK



From B to Z Zetta Jet Fleet Grows

Minsheng Financial Leasing VP Qiao Kai, Dubai-based Bombardier sales VP Khader Mattar, and Zetta Jet managing director Geoffery Cassidy celebrate Zetta's order for four Bombardier Challenger 650s, valued at \$129.4 million, at Orlando Executive on Sunday.

A Zetta Jet Global 6000 is on show too. Watch for a Global 7000 program update at the static display today, as first flight is imminent.



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Avanti Advances

Piaggio is flying into calmer skies after weathering several years of severe storms. The firm has a new Italian factory and has delivered the first Avanti EVO twin-turboprop manufactured there. —See Page 14



Longer Legs for Longitude

Cessna has boosted the performance targets for its \$23.9 million, super-midsize Citation Longitude, on show here for the first time. The Longitude's range is now to be 3,500 nm (up from 3,400 nm) and full fuel payload is 1,600 lb. (an increase of 100 lb.).

Separately, Cessna, a division of Textron Aviation, has named key suppliers for its developmental Hemisphere — including Snecma for Silvercrest turbofan engines. —See Page 53



Booth 235

Design for the Future

UNIVERSAL AVIONICS SYSTEMS CORPORATION

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NBAA 2016 – November 1

Embraer Launches L650E

The latest Legacy costs \$5 million less than the 650 it replaces. **PAGE 4**

Deer Jet Takes UAS Stake

Move is indicative of the Chinese operator's global ambitions. **PAGE 6**

More Connectivity Choices

Inmarsat Jet ConneX boosts broadband – and is not alone. **PAGES 8 & 10**

FBOs Move Into Tomorrow

They are far more than just gas stations for airplanes. **PAGES 20 & 24**

A New Age of VVIP Cabins

Lufthansa Technik with Mercedes, as Airbus plays new Melody. **PAGES 26 & 28**

Delta Private Jets Taps Delta

Private jet operator seeks synergies with airline parent. **PAGE 32**

Business Aviation Forecasts

Growth is flat for now, and probably for a few more years. **PAGES 34-40**

We Fly the Gulfstream G500

The aircraft is put through its paces; read about the cabin, too. **PAGES 46-48**

Opinion: Embraer CEO

Business aviation must add one million passengers a year. **PAGE 70**

BCA Fast Five: BBJ's Boss

David Longridge, president of Boeing Business Jets. **PAGE 72**

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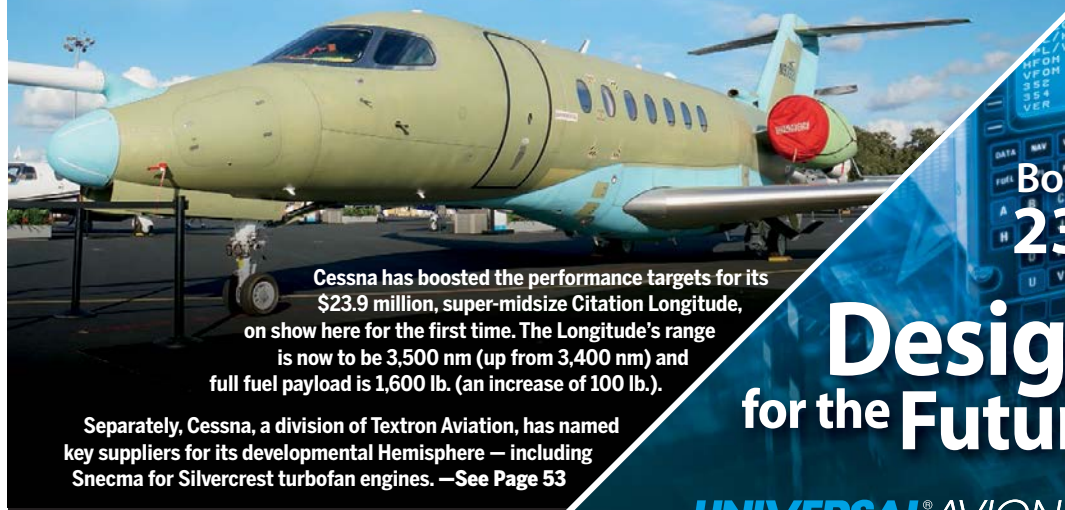
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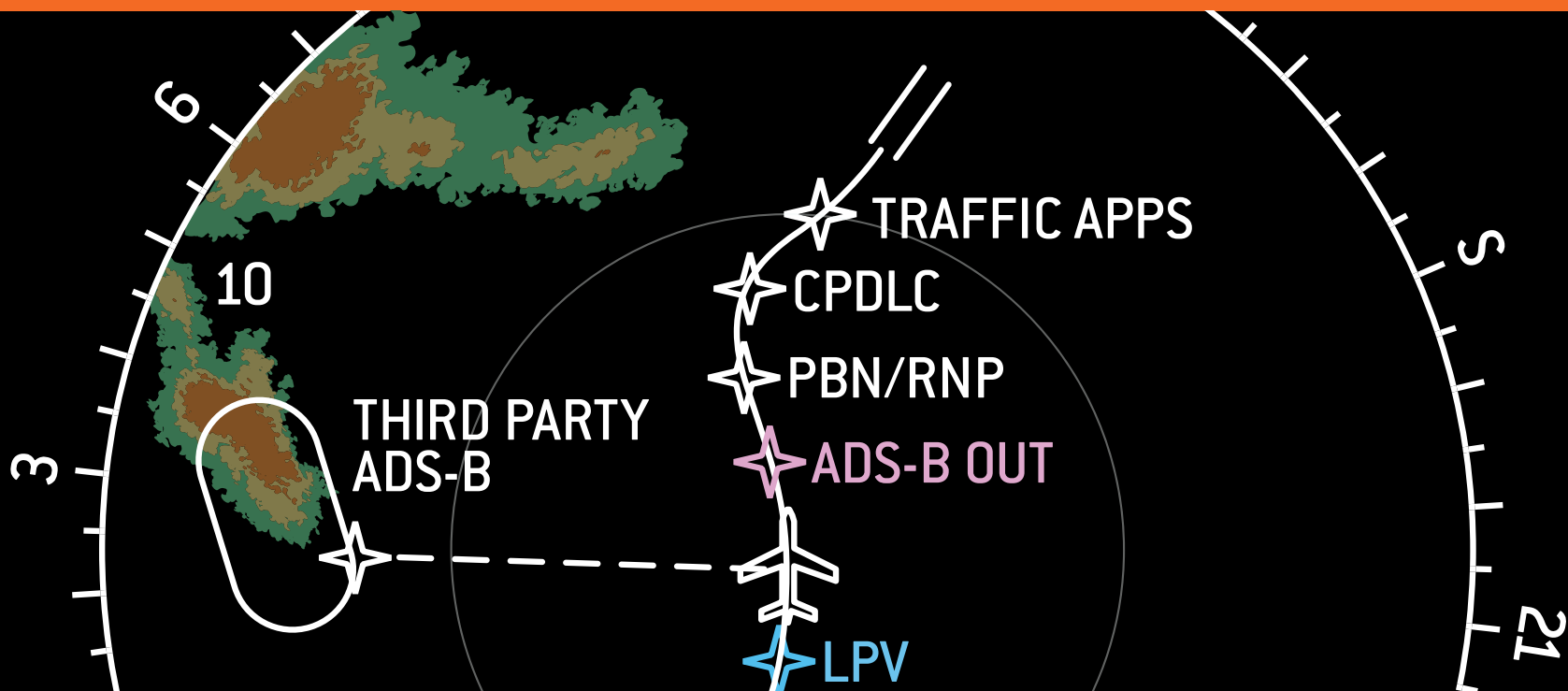
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Ed Bolen Outlines the Issues



ShowNews posed five questions to NBAA president and CEO Ed Bolen ahead of the NBAA convention here in Orlando. The group represents the business aviation industry and more than 11,000 companies.

At September's Safety Standdown, you called for renewed emphasis on the importance of safety and a focus on preflight checklists, an issue at the heart of a fatal 2014 Gulfstream GIV accident in Bedford, Massachusetts. The study analyzed 143,756 business aviation flights and found 15% of them began with only a partial flight control check. How do you combat that?

"Making people aware that complacency can be the enemy of success. By bringing forward data and by discussing challenges to our safety culture, we think we can promote an even stronger and enhanced safety culture. We have protocols and strategies, including preflight checklists, and making sure people are following them and that they understand why the tools exist and the importance of following them and the consequences if you don't."

What is the mood of the industry as you head into NBAA's annual conference and exhibition here in Orlando?

"It will be a positive event. We're coming off a regional forum in White Plains that drew

large crowds and had a very positive feel to it... For one example, flight hours are up, the MRO business is very strong. But new deliveries are not where the OEMs want them to be and the preowned market is probably not where we want it to be."

The conference is just a week before the presidential election. How will the election impact business aviation?

"Elections matter. It will undoubtedly have an impact. Whether that impact is positive or negative or more one or the other will depend a lot on who some of the people are who become part of the executive branch."

What is business aviation's biggest challenge right now?

"As part of FAA reauthorization, NBAA has been very actively engaged at making sure we protect our access to airports by not turning our air traffic control system over to the airlines. That will be an ongoing challenge for us as we have an FAA reauthorization debate in the new Congress.

What is the worry with air traffic control privatization?

Basically we would be giving control of an air traffic monopoly to the airlines, and we think they could operate it for their benefit and others' detriment.

NBAA Mourns Hoover Passing

NBAA mourns the passing of Bob Hoover, "an aviation legend and long-standing advocate for business aviation," who died last week at the age of 94.

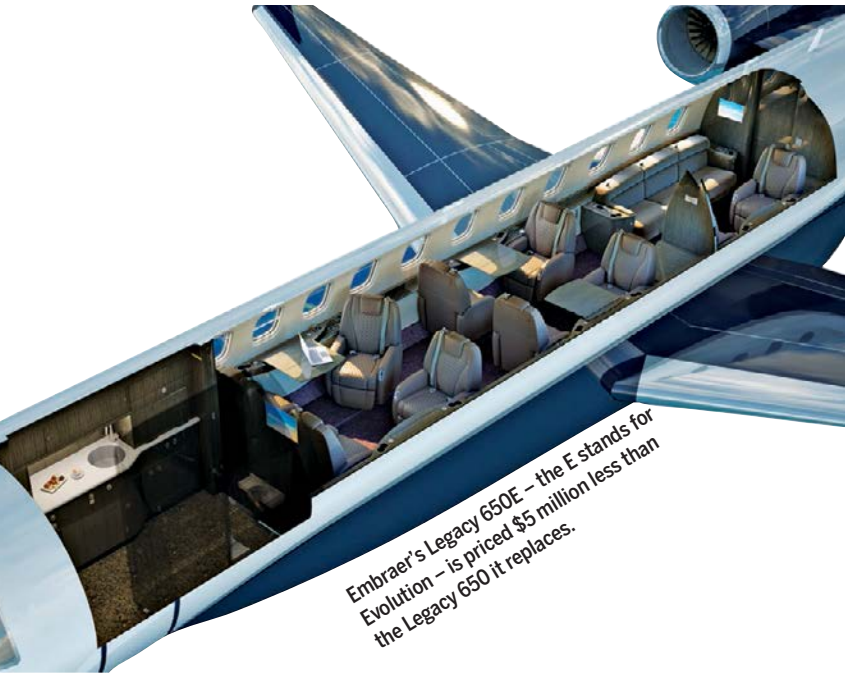
"Bob Hoover has been a source of awe and inspiration, who has provided a shared connection for generations of aviation enthusiasts," said NBAA president Ed Bolen. "He was a national treasure...respected

and beloved by history's most significant aviation figures, and the millions who saw his air show performances or heard him speak.

"The boldness and grace of Bob Hoover the pilot was matched only by the humility and graciousness of Bob Hoover the human being," Bolen said. "He was simply the best."

—SEE PAGE 68

Embraer Launches Legacy 650E



Embraer's Legacy 650E – the E stands for Evolution – is priced \$5 million less than the Legacy 650 it replaces.

Embraer Executive Jets has announced a new version of its Legacy 650 large business jet, the Legacy 650E.

The aircraft features automation, technology updates, restyled seats, a 10-year or 10,000-flight-hour warranty – and a lower price.

The new aircraft has been reduced to \$25.9 million from \$31 million. Entry into service is scheduled for 2017.

The aircraft replaces the Legacy 650, which itself replaced the 600. The 650E, which stands for Evolution, includes Primus Elite Advanced Features from Honeywell, with traffic collision avoidance system (TCAS), XM-ground-based weather information, moving map, synthetic vision system and autothrottles. It is compliant with all next-generation airspace mandates and requirements.

In addition, two iPads with mounting systems are available in the cockpit for easier updates and a range of tools to support the operation. The feature reduces cockpit workload.

The Legacy 650E carries up to 14 passengers in three cabin zones and provides internet connectivity and inflight entertainment. It has a range of 3,900 nm with four passengers.

The aircraft's warranty is 10 years or 10,000 flight hours for systems and components, which matches the warranty period of the airframe.

"This is the longest warranty in the industry," the company says.

—Molly McMillin

GE Reveals Printed-Engine Plan

The concept of 3-D printing metallic parts for aerospace applications in place of traditional forging and casting may be in its infancy, but General Electric says the coming revolution in additive manufacturing for aircraft engines is approaching quickly and on an unprecedented scale.

"It is the breakthrough we have been waiting for," says GE Additive VP Mohammad Ehiteshami. "In engineering we always do a trade between weight, cost and efficiency, but additive manufacturing gives you all three at the same time." Describing his first exposure to the new technology, he adds, "the first time I saw it I couldn't go home. I said, 'Oh my god, all these 30 years of anxiety over whether I want to make it heavier or stronger – it all can go away!'"

Revealing the extent of GE's additive manufacturing plan, GE Aviation Business VP Brad Mottier says, "We have spent about \$1 billion to develop this." Although printed parts are already in service on the CFM Leap engine, the first large-scale application will be on the company's clean-sheet-design Advanced Turboprop (ATP), which will power the all-new Cessna Denali single-engine turboprop aircraft. Additive parts will cut the ATP's weight by 5% while contributing a 1% improvement in specific fuel consumption.

To validate the parts, GE has also revealed that in a secretive Skunk Works-style project it is testing a 35%-additive manufactured demonstrator engine. Dubbed the "a-CT7," a reverse-engineered CT7-2E1 technology demonstrator was designed, built and tested in 18 months. The process reduced more than 900 conventionally made parts to just 16 additive manufactured parts.

The demonstrator was based on the venerable turboprop because the ATP engine architecture is derived from the CT7. "It includes three frames, eliminating hundreds of parts in each, and a simplified bill of materials. As we played with this, we realized we could reduce the weight and cost by 30%-35% and that we can also open the design space," Ehiteshami says.

As a result, the ATP, which will run for the first time by the end of 2017, will use more additive parts than any other production engine in aviation history, says GE. Some 855 normally made parts will be reduced to just 12 additive parts, including sumps, bearing housings, frames, exhaust case, combustor liner, heat exchangers and stationary flowpath components. Although production ATPs will be built in Prague, Czech Republic, GE has yet to decide where the parts will be printed.

—Guy Norris



GE Aviation says that 35% of the components for its new ATP engine will be produced via additive manufacturing.



GE Aviation showed this additively manufactured test C-sump for a turboprop engine here yesterday.

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Deer Jet to Acquire a Major Stake in UAS

Asia's leading business aviation company, Deer Jet, aims to expand its global footprint through the acquisition of a major stake in UAS International Trip Support.

The move by Beijing-based Deer Jet underscores its ambitions to become a player in the infrastructure that supports business aviation around the world. It already operates and manages a fleet of 90 aircraft flying to 820 airports across 180 countries, and has formed the largest FBO network in Asia-Pacific by developing facilities in Xian, Hangzhou, Shenzhen, Nanning, Guilin, Haikou, Sanya and Changsha, and through a strategic partnership with Hawker Pacific.

Since its establishment in 2000, UAS has become a global leader in the flight support industry, with four continental headquarters in Houston, Johannesburg, Hong Kong and Dubai, four regional offices in Nairobi, Lagos, Beijing and New Delhi, and a ground presence in 23 global destinations.

"We are very excited about this partnership," UAS co-owner, cofounder and executive president Mohammed Husary told *ShowNews*. "UAS

has very visionary and very ambitious plans for expansion, and we wanted a very strong partner who could accelerate them."

Added co-owner, cofounder and CEO Omar Hosari, "Deer Jet is a company that consis-



Left to right: Omar Hosari, UAS cofounder and CEO; Zhang Peng, Deer Jet chairman and CEO; and Mohammed Husary, UAS cofounder and executive president

tently demonstrates its ambition and dynamism, an outlook that mirrors UAS's strategic and organizational goals."

UAS has known Deer Jet for a long time as a customer, Husary said. "We saw they shared the same ambitious plans." Now it's a major shareholder in UAS, and the two companies

plan to work together strategically and in business to grow their footprints on a global scale. "This will be a very powerful relationship," Husary said.

Zhang Peng, chairman and CEO of Deer Jet, said, "This strategic agreement with UAS will strengthen our global operation capabilities, upgrade customer service experience and boost the international development of our company."

"In the future, Deer Jet will continue to expand its global footprint through a series of strategic acquisitions."

Deer Jet is a subsidiary of China's HNA Group, a *Fortune* 500 conglomerate engaged in tourism, aviation (it owns Hainan Airlines and Swiss airline catering firm Gategroup Holdings), capital investment and eco-technology.

Deer Jet's fleet includes the world's only VVIP BBJ 787 available for charter, and last December it was named the World's Leading Private Jet Charter by the World Travel Awards.

UAS and Deer Jet are both here at [Booth 2682](#).
—John Morris

Wheels Up: 1000s of Members, 100s of Aircraft

IN THE THREE years since Wheels Up began business, the private aviation membership company has taken delivery of 70 aircraft and membership has grown to 3,700.

In the next three to five years, says Wheels Up cofounder and CEO Kenny Dichter, membership is expected to grow to 9,000 or 10,000 - and the fleet to reach as many as 250.

In late 2017 or early 2018, Wheels Up plans to expand in Europe with the King Air.

The company operates a fleet of new King Air 350i turboprops and used Citation XLS+ aircraft and is open to adding other aircraft products to its fleet as well, Dichter said.

One aircraft it won't be adding is Textron Aviation's single-engine turboprop, the

Cessna Denali, he said. The King Air is the bread and butter of Wheels Up. The Denali will be a great airplane, he said, but it's not the right fit for Wheels Up.

Three years ago, Dichter announced the single largest order of King Airs in history when it placed an order for 105 King Air 350is, including 35 firm orders. Wheels Up will take delivery of the remainder of the order in the next 24 months and expects to order another 100 to 150 aircraft in the next three to five years.

The company has also started a flight desk to help members who need to fly when the King Air or Citation XLS won't fit their needs. It works with about 80 charter operators to help, offering flights on empty legs for a cost of \$295.
—Molly McMillin



Based on the heavier structure of a shortened MAX 8 rather than a stretch of the lighter MAX 7, the new BBJ variant will have a 76-in. longer cabin and a 7,000-nm range.

MAX 7 Is Boost for BBJ Family

Boeing Business Jets has unveiled a package of incentives to attract new customers and speed the resale of used BBJs.

The BBJ MAX 7 is "the aircraft we've been waiting to sell for a very long time," says Boeing BBJ president David Longridge. The new variant is based on the revised 737 MAX 7 model announced by Boeing at this summer's Farnborough Airshow and becomes available as a BBJ starting in 2022.



Wheels Up King Air 350 at Orlando Executive

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Satcom Direct Expands With Acquisition of TrueNorth

Marking another step in its growth from a provider of airborne connectivity into a comprehensive digital communications, flight data and avionics company, Satcom Direct will acquire TrueNorth Avionics, a Canadian company that offers the latest technology in cabin communications solutions.

From streaming TV in the cabin to connecting the airplane digitally to the flight department, Satcom Direct (Booth 2626) has set out to massage volumes of data into products that make flying easier, more comfortable, safer and more secure.

From its roots in 1997 as a provider of connectivity services, it has set itself apart in finding value-added in the data that flows between the aircraft and the ground. For example, flight departments can track their aircraft live in flight, and smart systems can warn pilots of weather ahead. Digital systems can fill in logbooks and remind mechanics of when maintenance is due.

In addition, SD offers secure communications and private networks that avoid the use of the internet, enabling the airplane to become a branch office in the sky, on the same side of the VPN firewall as a company's head office and complying with the same IT security requirements.

In TrueNorth (Booth 664), SD sees a significant expansion of its ability to provide advanced communications systems for business aviation aircraft. TrueNorth designs, develops and manufactures satcom solutions for business jets and

the Optelity family of cabin communications systems, delivers high-fidelity voice, fax and Wi-Fi solutions that enable intuitive connectivity for mobile devices.

"The acquisition of TrueNorth will broaden our avionics product portfolio and enable us to accelerate our efforts to bring fully integrated communications solutions to our customers," says Jim Jensen, founder and CEO of SD. The transaction is expected to close before year-end.

The acquisition follows Satcom Direct's obtainment just two months ago of AircraftLogs, a company with the latest technology in flight scheduling software and tax reporting tools for corporate and private flight departments. With the purchase of AircraftLogs, SD added scheduling and tax capabilities to its Integrated Flight Operations Management portfolio.

"Customers spoke and we listened. The addition of AircraftLogs to the SD family enables SD to provide an integrated flight department offering with enhanced capabilities, advanced technology and an unmatched level of expertise to revolutionize the aviation industry," said Jensen at the time.



The new SD LIVE allows streaming to multiple devices.

avionics OEMs. Its latest innovation

"The flight starts with the schedule and ends with tax reporting. AircraftLogs gives SD, and our SD Pro management platform, a total solution that corporate flight departments have been asking for, allowing them to always be in sync with their aircraft," accessing data on their own dashboards through a secure website, he said.

SD Pro, which launched in March, was designed to compile the critical information every flight department needs and display it in real time, anywhere in the world.

Latest developments at SD include:

- SD becoming the first business aviation service provider to offer SiriusXM satellite weather and radio to the business aviation industry, delivering to customers superior graphical weather services and myriad audio entertainment options while in flight.
- The launch, announced here at the show, of SD LIVE, a new platform for streaming television in flight worldwide. Passengers now can stream live television via their own personal electronic devices or the cabin entertainment system without adding additional hardware, STCs or antennas. Multiple devices can be used simultaneously to stream live TV, and no equipment installation is required.

Communications

That's where it all began. Now SD is at the leading edge of satellite connectivity, offering services through:

- Inmarsat, where SD, a premier Inmarsat Distribution Partner, was the first to provide and validate Jet ConneX, which uses the Ka-band Global Xpress satellite constellation. SD proprietary solutions enhance the Ka-band and optimize SwiftBroadband-Safety, for which it will be a global distributor partner.
- SmartSky Networks, where SD is the Exclusive Service Provider.
- ViaSat, where SD is a preferred reseller.
- Panasonic. SD will be the first reseller for Panasonic's new Ku-band business aviation service.

Avionics Hardware

SD has become a hardware manufacturer with its SD Router and smaller SD Wi-Fi Hubs, for which the FAA has awarded PMA approval, establishing SD as an approved manufacturer of avionics. These devices are instrumental in unlocking the full capability of SD FlightLogs and SD Pro data services. SD took the step of developing its own routers, it says, as it wanted better, more secure control of the pipeline through which all the data passes.

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Inmarsat Sparks the Great Band Rush

Inmarsat's fifth-generation satellites, with their Ka band Global Xpress capabilities, offer near worldwide Jet ConneX broadband satcom inflight and ground coverage for business aircraft operators. Partner firms have developed STCs for "multiple aircraft manufacturers and aftermarket installers."

By using higher-speed Ka band frequencies with considerably more bandwidth, Jet ConneX enables web browsing, live television streaming, file downloads "and more," Inmarsat says, "with seamless global coverage that ensures a consistent service on flight routes worldwide."

It is "a transformative connectivity service for the business aviation industry," Inmarsat says.

Not so fast, says Viasat CEO Mark Dankberg. His California company is investing \$1.4 billion during the next five years to provide less-expensive Ka broadband satcom connectivity for business aviation operators, along with commercial airline, government mobile customers and consumers.

Viasat (Booth 4855) has been providing airline customers with Ka band connectivity over the U.S., offering each passenger up to 12 mbps internet service. Partner Eutelsat is providing Ka band satcom service over Europe. Viasat's Ka band equipment for business aircraft is just now becoming available.

Viasat uses different Ka band aircraft hardware and different satcom digital communications protocols from Inmarsat's Jet ConneX, so business aircraft operators won't be able to switch between the two competing Ka band service providers without making major and expensive modifications to their aircraft.

Viasat's three-vehicle Viasat-3 constellation, providing the same near-worldwide coverage as Inmarsat-5, won't be in service until 2020. Viasat-3 promises to offer 3-terabit-per-second total capacity - several times that of Inmarsat's Global Xpress.

Even so, Inmarsat is off to a strong head start. "Interest from the market has been overwhelming," said Inmarsat business and general aviation VP Kurt Weidemeyer.

Inmarsat (Booth 1007) named Honeywell (Booth 2200) as the only authorized manufacturer of hardware to access the Jet ConneX service. Honeywell offers JetWave equipment, including modem and router hardware, with tail-mounted MCS-8000 antenna and controller for business aircraft.

"Honeywell has been attracting strong market demand since even before the service's commercial service introduction was achieved," said Honeywell Aerospace marketing and product management VP Carl Esposito.

"There are eight aircraft models that have been certified for JetWave installation and over 20 certifications in progress - with hardware delivering now," he said.

Prominent among them is the Falcon 7X, using the trijet's existing radome, with even faster connectivity speeds promised when a new Ka-radome becomes available. The upgrade to JetWave requires just a simple installation, Honeywell says, and can be booked today.

Gulfstream (Booth 250) was quick to note that Jet ConneX uses Inmarsat's three-satellite I-5 network, and will be available to G650ER, G650, G550 and G450 operators as a completions option and retrofit beginning in 2017.

Rockwell Collins (Booth 3594) reported delivery of a Bombardier Global 6000 to Singapore-based Zetta Jet - the first of type with Inmarsat's Jet ConneX. Rockwell Collins is the service provider and "a value-added reseller" of the Inmarsat product as part of its ARINCDirect offering.

Lufthansa Technik (Booth 2632) said it's begun installations for the Lufthansa Group's entire Airbus A320 aircraft family - a total of about 300 jets - with the Airbus A330 and Boeing



Passengers on the Falcon 7X and other aircraft equipped with the Inmarsat-Honeywell Ka band system will be able to have their way with all of their devices.

737 to follow over the short term.

Satcom Direct (Booth 2626) is an Inmarsat distributor.

"A rigorous testing process for Jet ConneX was successfully completed over the past eight months, with the support of our customers, distribution partners and Honeywell," said Inmarsat's Weidemeyer.

"We logged thousands of flight hours, flew to every continent in the world and ran hundreds of tests to put the system under stresses that are well beyond that expected in normal business passenger use," he said, "all to ensure we have the most reliable high-speed broadband for private jet flights in the world."

Jet ConneX customers will have high-speed connectivity over 100% of major aircraft routes and every island globally, off major routes, Inmarsat says. "Customers will have sufficient speed to stream Netflix, while sending emails and text messages" - all simultaneously while flying at 500 mph.

Jet ConneX for business aviation provides data plans and speeds to accommodate the needs of multiple users, all at the same time, in the same aircraft, the company says.

Some business aircraft operators, though, are holding off on making a decision on Ka band equipment. They're structurally and electrically provisioning their aircraft for Ka band avionics, but they're not making any hasty commitments. Some are planning first to install Viasat's Ku band satcom equipment, then upgrading to Ka band when Viasat-3 is up and operational.

With such strong competition from Inmarsat and Viasat, business aircraft operators likely will be the big winners.

—Fred George



The enabler: Honeywell's JetWave brand tail-mounted Ka band antenna for business airplanes. A larger variant is available for transport aircraft.



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Embraer Flies First U.S.-Assembled Legacy 450

The first Embraer Legacy 450 mid-light business jet assembled in the Brazilian manufacturer's Melbourne, Florida, facility made its first flight on Oct. 4.

"We are very satisfied to have successfully completed this important milestone and we are on track to deliver this aircraft in December," said Marco Tulio Pellegrini, president and CEO, Embraer Executive Jets, adding that the Legacy 450 "performed as expected and all flight test procedures were successfully completed."

The Legacy 450 is the third business jet model to be assembled at the company's recently

expanded Melbourne facility, where the midsize Legacy 500 will also be assembled, beginning in 2017. The Legacy 450 has been in production at Embraer's São José dos Campos, Brazil, headquarters since August 2015, where the Legacy 500 entered production one year earlier. Embraer plans to keep dual Legacy 450/500 production lines in both countries for the foreseeable future. Delivery prices to customers are the same at each, it added.

Plans call for Melbourne to produce one Legacy 450/500 every three months.

Embraer is at [Booth 4250 and the Static Display](#).



The first U.S.-made Embraer Legacy 450 took to the skies on Oct. 4.

Embraer Legacy 450, 500 HUD Earns Certification



The three cameras for E2VS fit snugly in the nose of the Legacy 500.

Embraer's head-up display and enhanced vision system for the Legacy 450 and Legacy 500 business jets have earned certification by the FAA, EASA

and Brazil's Civil Aviation Authority.

Embraer combined the two systems into its Embraer Enhanced Vision System, or E2VS, to raise situational awareness in all phases of flight and enable more missions to be safely completed in inclement weather and low visibility, the company said.

"Combined with these aircraft's full fly-by-wire technology, the Embraer Enhanced Vision System delivers innovation previously only available in a much larger business aircraft, at a fraction of the price," said Marco Tulio Pellegrini, Embraer Executive Jets president and CEO.

Embraer's E2VS includes a head-up display that incorporates Rockwell Collins' Head-up Guidance System and its EVS-3000 enhanced vision system. Three small, uncooled cameras working on different wavelengths allow the system to clearly see LED runway and airport lighting.

Deliveries of the first aircraft with the system (it is an option for both systems combined at \$550,000) are imminent. More than half the customers have chosen to install it, and it can be retrofitted to those already in service.

Embraer Reports Improvements Across Its Range of Business Jets

Embraer has the broadest range of business jets of any manufacturer, from the \$4.495 million Phenom 100 light jet to the \$53 million airliner-sized Lineage 1000E—and they're all here at NBAA.

Latest developments, by model, include:

Phenom 100: An evolution, the 100 EV, was announced in July, featuring a new avionics suite with the Prodigy Touch flight deck, based on the Garmin G3000, and modified Pratt & Whitney Canada PW617F1-E engines, bringing more speed with superior hot-and-high performance. It will enter the market in the first half of 2017. Some 340 Phenom 100s are in operation worldwide.

Phenom 300: New cabin improvements including a bigger table flush with the side ledge, wood side ledges instead of leather, and an option for a mirror in the lavatory. 350+ are in service worldwide.

Legacy 450: Enhanced vision E2VS with a head-up display has just been certified for the 450 and Legacy 500.

Legacy 500: In May it won certification for the steep approach at London City Airport. Now available with the E2VS enhanced vision and HUD. More than 30 aircraft are in service.

Legacy 600/650: Some 280 have been delivered. Dispatch reliability is running at 99.5%, thanks to its airliner heritage. And in September the Embraer 135/145 regional jet family from which it is derived reached 26 million flight hours, 21 million cycles.

Lineage 1000E: More than 20 have been delivered worldwide, with the majority operating out of the Middle East. But the aircraft is suddenly gaining traction in the U.S., where Embraer took orders for five in 2015 (three of them to MGM Resorts). "It has a 20-25% share in the ultra-large segment," says Embraer, partly because it is 13-19% cheaper to operate than a BBJ or ACJ. No decision has yet been made on whether to launch an E2 version based on Embraer's re-engined EMB 190-E2 family of airliners.



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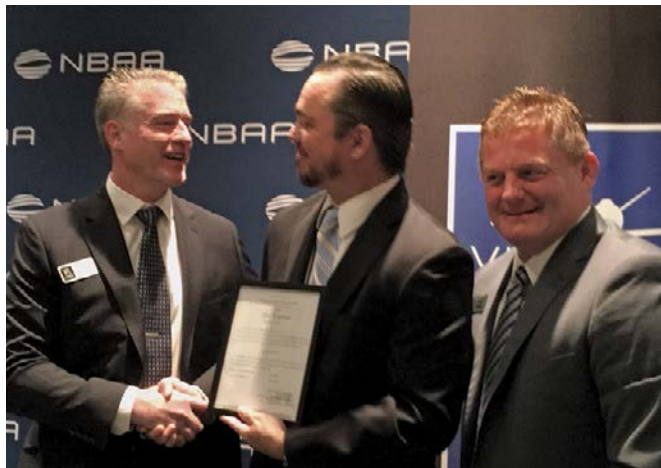


Cirrus Vision Jet Is Certified

The FAA officially awarded Cirrus Aircraft with an FAR Part 23 Type Certificate for its \$1.96 million, 300-kt. single-engine turboprop SF50 Vision Jet here yesterday. The approval comes after an intensive four-year development program. Vision Jet is powered by a 1,840-lb.-thrust Williams International FJ33-5A and features a Perspective Touch flight deck powered by Garmin G3000 avionics.

“We’re revolutionizing value in general aviation,” says Pat Waddick, Cirrus Aircraft’s president for innovation and operations. “You’ll be comfortable in the airplane; you’ll feel in control.” Vision Jet is designed as part of the Cirrus family, a comfortable step up for owner-pilots of Cirrus SR20/SR22 single-engine piston aircraft.

Ten aircraft are now in various stages of production or completion. First customer delivery is slated for December, and initial production ramp for 2017 is one aircraft per



(From left) Cirrus Aircraft innovation and operations president Pat Waddick and customer experience president Todd Simmons accept the FAA Type Certificate for the SF50 Vision Jet from John Kolin, manager of the FAA’s Orlando manufacturing inspection district office.

week. Waddick says the firm has nearly 600 orders for the Vision Jet, so he wants to ramp up production to at least two per week as soon as practical to fulfill demand. But he’s making no predictions for when increased production will be possible.

The seven-seat aircraft will be able to fly one pilot and four passengers 750+ nm at an average speed of 250 KTAS, based on amended data from *Business & Commercial Aviation’s* May 2016 *Purchase Planning Handbook*. With full fuel, one pilot and one passenger, the aircraft can fly 1,165 nm at an average speed of 248 KTAS and land with 100-nm NBAA IFR reserves. It’s certified for operations up to 28,000 ft.

—Fred George



Cirrus Vision Jet SF50 at Orlando Executive.

First Avanti EVO Delivered From New Piaggio Plant

Piaggio Aero Industries is flying into calmer skies after weathering several years of severe storms. A year after moving production from its aging plant at Italy’s Genoa Cristoforo Colombo Airport to its clean-sheet design factory at Clemente Panero International Airport Villanova d’Albenga, about 56 mi. southwest, it delivered the first Avanti EVO twin turboprop manufactured at the new \$150 million facility.

Piaggio’s new CEO, Renato Vaghi, who took over from Carlo Logli in late August, personally

handed over the aircraft to Sheikh Khalifa Al Saif, CEO and founder of Al Saif Group in Riyadh, Saudi Arabia. The aircraft will be used as a demonstrator and for on-demand air charter. Al Saif Group also has an option to buy a second EVO configured as a medevac aircraft. The Al Saif Aviation business enterprise of the group markets the aircraft in Bahrain, Iraq, Kuwait, Oman, Qatar and Saudi Arabia.

Al Saif Group supports the aircraft with pilot training and maintenance services through a

factory-authorized service center in Saudi Arabia.

Since introducing the EVO in 2014, Piaggio has delivered only five production aircraft, one-sixth the original production plan. But this niche player has plenty to offer. With a top speed of 402 KTAS and drag-reducing modifications that increase range by 50 nm, it remains the world’s fastest turboprop and the most fuel-efficient twin-turbine aircraft. The EVO also has recontoured engine nacelles,

redesigned exhaust pipes and new Hartzell scimitar-shaped, five-blade props that slash noise by 5 dBA, or 68%. Cabin sound levels also drop 1 dBA.

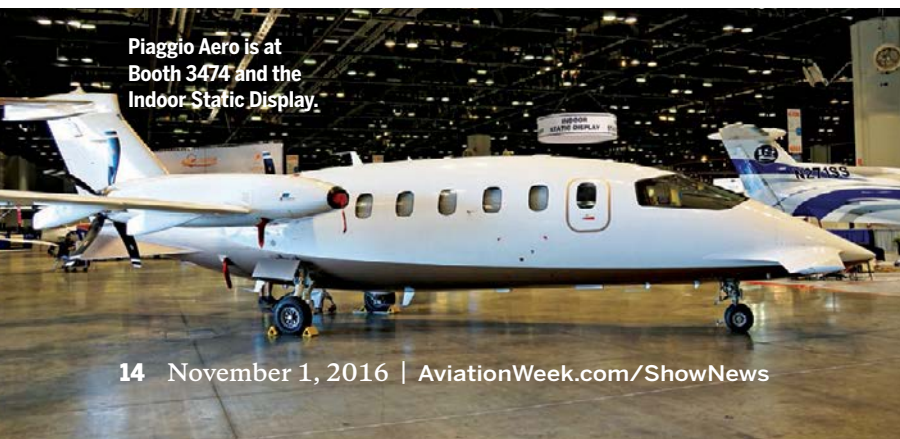
The aircraft’s 9.1-psi pressurization system provides a 6,600-ft. cabin altitude at the aircraft’s



Piaggio CEO Renato Vaghi

41,000-ft. maximum cruise altitude. An optional 390-lb.-capacity auxiliary fuel tank boosts range from 1,470 to 1,720 nm. Look for a comprehensive pilot report in an upcoming issue of *Business & Commercial Aviation*.

—Fred George



Piaggio Aero is at Booth 3474 and the Indoor Static Display.

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Rockwell Bid for B/E Signals Exasperation on Business Jet Market

Rockwell Collins will continue to eye the business jet market after it acquires cabin interiors leader B/E Aerospace for \$8.3 billion in a deal announced two weeks ago, but if executives' comments and financial analysts' reactions to the proposal are a good indication, the deal actually helps buffer continued softness there.

Rockwell alone expects its combined bizjet and regional business to decline in the "high-single-digit" range before accounting for B/E's revenue from the sector, Rockwell Chairman, CEO and President Kelly Ortberg said in a teleconference Oct. 24. More than once he cited "challenging business jet market conditions."



Kelly Ortberg

While analysts had questions about the proposal – some calling it pricy and others wondering aloud why high-technology Rockwell was interested in lower-tech cabin interiors – many saw it also speaking volumes about bizjets.

"For the past [roughly] seven years, persistent weakness in defense and business aviation markets has consistently weighed on Rockwell's top-line and bottom-line profile, and as a result the company saw a strategic value in pivoting toward civil air transport," Barclays analysts said.

Wells Fargo analysts concurred. "We see the strategic value in the transaction in reducing the business jet original equipment exposure, increasing the aftermarket exposure, and positioning for the digital airplane."

"The deal indicates to us that Rockwell is done waiting around for business jets to stabilize/improve," said UBS Securities analysts.

Still, Rockwell (Booth 3594) executives said that the business aviation aftermarket will be a particular focus for the combined company, as it can offer complementary interiors products for aircraft undergoing avionics modification, upgrades or engine overhauls. Rockwell plans to leverage its dealer network to upsell interior products. As it stands, B/E (Booth 242) does not have such a network.

—Michael Bruno

Garmin and Jeppesen Expand Garmin Pilot

Garmin International (Booth 1900) and Jeppesen (Booth 1596) have announced an agreement to integrate Jeppesen terminal charts with the iOS-based Garmin Pilot app. Jeppesen terminal charts can now be viewed within Garmin Pilot from the charts page and in split-screen mode alongside the moving map. Geo-referenced Jeppesen charts can also be overlaid on the moving map for seamless navigation. Customers with a Garmin Pilot IFR Premium subscription and a Jeppesen data subscription may access Jeppesen charts within the application at no additional charge. An electronic Jeppesen chart subscription for Garmin Pilot is required to access Jeppesen terminal charts through the app.



Jet Aviation Introduces Charters to Cuba

Jet Aviation Flight Services has been granted approval to begin charter services to and from Cuba. The U.S. government recently designated 19 airports, including Chicago, Dallas, Los Angeles, Miami and Palm Beach, to offer direct flights to Havana. Under its FAR Part 135 air carrier certificate, Jet Aviation Flight Services (Booth 265) has also obtained FAA authorization for travel to Cuba. "We strive to anticipate the needs of our customers and this approval strengthens our ability to provide them with the highest level of service," said Don Haloburdo, VP and general manager.

Second FSI Latitude Sim Qualifies to Level D



FlightSafety International's second Cessna Citation Latitude simulator has been qualified to Level D by the FAA. The new FS1000 simulator is located at FlightSafety's Learning Center in Columbus, Ohio. The first simulator for the aircraft entered service in Wichita last year. The Citation Latitude simulator is equipped with FlightSafety's VITAL 1100 visual system and new Instructor Operating Station. The IOS is designed to provide instructors with a highly productive and efficient workspace. It features an intuitive interface, scalable graphics and large multi-touch displays. FlightSafety is at Booth 2679.

Collins' FANS 1/A Certified for Falcons

Rockwell Collins' Future Airspace Navigation System (FANS) 1/A solution for Dassault Falcon 2000s and Falcon 2000EXs that have been upgraded with Pro Line 21 avionics is now certified under an STC held by manufacturer Dassault Falcon Jet. The FANS 1/A solution is available from authorized Rockwell Collins dealers as an option with the Pro Line 4 to Pro Line 21 upgrade. With FANS 1/A, Falcon 2000 and 2000EX operators will comply with regulations for operating over the North Atlantic and be able to access preferred wind-efficient transatlantic routes to save time and fuel. Booth 3594.

Elbit Skylens Wearable HUD on ATR-72/42

Elbit Systems' (Booth 1653) Skylens has begun flights in final configuration mode onboard ATR-72/42 series aircraft. ATR is the launch customer for Skylens, which replaces the traditional head-up display. The system also can be offered as a retrofit to ATR-600 aircraft, as well as to additional potential business aviation aftermarket customers. Skylens displays high-resolution information, images and video on a high-transparency visor, providing pilots with cutting-edge capabilities. Equipped with the ClearVision EVS and Skylens, aircraft are capable of takeoff and landing in low-visibility conditions and in locations that non-EVS-equipped aircraft previously could not approach.



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Dassault Delivers First Falcon 8X

Dassault Aviation on Oct. 5 delivered the first Falcon 8X trijet, a stretched, longer-range version of the Falcon 7X designed to offer more flexibility in long-haul operations.

The delivery was right on schedule and marks a new source of revenue for Dassault. In contrast, the Falcon 5X twinjet program is still bogged down by a redesign on the Safran Silvercrest engine.

First to operate the Falcon 8X is executive air charterer Amjet. The Athens, Greece-based company already operates several Falcon models, including the 7X. The handover took place at Dassault's Bordeaux-Mérignac factory, where Amjet president Abakar Manany was at the controls for the delivery flight.

Production has ramped up swiftly. Eleven Falcon 8Xs are at the final assembly stage in Mérignac. Another 16 are being outfitted and painted at Dassault's completions facility in Little Rock, Arkansas.

Key features of the manufacturer's new flagship are its 6,450-nm range and 42.6-ft.-long cabin. The greater range (500 nm more than the Falcon 7X) enables non-stop flights from Los Angeles to Beijing, Paris to Singapore, and Hong Kong to Johannesburg. Making additional city pairs available from Asia has been a focus in

a bid to sell more Falcons in the region.

The cabin is 3.5 ft. longer than that of the Falcon 7X. What looks like a minor increase opens many more interior layout possibilities. The owner can now have a comfortable crew rest area, a three-lounge seating section and a shower - no longer having to relinquish one of the three. Dassault engineers thus believe they are meeting the needs expressed by some operators of the Falcon 7X, which has been in service for almost 10 years. In turn, a majority of Falcon 8X customers are upgrading from a Falcon 900 or Falcon 7X.

A lighter wing offsets the weight added from the stretched fuselage. Also designed for a better lift-to-drag ratio, the wing enables a modest 106-kt. landing speed. The Falcon 8X thus retains the Falcon 7X's short-field performance.

Pratt & Whitney Canada has developed a new version of the PW307 engine, the PW307D, providing 6,725 lb. thrust - 5% more than the 7X's PW307A.

A Falcon 8X full-flight simulator was inaugurated in mid-September at Paris-Le Bourget



The first Dassault Falcon 8X trijet was delivered to Athens-based Amjet on Oct. 5.

FalconEye Combined Vision System Approved

Dassault Aviation's FalconEye Combined Vision System has been certified by EASA and the FAA on the Falcon 2000S and LXS. It will also be approved for the Falcon 8X.

FalconEye is the first HUD to blend synthetic, database-driven terrain mapping and thermal and low-light camera images into a single view, providing flight crews with a high level of situational awareness in all conditions by day or night. The system is equipped with a fourth-generation multi-sensor camera that generates very-high-definition images comparable to those on a military FLIR. In synthetic vision system (SVS) mode, the camera displays a 30-by-40-



Dassault's FalconEye HUD blends database-driven terrain and thermal and low-light camera images into a single view.

deg. field of view, ensuring full coverage of the viewing area with no tunnel vision effects. Its modular architecture will make it easy to add on future capabilities such as enhanced vision system (EVS) landings.

On the 8X, FalconEye will eventually be qualified for use on single or dual HUD configurations. By providing the same information and

views heads-up to both the flying and non-flying pilot, the dual HUD system will also improve crew coordination and facilitate pilot training. Falcon 8X dual HUD approval is expected in 2018. More than 90% of Falcon 8X customers have selected FalconEye. [Booth 2647](#).



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FBO Consolidation Does Not Mean Ruination

The so-called “Wal-Marting” of FBOs, demonstrated by the \$2.1 billion acquisition of Landmark Aviation by BBA Aviation, parent of Signature Flight Services, won’t threaten the viability of small chains and healthy independent FBOs, believes the Aviation Business Strategies Group, which tracks the sector.

“The FBO landscape has not changed appreciably with the recent mergers of FBOs,” says ABSG principal Ron Jackson. “There is one less chain. But there are still a great number of viable FBOs that compete in lesser markets.”

“Will there be more mergers? Of course,” he adds. “But I don’t see consolidation as a big [competitive] threat. I don’t see any reports of price gouging out there.”

ABSG Principal John Enticknap says there remain around 3,000 FBOs in the U.S. and Canada. These include 1,700 FBOs operating on runways at least 4,000 ft. long and pumping 500,000 gal. or more of fuel annually.

The percentage of chain-operated FBOs versus the total marketplace “is still around 17% of the total viable FBOs,” says

Enticknap. With the acquisition of Landmark, Signature now offers support services at more than 189 locations, of which 133 are in North America.

The ABSG executives concede that FBO competition at larger international airports, where FBO direct operating costs are higher, could be curtailed somewhat by consolidation.

ABSG reported two years ago that there were 300+ FBOs that were part of various size FBO chains in the U.S. and Canada. Today, those numbers haven’t changed dramatically, says ABSG.

For those U.S. FBOs, which continue to rely on fuel sales to remain competitive, there is good news: More than half them reported increased fuel sales in 2015 compared to 2014.

Citing its Annual FBO Industry Fuel Sales Survey, ABSG says 54% of respondents reported an increase of 1% to 4%. Of those, 15% reported an increase of 5% to 8%, while 16% said they showed more than an 8% increase. ABSG says FBO fuel sales have steadily improved over the past three years.

“This is the first time since we started the survey that more than 50% of the respondents experienced an increase in fuel sales over the previous year,” says Enticknap. “Although the benchmark numbers show a positive trend, nearly 30% of the FBOs participating in our recent survey had a decrease in sales. This is still a fractured marketplace that is showing some positive signs of recovery.”

According to Jackson, the outlook for 2016 and beyond “remains optimistic” with 58% of FBOs predicting an increase in fuel sales over the 2015 results.

AirNav.com reported average Jet-A and avgas prices at 3,676 FBOs nationwide were \$4.08 and \$4.68 per gallon, respectively, as of late September 2016.

FBOs pumped out more fuel in 2015 and part of 2016. Yet more customers are parking at FBOs and not filling up because of increased tankering.

One fuel-related area ABSG is tracking is the potential competitive threat to FBOs posed by fuel companies getting into the FBO business, says Jackson. AvFuel, an independent provider of aviation fuel and services, is one such company that has quietly penetrated the FBO business through its AvFlight network of full-service



ABSG principal Ron Jackson



ABSG principal John Enticknap

FBOs operating throughout North America and Europe. ABSG clients have expressed concern about the competitive threat that fuel companies pose to independent FBOs. Attempts to reach AvFlight for comment were unsuccessful.

Another concern: Wholesale fuel distributors are beginning to add credit card processing fees on these fuel sales, which is just one more fee that FBOs must absorb.

An increase in current monthly jet operations is likely to improve revenues for most FBOs throughout North America. According to the FAA, U.S. business jet operations peaked in October 2007 at 407,000 per month before the recession cut operations to 266,000 per month during the financial crisis. At present, monthly jet operations are around 359,000.

“That is just 12% shy of the [business aircraft] market peak and a full one-third higher than the market trough,” says aviation industry analyst Brian Foley, president of aviation consultancy Brian Foley Associates.

Foley described the peak year of 2008 as “unsustainable” and the present stage as “nominal.”

“The industry pays too much attention to the barrage of monthly reports on U.S. business jet activity since we’ve been relatively stabilized at the new normal for some time now,” says Foley. “This is the activity level that FBOs have dialed their current business models into. Those

CONTINUED ON PAGE 22



Atlantic Aviation FBO at Houston Hobby

Consolidation? Nothing New, Says Atlantic

Lou Pepper, CEO of Atlantic Aviation, gives an historical perspective to the present consolidation craze.

“We had consolidation crazes before,” says Pepper. “2002 to 2008 was similar. I did a lot consolidation then, when I started Atlantic. “Then it stopped due to the recession. Then between 2010 and 2011 consolidation started again.”

And presently? “I think consolidation is more measured this time, not withstanding the big merger between Signature and Landmark,” he says.

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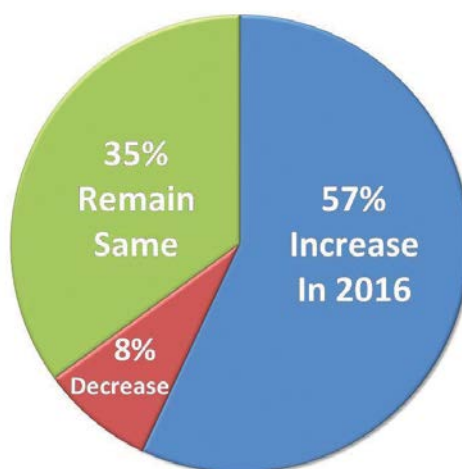
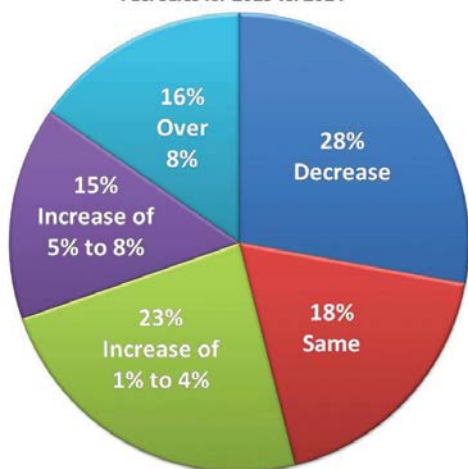


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Annual FBO Fuel Sales Survey
Fuel Sales for 2015 vs. 2014



Source: AVIATION BUSINESS STRATEGIES GROUP

"This is the first time since we started the survey that more than 50% of the respondents experienced an increase in fuel sales over the previous year," says ABSG principal John Enticknap.

and small-chain FBOs are looking to safety services as an internal cost-saving measure "and a way to differentiate an FBO from the competition," says Enticknap.

Adopting International Standards for Business Aircraft Handling (IS-BAH) could aid these FBOs financially because it would demonstrate to international customers particularly "a commitment to a high level of international safety standards," states Jackson.

In addition, international aircraft operators are more inclined to patronize FBOs adhering to IS-BAH standards. Which is good for the bottom line.

"FBOs seeking to attract new customers should develop a two-fold marketing platform that includes investments in building a strong customer service experience and a higher level of safety risk management," says Jackson. "Developing a safety management system with a potential goal to become IS-BAH registered is a qualitative measure through which to demonstrate a commitment to a higher level of safety standards."

He continued: "Aircraft operators, particularly those that fly internationally, will be seeking the services of FBOs that are IS-BAH registered because of the safety standards required for this designation."

IS-BAH was formed as a way to identify and promote the use of industry best practices by adopting a more progressive safety management system for both FBOs and business aircraft handling agencies (BAHA).

—Robert W. Moorman

No Free Lunch at FBOs

One hot topic at last year's NBAA Convention was the transition from the fuel-sale-dependent FBO business model to a European version, where fees for service are commonplace. This year, FBOs are talking about adopting best practices from both business models.

"What we're seeing are FBOs charging facility fees on each invoice regardless of whether FBOs are pumping fuel or charging other services," says John Enticknap, principal with ABSG, the Aviation Business Strategy Group.

Put another way: "We're seeing an Americanized version of the European model."

The facility or security fee, \$5 to \$10 typically, and levied in addition to a ramp fee, further helps FBOs pay for their infrastructure, headquarters and hangars, as well as for servicing, marshalling, towing or tying down aircraft.

For years, FBOs relied heavily on fuel sales for revenue, but with increased tankering of fuel, and the continued low prices for Jet-A, the FBOs needed to find other ways to move the revenue stream.

To increase margins, FBOs began charging facility fees and ramp fees for aircraft operators that don't purchase fuel. (Signature Flight Services was the first chain to introduce a ramp fee in the mid-1990s.)

"Every aircraft that comes onto an FBO ramp must pay its way," says Ron Jackson, ABSG principal. U.S. FBOs are "morphing slowly toward a European model."

Fuel sales are not typically part of a European FBO income stream, says ABSG. An airport-approved vendor provides that service. Energy companies' direct involvement in fuel sales limits European FBOs' options in this area.

Some U.S.-based independent



CONTINUED FROM PAGE 20
that haven't are gone."

After years of stagnation, ABSG projects around 2% growth for the U.S. and Canadian FBO industry.

While the U.S. FBOs continue

to show modest improvement, the situation outside North America is a different story. "It could take another couple of years for Europe, and perhaps upward of a decade for parts of South America,

to get back to any semblance of normalcy," says Foley.

A niche market for customers who want to avoid large airports and big chain FBOs in favor of a less-congested alternative airport

could arise from consolidation, says Foley, "even if it means paying a slight fuel cost premium." And that could be good news for viable independents and small chains. —Robert W. Moorman

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A Conversation With Signature COO Maria Sastre



Signature Flight Services president and COO Maria Sastre.

BBA Aviation, parent of Signature Flight Support, closed in February on its \$2.065 billion acquisition of the Landmark Aviation FBO chain. The merger of these two leviathans created the largest FBO chain worldwide, with 195 locations, and raised questions about how, if at all, the FBO competitive landscape would change significantly. Before NBAA, *Show News*' Robert W. Moorman interviewed Signature President and COO Maria Sastre on the re-branding of Landmark into the Signature family and on other issues, including competition and growth.

According to the BBA Aviation 2015 final results, Signature doubled in size with the acquisition of Landmark. Will the growth-through-acquisition strategy continue? Or will the company settle down for a while and incorporate Landmark's FBOs into the Signature family?

We've been highly engaged in the full integration of the former Landmark network into Signature. We are near the final stage of a very successful integration and are moving on as a fully integrated company. As for growth, we will continue to consider the right type of acquisitions and expand Signature accordingly. We are on our way to being a completely integrated network.

Was the integration challenging?

The old adage applied: The more you plan the better you execute. We did a lot of pre-planning prior to the close of the acquisition. We engaged all of Signature and BBA's management and Landmark in the integration. We

made sure that our customers had a seamless transition and that safety standards were met. This acquisition was a defining moment for our company and a success story in integrating the two companies. We are investing a significant amount of capital in our combined network to ensure that it is up to Signature's standards.

Were you able to combine the best practices of both companies into this fully integrated company?

Of course. We adopted a technology enhancement program from Landmark, which we converted at all of our locations. The system relates to the inbound and outbound activity of aircraft at our FBOs. I can't give you specifics of the proprietary technology. But we were able to automate all of that technology and bring it into our primary point of sales system, Signet. We installed Signet throughout the Landmark network, but we also upgraded a key feature, which was a Landmark best practice, into that system. As we went through key areas during the integration, we wanted to keep the best practices of either organization.

Can we draw parallels between the merging of the U.S. major airlines and Signature's acquisition of Landmark FBOs?

Look, this industry continues to be significantly fragmented. I still believe that there is enormous opportunity for competition with more than 4,000 FBOs out there. We aren't in the position to be compared to the status of the major U.S. airlines. I think we still have much more room on the competitive side of the equation. We continue to see an agile and competitive environment.

In terms of regions, where is the next growth opportunity for Signature?

The Americas continues to be a strong market for Signature. But it isn't the only growth area. We continue to focus on the Caribbean and Latin America with some recent announcements. And we're always looking for targeted and appropriate opportunities in the EMEA (Europe, Middle East and Africa) region.

What is the breakdown of Signature's growth?

The lion's share of the business continues to be the FBO segment. The aircraft management charter business is held in a trust. As a foreign entity, BBA cannot own more than 49% of the business. We are in the process of securing a partner that could ultimately own 51% or more of that business. BBA is working through

that issue presently. Signature's TECHNICAir (MRO) at 18 locations is a smaller, but remains an important, piece of the business.

Are there any regulatory or other challenges facing Signature?

We aren't facing any regulatory challenges per se. But we need to keep a very close eye on the situation in Santa Monica. (Ed. Note: The City of Santa Monica is trying to evict FBO chain Atlantic Aviation and other tenants from the Santa Monica Municipal Airport, as a precursor to eventually closing the airport permanently.) There is a major backlash against that airport from the immediate local area and the industry. The FAA believes the airport should remain open. There also is a concern generally about the closing of airport services in any given community in this country. There are a multitude of issues that Santa Monica raises. We are monitoring the situation closely.

Some FBOs have expressed competitive concern over oil companies getting into the business. What do you think?

Actually, we've seen quite the opposite. For the most part, we have seen the oil companies retreat from down line distribution, as evidenced by the disposal of assets by Exxon and Shell and others, particularly in the international markets over the last two years. We don't see this as a major issue.

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Lufthansa Technik & Mercedes Go Modern

Modern buyers are demanding that next-generation VVIP airplanes have next-generation interiors. They don't want traditional "boxy" fittings in the ACJneo, BBJMAX, Airbus A350 or Boeing 787.

Out with dark wood, heavy leather and enough monitors to make you think you're in the stock exchange. In with new thinking, new materials, flowing lines, onboard therapy and relaxing environments. That's what the modern generation wants, says Lufthansa Technik EVP Wieland Timm.

We have enough crazy ideas and innovation that we are the go-to center for next-generation completions.

—Wieland Timm, EVP, Lufthansa Technik



The Hamburg-based completions and design center is unveiling its Mercedes-Benz-style interior here, "going far beyond everything that has been built to date," he says. Elements of the design were unveiled at EBACE 2015, but they elicited doubt about the feasibility of the concept. So Lufthansa Technik has spent the past year engineering the sumptuous interior into a product.

"We have created all the necessary prerequisites for building and certifying this aircraft. This means we can start taking orders effective immediately," Timm says. A number of potential MAX and neo buyers have already requested private viewings after NBAA, and one client wants to explore scaling it up to a larger aircraft.

Lufthansa Technik's Mercedes-Benz-style ACJ/BBJ interior can be seen at the show with virtual-reality goggles, or on 2-D video, at [Booth 2632](#). There is also a 1/20-scale mockup.

—John Morris



"We've developed a completely new space concept that goes beyond conventional cabin space design, and we've been rather radical in throwing old-fashioned aircraft cabin design precepts overboard. We've developed an interior design that clads the entire space in a spiral, a DNA helix." —Gorden Wagener, head of design, Daimler AG

The entertainment lounge: Black panels, formally inspired by the latest Mercedes-Benz dashboard design, join with the floating lines of the furniture and feature electrically controlled sun shading as well as a real-time passenger flight information display. "The ultimate in technological sophistication," says Lufthansa Technik.



"Our aim was to apply the design language of sensual purity and the high standards of modern luxury and aesthetics that characterize Mercedes-Benz to other spheres of life." —Gorden Wagener, head of design, Daimler AG

All of these names have one name in common.

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Airbus Shows Curvy Cabin Concept

Unlike most corporate interiors, there are few straight lines to see in Melody, the nature-inspired Airbus cabin concept unveiled at NBAA 2016 for future customers of the company's new ACJ320neo family.

“We have a new generation of aircraft, so let's have a new generation of cabin to go in it,” says Airbus Corporate Jets Marketing Director David Velupillai. “The customer has a completely free choice of what kind of cabin to use, but we are saying, let's take the opportunity to go beyond what is out there today,” he adds.

Dominated by a broad passageway that meanders, stream-like, between curved alcoves, suites, seating areas and a large kitchen, the cabin concept weaves together two main strands - “curves inspired by nature and an emphasis on sound,” says Sylvai Mariat, head of creative design and concepts at ACJ (Booth 2234). “It's very much

out-of-the-box thinking. Many times interior designs are copy-and-paste in business aviation, but we aim to push new solutions.”

One of the most striking aspects of the interior is the reshaping of the ceiling panels, which are formed of multifunctional speakers and light sources. Rectangular loudspeaker panels, or audio boxes, are blended into the curve of the fuselage interior for better acoustics. “This was our starting point, rather than an add-on, and led us to reshape the cabin ceiling for great sound - just as one would when designing a theater,” Mariat says.

Cabin interior zones are divided by extra-large openings, rather than conventional doors and bulkheads, but can be closed off by a moveable door. Fiber-optic lighting, built into the carpet, provides guidance along the cabin in low lighting, while the amount of natural light entering the cabin can be adjusted by finger-tip-controlled electrochromic windows.

Other features driven by input from customers include a large kitchen to enable preparation of fresh food, and a home cinema area aft of mid-cabin. A large bedroom, located at the back of the cabin, incorporates a 65-in.-wide curved screen built into the curved contours of the rear pressure bulkhead.

Airbus, which launched the first two new ACJ variants in May 2015 on the back of the development of the re-engined A320neo family, says an ACJ321neo is “likely, though we haven't talked about it yet.” The initial ACJ320neo is due to be delivered at the end of 2018, while first delivery of the ACJ319neo is expected in the second quarter of 2019. To date, Airbus has taken orders for six ACJneos, of which four are for the ACJ320neo and two for the smaller variant.

—Guy Norris



Melody “home cinema” for your Airbus home in the sky



Want to see more? NBAA attendees can take a virtual-reality tour of the new ACJ cabin at



Melody lounge and conference area



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For more information, see the G5000-equipped Beechjet at NBAA Static Display 20, or contact Dave Brown, Integrated Flight Deck Retrofit Programs Sales Manager at Dave.Brown@Garmin.com or 913-440-1714.

JetBlue Takes Share in JetSuite

New York-based JetBlue Airways has taken a minority stake in fast-growing, California-based jet-charter company JetSuite.

JetBlue president and CEO Robin Hayes announced the investment in JetSuite during a third-quarter investor call Oct. 25. Hayes said JetSuite was “changing the game in short-haul travel on the West Coast.”

JetSuite launched in 2009. Its JetSuiteX by-the-seat public charter service operates daily flights between seven West Coast locations in California, Nevada and Montana. It sells tickets on its small jets via its website.

Hayes told analysts that

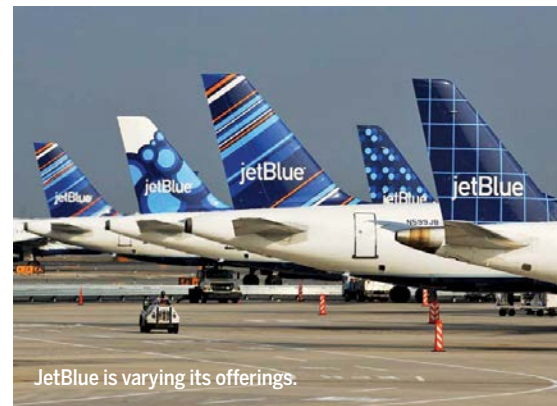
JetBlue’s investment was “small” but could grow. “We are very active in thinking about how this industry could change and be disrupted in future years. In JetSuite we see a great opportunity on the West Coast in terms of offering customers much more convenient alternatives in how to fly,” he said.

Hayes added that JetBlue is now working with JetSuite to put in place a commercial agreement. “We can bring to JetSuite great access to a bigger customer base

and distribution,” he said.

On its website, JetSuite describes itself as a JetBlue partner. JetSuiteX comprises a fleet of 30-seat, Wi-Fi-equipped Embraer 135s. Cabins are configured with three leather seats per row.

JetBlue has been moving to expand its West Coast network. It lost a bidding war against Alaska Airlines to acquire San Francisco-based Virgin America. Since then, it has



JetBlue is varying its offerings.

added service from Long Beach, California, and grown its Mint-branded premium transcontinental services.



The G-NOAH ACJ319, says Acropolis, “has flown U.S. business magnates, heads of state, royal families, [and] celebrity artists and families.”

‘How Can I Buy One?’

Farnborough, England-based Acropolis Aviation (Booth 2219) is talking up a 30% increase in charters from U.S. clients for its G-NOAH Airbus ACJ319.

“The Airbus ACJ319 is exceeding every expectation,” says Kuky Salazar, who was named dedicated sales VP for the region last year. “U.S. clients are getting to know this tastefully designed, spacious aircraft, and once they fly with us, they ask: How can I buy one?”

“The feedback has been overwhelmingly fantastic,” she continued, “and it is great to see the clients call us back to book more trips, months in advance.”

Over the past 12 months G-NOAH has flown from Washington, D.C., to Jeddah, Saudi Arabia; from California to Entebbe, Central Uganda; and from São Paulo to Milan.

Acropolis says it manages “a healthy mix of both direct and brokered clients.”

Pilatus Remains Zip-Lip on PC-24 Progress

THE SECOND PILATUS PC-24 prototype (Booth 4293, Static Display), most recently seen undergoing avionics tests at Honeywell’s Phoenix-Deer Valley hangar, is making its NBAA debut this year. Preliminary performance tests are encouraging, with the aircraft meeting or beating early performance projections, say Pilatus officials. They previously said they expect the aircraft to have a 425 KTAS maximum cruise speed, a 1,950-nm full-tanks range with four passengers at long-range cruise, and a 1,190-nm NBAA IFR range while carrying a 2,500-lb. maximum payload. Time to climb to FL 450 is projected at 30 min.



Two Pilatus PC-24 prototypes have logged more than 600 flights and 1,000 hr.

The two PC-24 prototypes have logged more than 600 flights and 1,000 hr., leading to October’s aerodynamic design freeze. More than 300 engineers in Stans, Switzerland, are at work on the program.

Pilatus officials remain mum on flight-test performance numbers, likely because company engineers only reached design freeze.

Officials previously disclosed that the aircraft will be certified to fly as high as 45,000 ft. and will have an 81-kt. stall speed and a 2,525-ft. landing distance at its 16,250-lb. max landing weight. A computational fluid dynamics designed airfoil, including wide-span, 37-deg. flaps, large ground spoilers and large-capacity, anti-skid brakes, make the impressive landing performance numbers.

Program VP Andre Zimmerman also tells *ShowNews* that the aircraft will have a take-off field length of 2,690 ft. at its 17,650-lb. MTOW. As with the PC-12, the PC-24 will be certified for rough field operations. A “yawning” 4.1-ft.-wide-by-4.2-ft.-high aft, left cargo door and flat cabin floor facilitate loading of bulky items. The luggage bay inside the 500+ cu. ft. cabin ranges from 51 to 90 cu. ft., depending upon positioning of the seats and cargo net.

Designed from the onset to be able to operate from grass, gravel, dirt and other unpaved runways, the PC-24 will have access to 21,000 landing facilities. Its short-field capabilities will enable it to use 11,950 paved air strips. Combined, those attributes will allow it to operate from up to twice as many landing facilities as its closest competitor, Zimmerman says.

Power is provided by two 3,400-lb.-thrust Williams International (Booth 2695) FJ44-4 turbofans with 3,600 lb. thrust APR. The Primus Apex avionics are furnished by Honeywell (Booth 2200). —Fred George

PHOTO BY ROB FOX

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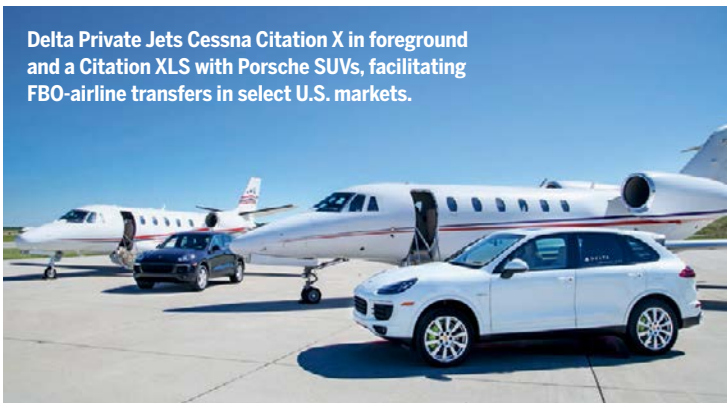
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Delta Private Jets Connects Air and Ground – and Airline

Executives of Delta Private Jets are making the rounds of NBAA 2016 extolling connectivity – better broadband aloft and a ground service featuring Porsche SUVs designed to speed private jet passengers to long-haul Delta Air Lines flights.



Delta Private Jets Cessna Citation X in foreground and a Citation XLS with Porsche SUVs, facilitating FBO-airline transfers in select U.S. markets.

DPJ's new "high-touch" service with the Porsche SUVs is part of a broad plan to connect the airline's private jet service with parent Delta, says Delta EVP and DPJ COO David Sneed. "We want to connect business jets with the whole Delta enterprise," he says. "We want to take the private flyers and make them loyal to the Delta brand on the commercial side."



Delta Private Jets COO David Sneed

Conversely, Delta wants its airline flyers to consider private flying.

DPJ has pledged to be the first FAA-certified Part 135 air carrier to equip its entire fleet of some 70 business jets with Biz 4G Internet

hardware from Gogo Business Aviation.

"It's connectivity commensurate with what you have with broadband at home," says Sneed.

The 4G plan builds upon Gogo's relationship with Delta Air Lines for the carrier's commercial fleet. It

represents the first multi-aircraft adoption of Gogo Biz 4G in the private aviation sector, DPJ says. The 4G equipment package will bring dual-band 802.11ac Wi-Fi service and related features from a single, lightweight box, allowing no-restriction video streaming (for entertainment and teleconferencing) and emails with attachments. The 4G capability is to go

live in 2017. (Gogo, the former Aircell, is at [Booth 1844](#).)

The new arrangement with Porsche will see the use of luxury SUVs to transport DPJ passengers from major airport FBO facilities to their Delta Air Lines flights with a minimum of fuss and bother.

"Imagine traveling from Louisville to New York via private jet to connect with a commercial flight to Munich, Germany, on Delta Air Lines," says Sneed. "You will be picked up in a Porsche from the fixed-base operator and transported to the main airport where you will be escorted and expedited through security by Delta agents."

The private-to-commercial transfers are being made available to Delta Private Jets Card members in Atlanta, Detroit, Minneapolis-St. Paul, Los Angeles, Salt Lake City, New York, and Seattle – as well as Cincinnati/Northern Kentucky International, DPJ's home base.

Also new this year is a Premium Private Jet Program in league with American Express, all part of a plan to make it easier to fly in a business jet. "We want to make this almost mainstream," Sneed says.

In addition to flying passengers, DPJ services include aircraft management and charters.

—Rich Piellisch

Business Jets to the Rescue

Delta Private Jets helped bail out its airline parent this past August when a systems failure in Atlanta forced the cancellation of hundreds of commercial flights and stranded thousands of passengers.

Delta EVP David Sneed, COO for the DPJ operation, says he was in Cincinnati when he heard about the outage and immediately called his operations people to scramble available business jets to Atlanta to help out.

Seven aircraft were there within 3 hr., he told *ShowNews*. Approximately 40 passengers were flown from Atlanta to New York-JFK, Washington-Dulles, Los Angeles, Houston-Hobby, Miami, Chicago-O'Hare and Dallas-Fort Worth – in style.

"This was an all-hands-on-deck effort by the Delta Private Jets and Delta teams, including reservations, airport customer service and global sales," Sneed says. Priority was given to top customers like front-cabin frequent flyers, but consideration was also given to people who had commitments like weddings.

"No other commercial airline company has this capability," Sneed says.

"We charged nothing," he adds. "We ate the cost."

"It was very difficult knowing all those passengers were stranded," he says. But helping arrange the rescue "is one of the most satisfying things I've gotten to do." —RP



The Delta Private Jets Card allows the purchase of both DPJ lift and Delta Air Lines tickets.

The Delta Private Jets Fleet – Watch It Grow

Delta Private Jets believes that it's the only private jet company affiliated with a major commercial airline – "an unmatched competitive advantage in a fractured marketplace." DPJ's fleet includes both owned and managed aircraft running the gamut of light, mid, super-mid and large business jets. Types include Cessna Citation CJ2 and Ultra/Encore, Hawker/Beechjet 400, Learjet 40/45/60, Hawker 800, Citation X, Challenger 300/601/604 and Falcon 50/900/2000 series jets.

"We've got north of 70 jets," Sneed says. "In 2017, he says, "We're going to grow. There's no question about that. I'm not going to give you a number," but he told *ShowNews* that the growth will most likely involve large and midsize jets.

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Manufacturers Brace for Continued Stagnation

From Bombardier to Gulfstream, business-aircraft manufacturers are making changes forced by sustained lower sales in a market besieged by negative pressures.

“The business aviation market continues to struggle to find the bottom,” avionics supplier Rockwell Collins’ CEO, Kelly Ortberg, told analysts in August. In recession since the 2008 economic crisis, the market continues to decline as its malaise widens from the hard-hit lighter jets to the once-solid “heavy metal” and spreads geographically to encompass regions that had been shoring up demand.

It’s not specific to any particular airplane type, but rather an overall market condition,” said Ortberg. “I can’t see any conditions at this point to say we’re at the bottom. The market continues to struggle.”

The long-running connection between the growth of global economies, individual wealth and business aviation has been severed, making it harder to forecast the market. In September, a survey of industry professionals by financial services company UBS Securities showed an uptick in customer interest from the post-crisis low reached in May. But the UBS Business Jet market Index remains well below the score that would signal a recovery, and the outlook is staying subdued.

Investment bank Jefferies projects business-jet deliveries will continue to decline over the next three years, from 714 in 2015 to 628 in 2018. The forecast is based on business-jet activity that is persistently sluggish, rising fractionally one month only to fall the next.

Economic factors are on top of downward pressures that range from the number of used aircraft for sale to the stigma that lingers around business jet ownership long after the global economic crisis. Of 43 newer models that it tracks, UBS said in July that 23 have at least 10% of the fleet up for sale, and 18 models had rising

levels of used inventory. Prices had dropped 11% from their peak for aircraft under five years old, with the decline increasing substantially with age.

Bombardier

Bombardier was first to make adjustments, canceling the midsize Learjet 85, reducing production of the large-cabin Global 5000/6000 and stretching development of the ultra-long-range Global 7000. Since February the company has announced it plans to cut 14,500 jobs worldwide.

It also plans a series of “pauses” to Global 5000/6000 completions in Montreal through 2017 to manage costs.

Analysts have speculated that Bombardier may sell Learjet, and Textron Aviation’s parent company says it would be interested “at the right price.”

Dassault Falcon

Dassault has reduced planned deliveries of Falcon large-cabin jets this year to 50, from 60, down 9% from 2015. The company booked only 22 orders in the first half, and saw cancellation of 11 orders for the Falcon 5X after service entry was delayed to 2020 from 2017 by development problems with its Safran Silvercrest engines. Backlog declined to 87 Falcons from 91 at the end of 2015.

Embraer

Hit by slowing sales, Embraer is cutting 8% of its workforce – almost 1,500 employees – through a voluntary redundancy program that is part of an effort to cut costs by \$200 million. The Brazilian manufacturer has lowered projected business jet deliveries for the year by 10 aircraft to 70-80 light and 35-35 large jets. Unsold aircraft will enter inventory and 2017 production will be reduced accordingly.

Textron Aviation

Textron has begun delivering midsize Cessna Citation Latitudes against a long-term order for 200 from fractional operator NetJets. Deliveries of the super-midsize Longitude will begin at the end of 2017. But Textron Aviation is nonetheless laying off a small number of workers to trim costs.

Gulfstream

Gulfstream laid off 1,100 workers at the end of 2015 and in August launched a voluntary redundancy program to further trim its workforce. The company is ending G150 production and has begun winding down G450/G550 large-cabin production as it prepares to ramp up the G500, with customer deliveries beginning in 2018, followed in 2019 by the G600.

Parent company General Dynamics in August said it was “comfortable” with the G450, G550 and G650 positions sold through 2017 but had yet to set G500/G600 production rates.

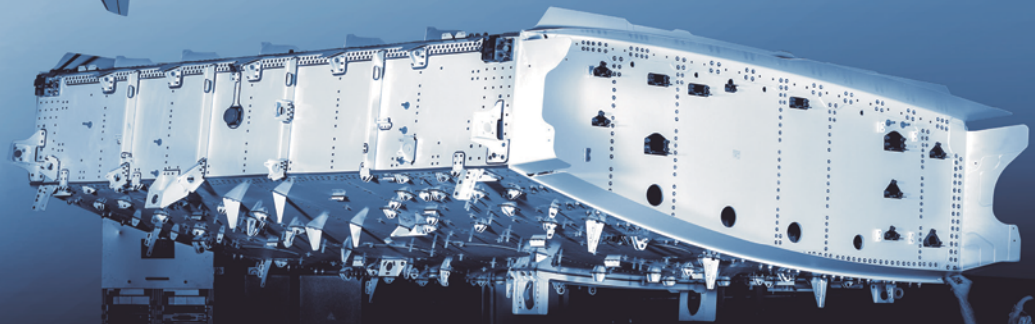
Amid this story of gloom, the U.S. has returned to its historic position as the most important market for business aviation. And here there is a glimmer of hope. Aircraft brokerage Jetcraft sees North America accounting for 60% of business jet deliveries over the next 10 years, up from 50% at the peak in 2007-8 as emerging markets cool off. And Jetcraft, while adjusting its forecast downward 10%, still foresees sales of almost 7,880 jets over that period.

Describing business aviation as the “wild card,” Ortberg told analysts that, in putting together its plan for 2017, Rockwell Collins was “going to be pretty conservative – which I thought we were coming into this fiscal year, but it turned out even that was too optimistic.”

—Graham Warwick, Michael Bruno and Molly McMillin



The inventory of unsold aircraft continues to pressure the market for new jets.



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Business Aircraft Demand to Stay Soft



Demand may be historically soft but new business jets are still selling.

“I think it’s very simple,” Robert Spingarn, an analyst with Credit Suisse’s aerospace equity research group, said during a round-table discussion of the market in New York in mid-September. “There’s too much capacity. The used market is too large.”

Prices of used aircraft continue to fall. The worry is that owners will not trade up to new aircraft because of low trade-in values for their aircraft.

Customers are hanging on to aircraft longer than they ever have, one lender said.

Prices of used large-cabin jets

have fallen for the past five years, while midsize and light jets have shown signs of recovery over the past three years. But there are fears that prices could fall once more, Bernstein Research analyst Finbar Sheehy wrote in a note to investors following the conference.

Corporate profits have risen amid cost cutting. With the Dow Jones Industrial Average over 18,000, one would think demand would be higher, one manufacturer said.

“We agree that the near-term outlook is weak,” Sheehy wrote. “However, we now believe that

Wall Street brokers and business jet lenders told a recent JetNet iQ conference on business jets that they expect business aircraft demand to remain soft in the near-term, with no clear indication of when recovery will occur. But manufacturers were more optimistic.

the pessimism is overdone.”

Dassault Falcon Jet President and CEO Jean Rosanvallon acknowledges that the market has been uncertain but that it may be seeing “some light at the end of the tunnel.” The company also has a strong military business, which is helping.

Gulfstream Aerospace President Mark Burns said the G650 has opened a new avenue globally for the company and demand remains strong.

Bombardier reduced production rates for this year to align production with demand. During the first six months, its book-to-bill, the number of orders versus number of deliveries, was even, said David Coleal, president of Bombardier Business Aircraft. That will help recovery, he said.

Manufacturers report a shift of demand from international and domestic buyers. Ten years ago, the market was skewed toward international demand. For some manufacturers, 30%

of its customers were in North America with 70% global. Now, demand at **Textron Aviation** is 70% domestic, said David Rosenberg, VP of strategy and integration at Textron Aviation. The company is selling to more corporate buyers today than it did a year ago. It is also seeking to grow sales by adding new products.

Ninety percent of sales are from repeat customers, Coleal said.

Competing on price is not good for anyone, said Marco Tulio Pellegrini, president and CEO of **Embraer Executive Jets**.

“If you keep doing that, what’s going to happen five or 10 years from now? Who is going to be investing?”

Wooing a customer of another manufacturer’s aircraft has been a challenge for Embraer, one of the latest entrants into the business jet market, Pellegrini said. “Customers, in general, tend to be loyal to their brands.”

—Molly McMillin

JetNet Says Three Years Until Recovery Begins

Business jet deliveries are expected to fall to around 660 each year for the next three years before turning upward, according to a forecast by JetNet iQ Managing Director Rolland Vincent. JetNet iQ projects business jet deliveries of 662 this year and then it will remain flat or fall in 2017 and 2018 before an upturn.

“We are now in a slow period,” Vincent said during a Global Business Aviation Summit in New York on Sept. 14.

Optimism in the business aircraft market is on the wane. That’s despite business jet operators’ views that the market is at or has passed a low point in the economic cycle.

“We’ve seen a dramatic turn in the market,” Vincent said. “We’re doing deals and the pre-owned market is very active, but the price is another story.”

Forty-eight percent of decision makers responding to the survey said that in the past two years concern about declining values has delayed their plans to buy new or used aircraft; 42% said they opted to refurbish an existing aircraft instead of buying new or used.

In the purchase of a new business jet, performance was the No. 1 priority, while cabin size and capacity came in second and range was third. Purchase price was the top priority when buying used aircraft, followed by cabin size and performance.

Despite an improvement in the public’s poor image of business and general aviation, 80% said it had caused them to use alternative forms of travel, such as commercial airlines. They also thought that the public did not understand the role of business aviation.

—MM

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Honeywell Forecasts Lower Near-Term BizJet Demand, But Bright Spots Remain

Honeywell Aerospace's latest 10-year forecast projects market demand for 8,600 new business jet deliveries valued at \$255 billion. That's a decline of 6%-7% by value over the 2015 forecast. Honeywell revised its

Longer range, the outlook through 2026 projects a 3%-4% average annual growth rate, as new models and improved economic performance contribute to the increase.

Operators surveyed say they

Russia, with slight gains made in the larger Brazilian outlook. Purchase plans rebounded off 2015 lows. Brazil remained a bright spot by recording the strongest new aircraft purchase plans in the survey. Operators said 38% of their intended jet purchases are scheduled for the next two years.

In Asia-Pacific, operator enthusiasm seems to be improving, with operators planning new jet purchases equivalent to 38% of their fleet over the next five years. That's roughly double from 2015 levels. Asia-Pacific could reflect a 6% share of new jet demand over the next five years.

Operators in the Middle East and Africa reported improvements in purchase

less optimistic mood elsewhere in the area; 47%-48% of the planned purchases there are expected to take place from 2016 to 2018.

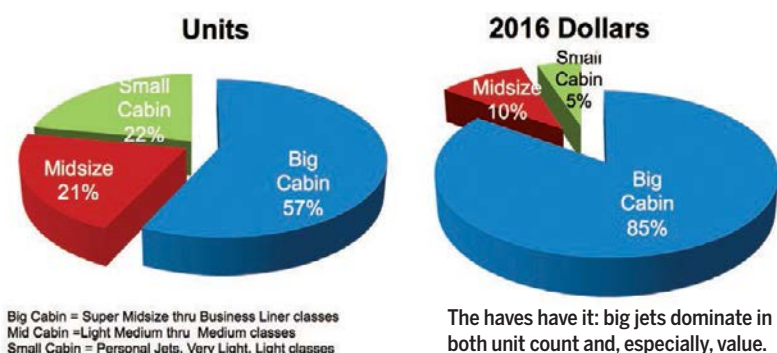
In North America, where 65% of the demand is projected, new jet purchase plans rose five points over a year ago. The fleet and operator base has expanded, supporting solid demand. New aircraft acquisition plans are critical because of the region's size and the unsettled conditions elsewhere in the world.

In Europe, new purchase plans improved from a year ago, despite political tensions, the uncertainty of Brexit, a migrant and refugee surge, and depreciated currencies. Purchase expectations are up; Europe's fleet has not expanded in recent years, and many aircraft have migrated to other regions. Of projected purchases, 26% are predicted to take place through 2017, with 15% of them to take place in 2018 and 15% in 2019.

Flight Activity and Used Jets

Operators in the 2016 survey said they were planning to fly more in the next year, which would be a welcome outcome, Park said. Operators reduced their used jet purchase plans by eight points from a year ago, which equates to 24% of their fleets in the next five years. About 10% of the used fleet is up for sale, down from a high of about 16% in 2009 but up from the low reached last year. Inventory levels are trending up, and asking prices are heading lower. —Molly McMillin

New Jet Purchase Plans by Aircraft Class – New Grouping



forecast downward as the business jet industry continues to face slow near-term orders from a slow-growth economic environment in many markets around the world.

“While developed economies are generally faring better, commodities demand, foreign exchange and political uncertainties remain as concerns,” said Brian Sill, Honeywell Aerospace president of commercial aviation. Used pricing has not stabilized across the board. When prices are falling, buyers tend to wait to make a purchase.

Honeywell forecasts 2016 business jet deliveries to total 650-675 units, down slightly from 2015 deliveries due to slower order rates for mature models and stabilization of deliveries to fractional providers.

Deliveries are projected to fall slightly again in 2017 as buyers transition from older models to new models scheduled for delivery in late 2017, 2018 and 2019.

“We see recovery, in volumes, beginning in 2018,” said Charles Park, director of market analysis for Honeywell.

plan to make new jet purchases equivalent to about 27% of their fleets over the next five years as they replace or add to their current fleet. That's an encouraging increase over a year ago, Park said.

Of the purchase plans, 21% are expected to occur by the end of 2017, and 18% are scheduled for 2018 and 2019.

Brand Preference and Range

While range remains critical, operators are pointing more to brand preference as a significant factor in choosing a specific make and model, Park said. The kind of service and treatment they receive is key, especially because there are more products from which to choose.

Demand By Region

One surprise in the survey was the improvement in general interest by operators in almost nearly every region of the world, Honeywell said.

In the BRIC regions (Brazil, Russia, India and China), buying plans improved by operators in China and

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Jetcraft Cuts Forecast, But Is Optimistic

A new forecast by Jetcraft predicts deliveries of 7,879 business jets representing \$248 billion in revenue over the next 10 years, through 2025.

The forecast projects deliveries of 688 business jets in 2016, down from 711 in 2015. It then projects rising deliveries each year through 2021 before a three-year decline. That's about 10% less than it forecast a year ago.

“We are expecting the launch of multiple models over the forecast period introducing innovative and transformative technologies,”

The forecast does not project shipments to return back to the record level set in 2008, a year in which the industry delivered 1,313 business jets. “That level just isn't sustainable,” Jetcraft president Chad Anderson told *ShowNews*.

Over the next 10 years, **Gulfstream** is expected to secure the highest revenue market share, at 30.6%, largely due to the introduction of its expanded family of aircraft, the forecast said. **Bombardier** is expected to secure the second spot, with a 28% market share.

Cessna Aircraft is expected to regain market leadership from Bombardier with the number of aircraft delivered over the next 10 years, with 24.4% of all new aircraft deliveries, Jetcraft said.

By segment, Jetcraft predicts delivery of

910 very light jets, 1,171 light jets, 436 super-light jets, 733 midsize jets, 1,310 super-mid-size jets, 674 large jets, 538 super-large jets, 871 ultra-long-range jets and 236 converted airliners.

“We are expecting the launch of multiple models over the forecast period introducing innovative and transformative technologies,” Jetcraft said. Their appearance will again stimulate demand and will be key to sustaining growth until at least 2021, it said.

In the used market, the industry is below its 13% benchmark level of inventory as a percentage of the in-service fleet. But “there is little evidence of an increase in residual values for five-year-old aircraft,” it said. “We speculate that this is because these aircraft were initially procured with discounts and that the gap between the current pre-owned transaction prices and the initial list pricing has been subsequently reduced to its current 55% residual level.”

Owners typically postpone the replacement of their aircraft if the residual value environment is not favorable, it said.

Jetcraft's forecast model over the next decade reflects a slow-down in wealth creation, an outflow of ultra-high-net-worth individuals from emerging market economies, and oil prices at less

than \$50 a barrel.

At the same time, the U.S. economy has ample room to grow. The trend of companies buying back shares is about to wind down, and the shift to robust capital expenditure investment will support a better climate for aircraft sales, it said.

On the other hand, unpredictable issues, such as terrorism and the migrant crisis, remain threats that could derail forecast projections.

—Molly McMillin and John Morris

Forecast Summary



Jetcraft anticipates new models in its forecast. Here's what it sees, with dates for entry into service: **Gulfstream 500** (2017), **Global 7000** and **Gulfstream 600** (2018), **Falcon 5X** and **Global 8000** (2019), **Gulfstream 750** (2020), **Cessna Hemisphere** (2022), and **Legacy 700**, **Falcon 9X**, **Gulfstream 400** and **Challenger 700** (2023).

Jetcraft Had Its Best Year Ever



Chad Anderson

While reducing its forecast for the years ahead, Jetcraft, a leading broker and deal management company with more than 50 years' experience in the market, is having its best year ever.

“Our revenue and number of unit transactions over the past 18 months is the company's best since its formation,” Jetcraft president Chad Anderson told *ShowNews*.

“There still is activity. There still is demand. We delivered two new

Globals 6000s in the first week of September,” he said. “Fifty percent of our transactions right now are for ultra-long-range, large-cabin aircraft.

“People are getting better deals than ever before, and that creates demand for large-cabin, long-range aircraft. It's predominantly large-cabin but not excluding smaller aircraft such as the PC-24 and HondaJet.”

In addition, Jetcraft, with offices in 20 countries, reports activity in regions where many have seen little business potential, particularly throughout Asia.

Anderson said Jetcraft believes the trend is turning positive. “The market is turning, based on our own experience. But we work harder and harder for every sale.

“We're seeing an extraordinary number of sales and trades right now. For example, a Hawker 4000 against a G550, and a G450 against a Global 6000. People are moving up; they're upgrading because of aging issues or change of mission.

“We're not seeing a lot of people leaving the market.”

—John Morris

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Hawker 400XPR Program Moves Forward

After a protracted development program, the Hawker 400XPR – a Beechjet 400A/Hawker 400XP upgraded variously or separately with new engines, avionics and winglets – has received FAA approval.

The first full Hawker 400XPR factory-completed aircraft is currently in work and expected to deliver later this year, according to a statement on Sept. 15 by Beechcraft Corp., a subsidiary of Textron Aviation. It has, it said, received certification on all 400XPR program elements.

The program involves a menu of improvements, which operators can buy in whole or in stages. In addition to the winglets, these include installation of Williams International FJ44-4A-32 engines and a Rockwell Collins Pro Line 21 avionics suite. New exterior paint and cabin refurbishment is also available. All work would be done and supported by Textron Aviation.

The upgrade program's progress was stalled by Beechcraft Corp.'s financial distress and, ultimately, its bankruptcy. The Wichita manufacturer was subsequently acquired by Textron, which brought the program to fruition. The jet upgrade program now begins to compete in earnest with the Nextant 400XTi, another Hawker 400 remanufacturing program based in Cleveland, which has a head start of several years.

However, the 400XTi is fitted with Williams FJ44-3AP engines, whereas the -4A-32 model delivers better runway and hot/high performance. Beechcraft says the Hawker 400XPR has a range of 1,970 nm with four passengers departing a



Hawker 400XPR upgrade options include winglets, Williams FJ44-4A-32 engines, and a Rockwell Collins Pro Line 21 avionics suite.

5,000-ft. elevation airport at 30C and can climb directly to 45,000 ft. altitude in 19 min. at maximum takeoff weight.

"We offer the best – and the only factory-approved – upgrade solution for Beechjet 400A/Hawker 400XP owners, significantly improving their aircraft's performance, operating cost and resale value," said Brad Thress, SVP, customer service. "Our customers have been extremely impressed with the aircraft's outstanding performance and we are eager to provide our 400A/400XP owners and operators with the confidence that comes only from an upgrade engineered and supported by the original manufacturer."

Despite Nextant's market lead, the real prize could be to someday upgrade the U.S. Air Force's fleet of around 178 elderly T-1A Jayhawks, advanced pilot training aircraft based upon the Beechjet/Hawker 400.

—William Garvey

ATP Selects L-3 Lynx NGT-9000 ADS-B Solution

L-3 Aviation Products' Lynx NGT-9000 ADS-B solution has been selected by ATP Flight School for installation in 100 of the school's 266 training aircraft, with the option for additional units as the fleet expands. Deliveries will continue through the end of this year, ahead of the 2020 ADS-B mandate. The ATP fleet comprises Piper and Cessna singles and twins, which will be equipped with the NGT-9000 plus options, including L-3's ADS-B Traffic Advisory System (ATAS) with aural alerting and its Class B embedded Terrain Awareness Warning System (eTAWS).

"ATP is dedicated to providing Airline Career Pilot Program students with the necessary resources, safety and technology they need to prepare for successful airline pilot careers," said ATP VP Justin Dennis. "This investment in avionics is a demonstration of that commitment, and we are pleased to partner with L-3 to bring the technology of tomorrow into the hands of our students today."

ATP's Airline Career Pilot Program prepares pilots from zero time to 1,500 hr. It also provides type rating certification across most of the Boeing and Airbus fleet, including ATP CTP certification. L-3 is at Booth 1416.



L-3's Lynx NGT-9000 is to be installed in 100 ATP Flight School training aircraft.

Innova Aerospace Upgrades for Citation 525s and 560

Innova Aerospace (Booth 2282) has introduced new upgrade programs for the Cessna Citation 525 series and Citation 560.

For C525s, which includes the CitationJet, CJ1 and CJ1+, it has developed a Williams International FJ44-1A engine retrofit that provides a 10% increase in both cruise speed

and range, improves reliability and reduces operating costs, the company claims. It also is considering a major avionics retrofit, integral winglets and engine pylon/nacelle optimization for the C525 series. First flight of a testbed aircraft is expected by December, with FAA STC approval in spring 2017. Slot reservations are available for all Citation 525 series aircraft for installations starting in Q3 2017.

For the Citation 560, Innova, in conjunction with BendixKing, is developing a version of the AeroVue integrated flight deck to address

the upcoming ADS-B mandate and increasing failure rate on the CRT displays. "AeroVue implements cutting-edge integration to some current aircraft systems, including safety sensors, navigation and terrain database information for enhanced safety and situational awareness," the company says.

"AeroVue also complies with the ADS-B mandate, and enables coupled VNAV profiles, WAAS LPV approaches and RVSM compatibility." Innova is aiming to certify the upgrade by 2Q 2017.



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Bell, Mecaer Launch VIP Model 525

Bell Helicopter has launched a high technology, VIP interior for its Model 525 super-medium rotorcraft in a bid to widen its appeal to the VIP and high-net-worth individual market.

The VIP kit, called MAGnificent after its Italian partner Mecaer Aviation Group, was unveiled at the Monaco Yacht Show on Sept. 28, where the company hoped to attract interest in the aircraft as a flying yacht tender for a new generation of gigayachts - private floating palaces over 100 meters in length and increasingly equipped with facilities for larger helicopter types. Mecaer is here at [Booth 1919](#).

With the downturn of the oil and gas industry, the company has noted that several customers are considering converting aircraft for the VIP mission, noting its high cruise speed and long-range capabilities.

Bell had planned to launch the Mecaer interior at this year's Farnborough International Airshow but decided to cancel all 525-related activity at the show following the loss of the first prototype on July 6.

Charles Evans, Bell's director of marketing and sales support, said Bell was continuing to support the NTSB and FAA in their investigations into the crash, which killed two of the company's test pilots.

All test flying of 525s has been halted and the company does not expect to restart until the final report is published, but "non-flight critical elements of the program are continuing," said Evans.

The company remains hopeful of achieving certification of the fly-by-wire helicopter in late 2017 or early 2018.

The MAGnificent VIP interior kit offers operators a number of options in terms of seating arrangements. Key to the kit is the installation of a noise cocoon in the cabin, attached to the cabin floor but isolated from

the vibrations of the main dynamic components, gearbox, rotor head and engine above.

With the cocoon, combined with an active vibration system installed as standard, and additional soundproofing, Mecaer and Bell believe they can reduce cabin noise to levels of around 70 dB. This compares favorably

to an IP network that can be controlled from an operating system accessible through Near Field Communication (NFC) technology, the same technology that allows smartphones as debit or credit payment devices. Through the NFC, the phones are linked to an interactive program that allows adjustments to internal lighting and the level of tint in the photochromatic windows.

The VIP kits will be built by Mecaer at its plant in Italy and installed on the aircraft on the production line in Amarillo, Texas,



The Bell 525's interior is dubbed MAGnificent after the airframer's Italian partner Mecaer Aviation Group.

with noise levels of around 60+ dB on modern business jets.

"Passengers can speak without the need for headsets," says Grayson Barrows, director of cabin comfort systems at Mecaer Aviation Group, "That is a dramatic decrease in noise levels."

Passengers can also interactively control the cabin environment using a smartphone, tablet or watch. The cabin systems are linked

a process expected to take approximately three weeks.

Mecaer already has a close relationship with Bell, building the flight control system for the 505, and has been developing VIP interior kits for other Bell family aircraft including the Model 429 light twin. Company officials have hinted that such a kit for the new Model 505 Jet Ranger X is in development.

—Tony Osborne

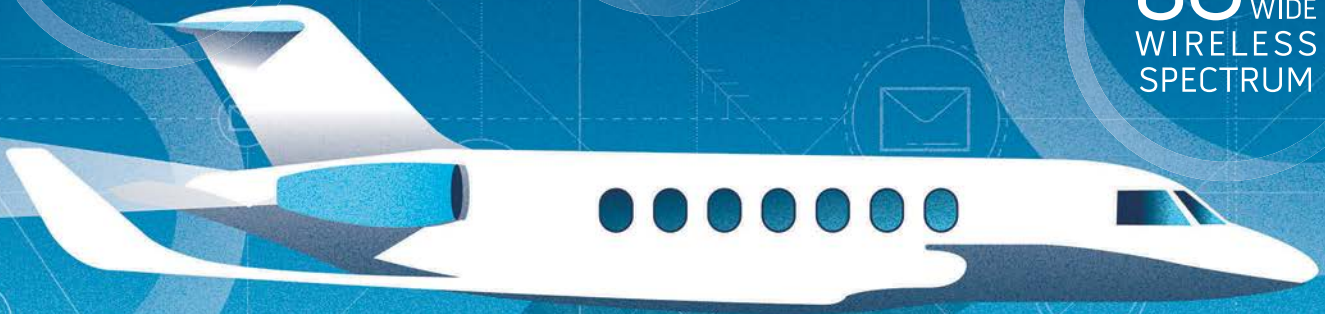


Bell hopes to certify the fly-by-wire Relentless in late 2017 or early 2018.

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Gulfstream's All-New G500 Jet...

Business & Commercial Aviation Senior Editor-Chief Pilot Fred George flies Gulfstream's in-development G500 and finds the all-new large-cabin business jet offers new levels of fuel efficiency, flight deck sophistication, pilot situational awareness and low noise coupled with natural flying characteristics

Suddenly, cruising at Mach 0.80 seems so 20th century. The G500 cruises economically at Mach 0.85, the new standard for the latest large-cabin business jets and long-range Airbus and Boeings.

With 5,000-nm range at that speed, the \$44.65 million G500 can fly nonstop between Seattle and Seoul, Los Angeles and London, or Montreal and Montevideo. The longest trips take less than 10.5 hr., yet are flown on less fuel than any other business aircraft cruising at Mach 0.85. Range at Mach 0.90 high-speed cruise is 3,800 nm.

Due to enter service in 2017, the G500 will replace the G450 in Gulfstream's product line and the contrast between the two is striking. While the G450 was an evolutionary step in Gulfstream model development, the G500 is a leap forward in aircraft design. As the launch platform for Pratt & Whitney Canada's PW800 turbofan, this is the first large-cabin Gulfstream powered by engines not made by Rolls-Royce.

The G500 is far from a scaled-down G650, and premieres the Symmetry flight deck, Gulfstream's and perhaps business aviation's most advanced cockpit. Its three-axis digital fly-by-wire flight control system is adapted and improved from the G650's.

The landing gear features trailing-link mains for smooth touchdowns, with a redundant brake-by-wire system and multi-disc carbon heat packs. An autobrake system

is standard.

The environmental control system's 10.7-psi pressurization provides a 4,850-ft. cabin at FL 510 and 3,670 ft. at FL 430. At routine cruise altitudes, cabin altitude seldom exceeds 4,000 ft. on most missions.

Based on a 46,600-lb. basic operating weight (BOW), the aircraft has a 1,800-lb. tanks-full payload. But customer options such as a mid-cabin solid partition and Internet connectivity can inflate BOW and reduce payload.

We Go Fly

In mid-September, BCA flew G500-72003, the third flight-test aircraft.

It was immediately clear that the G500's Symmetry flight deck has little in common with any previous Gulfstream's. Dozens of switches, knobs and buttons, plus at least half the physical circuit breakers, have been eliminated. The Honeywell touchscreens provide access to virtual circuit breakers and integrate many system control functions, automating many tasks that formerly required pilot actions.

Four portrait-configuration, 14.1-in. touchscreen displays dominate the main panel. Three large touchscreens on the overhead panel replace more than a dozen stand-alone switches. Only critical functions that require immediate crew inputs have dedicated control panels and switches. The glareshield control

panel is narrower, as several controls have been integrated into the lower four touchscreens. Left and right 5-in. standby displays also use touch interfaces.

Data entry is via a virtual keyboard, changed at G500 chief test pilot Scott Martin's insistence from the old-style ABCDEF aviation format to the QWERTY layout used for consumer computers. While the touchscreens have a comparatively intuitive user interface, they are far from being airborne clones



The G500 is the first civil aircraft equipped with active sidesticks – control devices that are electrically back-driven so they appear to be mechanically linked. Move one and the other moves as though the two are tied together. They also provide stall-warning stick-shaker tactile feedback.

of consumer tablets. Gulfstream has created push-wait-release icon activation to prevent inadvertent button pushes.

Graphical flight planning is by phase of flight, similar to Dassault's EASy or Bombardier's Vision flight decks, but I found the touchscreen interface to be better for hand-eye coordination than the cursor control devices (CCDs) used by other manufacturers. The G500 retains the CCDs, however, now relocated to the center pedestal.

Looking down, the primary flight and multifunction displays (PFD and MFD) provide much better situational awareness than on older business aircraft. Most jets do a good job of providing guidance to help land and take off but leave you blind at the airport when taxiing to and from the ramp in low visibility.

The Symmetry flight deck fixes that. The exocentric view on the PFD looks like a camera image from 100 ft. above and behind the aircraft. Ramp pavement, taxiways and runways are depicted, along with structures, identification signs, hold short lines and hot spots. A bird's-eye display on the MFD provides an equally detailed overhead view of the airport diagram. ADS-B In growth modes will add real-time vehicle and aircraft traffic to these displays in the future.

In pre-takeoff flight control checks the



From the top: flight test engineer Rachel Henry, G500 chief test pilot Scott Martin, senior test pilot Kevin Claffey and Aviation Week/BCA's Fred George.

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sidesticks mimicked inputs from each pilot. From the immediacy and precision of their action, they could have been mechanically connected rather than electronically linked. In my opinion, they provide a significant improvement in situational awareness over passive sidesticks.

Our computed takeoff weight was 56,458 lb. Because the G500 was just midway through its development program, full stall testing was not complete. As a result, we used V speeds that were padded by at least 15%. That increased takeoff field length (TOFL) by several hundred feet compared to a production airplane.

Using 10 deg. of flaps, we set takeoff speeds of 131 kt. indicated airspeed (KIAS) for the V1 go/no-go decision and Vr rotation speeds, 143 kt for V2 takeoff safety speed and 162 kt. for the Vse final segment one-engine-inoperative (OEI) climb speed. The padded speeds resulted in a 4,839-ft. TOFL.

Cleared for takeoff on Runway 10, I advanced the power levers and engaged the autothrottles. With a weight-to-thrust ratio of 1.86:1, acceleration was quite brisk. Initial pitch response to pulling back on the sidestick was crisp, but well damped. Twelve



Four portrait-configuration, 14.1-in. touchscreen displays dominate the Honeywell-based Symmetry flight deck.

Turbulent air associated with the approach of tropical storm Hermitte prevented an accurate measure of cruise performance, but I spot-checked it at three points. At a weight of 55,000 lb., in ISA-8C conditions, the aircraft cruised at Mach 0.85 or 478 kt. true airspeed (KTAS) while burning 2,300 lb./hr. Pushing up to Mach 0.90/507 KTAS, fuel flow increased to 2,700 lb./hr. And nudging redline at Mach 0.92/517 KTAS, it increased to 3,300 lb./hr. During the cruise checkpoints, I was impressed with the low sound levels in the cockpit and also the 3,670-ft. cabin altitude.

I then pulled the aircraft into a wind-up turn to check Mach buffet boundaries. It was buffet free up to 2.0G, but I could not probe absolute limits because of flight test restrictions.

During the descent back to Savannah, I checked pitch response to gear, flap and speedbrake configuration changes. The FBW system compensates for each. But as speed increases or decreases, pilot trim inputs are required to maintain neutral sidestick forces.

Our first approach to Savannah was the ILS Runway 10. VREF was 122 KIAS and Vse was 157 KIAS, based on using 39 deg. of flap for landing and flaps up for the OEI final segment speed. Similar to the takeoff, the landing V-speeds were heavily padded to assure generous stall margins.

It was an ideal day to check head-up display (HUD) and enhanced vision system (EVS) performance. The G500 comes standard with a left-side Rockwell Collins HGS-6250 HUD with 42-deg.-wide-by-30-deg.-high field of view and a third-generation EVS with 640 x 512 pixel resolution, a wider field of view and better infrared camera performance. Various cloud layers reduced visibility, but

we were able to spot the runway using EVS well outside of unaided visual range.

Our second approach was a simulated OEI exercise. I disconnected the autothrottle system. Martin pulled back the right throttle to idle. The aircraft is easy to control, but the autothrottle is not available to hold the set indicated airspeed if one engine fails. Unlike systems installed in commercial airliners, it is limited to all-engine operations.

We flew the GPS procedure for the second approach to Runway 10, again using 39 deg. of flap.

While the G500 has full three-axis FBW, it lacks P-beta - a yaw/roll compensation function for OEI operations. P-beta is part of other FBW systems, including that installed in the smaller Embraer Legacy 450/500.

But the aircraft exhibits little yaw/roll coupling or dihedral effect, so only small rudder inputs are needed during OEI approaches. Single-engine go-arounds, though, require large rudder-pedal inputs to counter sideslip. But pedal forces are moderate, reducing pilot workload.

As with Gulfstream's G650, this aircraft has such a natural, but well-mannered feel that it is hard to detect it has fly-by-wire and not conventional controls. The active sidesticks provide such realistic tactile and visual feedback that they appear to be mechanically linked. The 10 touchscreens reduce pilot workload, slash the size of checklists by automating systems, clean up the cockpit layout and provide redundancy not possible with conventional stand-alone controls. The exocentric synthetic vision system on the PFDs and enhanced map views on the MFDs offer a leap forward in situational awareness when taxiing between runways and ramps in low visibility.

Even more impressively, the G500 sets higher standards for cruise speed and fuel efficiency, along with improved passenger comfort, lower cabin altitudes and reduced interior sound levels.

As the worthy successor to the G450, the G500 is poised to seize a sizable share of the large-cabin aircraft market. It embraces disruptive change and its leap forward in 21st century technology gives it the potential to stay in production for years to come.

Read the full Pilot Report in November's *Business & Commercial Aviation*.



Similar to the G650, the G500's long-range cruise speed is Mach 0.85.

seconds after beginning the takeoff roll, we broke ground in less than 3,000 ft., well before Taxiway C1. The active sidesticks had a nice feel, soft on center and more resistance with larger control displacement.

The G500, similar to the G650, has a speed-stable flight control law. Nose pitch changes in response to increases or decreases in indicated airspeed. The sidestick has two thumb controls. The inboard red button is pressed to roughly reset the trim speed to the aircraft's indicated airspeed. The outboard, four-way trim switch is used to make fine adjustments to pitch trim. I found it more convenient to use the red button to reset trim to neutral with rapid changes in indicated airspeed. Both controls also double as autopilot disconnect switches.

Gulfstream Unveils All-New Cabin Interiors

Gulfstream has reached new heights in cabin sophistication with its two latest models, the G500 and G600. Today it is unveiling the luxuriously appointed cabin of the G500 and showing new interior styles for the first time.

“Less is more” in the aesthetics, luxury and ambience of Gulfstream’s latest cabins, says Tray Crow, director of design for the aircraft manufacturer. He and his team took the opportunity of the two new jets not only to implement new cabin technologies but also to involve customers more than ever before in designing their surroundings. This new approach will now be extended to other Gulfstream models.

Crow and principal designer Vicky Amores determined that customers were not being best served by choosing from lists of cabin layout, furniture, colors and fabrics. Instead the team wanted to design environments that owners would feel at home in.

So they created five “profiles”

into which their customers’ tastes might fit: Classic, Layered, Sport, Minimalist and Next Gen.

Classic interiors are what one would imagine, and probably best if the client is concerned about ease of resale.

Layered: An emerging trend for Gulfstream that could turn an interior more into a home than an office. Perhaps “No galley! I want a closet for my furs.”

Sport: Leaning more toward carbon fibers, high contrast, maybe black-and-white interiors.

Minimalist: Very tonal, very architectural, with a focus on textures and ultra-suede.

Next Gen: A lot more vibrant and playful. “It’s an aesthetic that’s growing, but we know less about next gen clients than any of the others,” says Amores. “They might have the greatest impact

over the next 10 to 15 years.”

A portfolio of seat designs complements each style, differing in look, style and luxury. A customer can, of course, play mix and match, says Crow. The designs and six seats, two each from the Classic, Minimalist and Sport styles, can be inspected here at the [Static Display](#).

Other cabin improvements include overhead trim uncluttered by controls, stone veneer floor for galley and lavatory, improved galley designs and a more ergonomic cabinet-level refrigerator.

Many of the improvements were made at the behest of G650 and other customers, says Crow. When the G650 entered service, Gulfstream learned that its non-circular fuselage flexes differently under pressurization loads than a circular cross-section fuselage. The flexing caused gaps in some interior sidewall seams and warping of some panels. Gulfstream engineers say they’ve learned from the experience and made changes to interior mounts so the

cabin furnishings of the G500 and G600 should fit much better under similar loads.

Both aircraft will be equipped with Iridium and Inmarsat satellite communication systems as standard.

For high-speed data, Gulfstream plans to offer options for JetConneX Ka band, SwiftBroadband and Gogo Biz data systems at entry into service.

Cabin sound levels are expected to be comparable to the G650, thanks to a lot of work on structures and noise absorption by the company’s acoustical lab.

The G500 will compete directly with the Dassault Falcon 900LX and upcoming Falcon 5X in cabin size, range and price. The Falcons will remain class champions for fuel efficiency, but the G500 will cruise higher and faster.

Similarly, the G600 will vie against the new Falcon 8X. The Dassault offering has a slightly longer cabin and better fuel efficiency, but the G600 will fly faster, farther and higher.

The new Gulfstreams also compare favorably with Bombardier’s existing Global 5000 and 6000 models, even though those aircraft have slightly larger cabin cross-sections.

The G500 cedes up to 400 nm of range to the Global 5000, but it cruises faster, and offers far better fuel efficiency. The G600 has a 3-ft. shorter cabin than the Global 6000, but it cruises faster and farther on less fuel.

The G500, to be certified and enter into service in 2017, is priced at \$44.65 million. The G600, to be certified and enter service in 2018, comes in at \$55.65 million.

—John Morris



“Less is more,” says Gulfstream design chief Tray Crow.



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Avinode's PayNode to Revolutionize Charter Payments

Payment is the last major pain point in the business jet charter industry. The procedures are inefficient, costly and insecure, placing unnecessary strain on brokers and operators' cash flows, as well as giving customers insufficient protection of their payment details. But that's about to change with the launch today of PayNode, by Avinode, the world's largest online marketplace for buying and selling private air charter.

PayNode is the world's first payment service provider created to support the global business aviation industry, says Magnus Henriksson, its global business director. The service is designed to bring the payment process into the digital world from its current cumbersome, manual, paper-intensive traditions.

"Imagine eBay without PayPal," says Henriksson. "Well, that's how the charter industry is today."

Typically brokers and customers meet online (such as on Avinode's Marketplace) and arrange a charter. As with an airline, you cannot board the charter jet until paying for

the ticket - so who pays, and when, especially when charters are commonly booked only 48 to 78 hr. before departure? Very often the broker must foot the bill while waiting for payment from the customer.

"The average transaction is \$35,000," says Henriksson. "When you consider that we list 3,200 aircraft, have 12,000 customers, some 7,000 professionals a day using Avinode, and 450,000 flight requests a month, you can see that the sums of money involved are very substantial. Now we are set to disrupt the multi-billion-dollar business aviation payments market."

PayNode lets customers pay directly for business charter flights with an American Express card. This will be followed soon by the ability to include bank wire transfer payments, instant settlement, notification and fund movement.

Anybody can sign up for PayNode, but they must use the American Express card, which will charge 3-4%. There will also be a payment processing fee.



PayNode global business director Magnus Henriksson (left) and Avinode Group CEO Niklas Berg.

Customers could, and still can, pay the broker with their own credit card, but this is inherently risky in that details taken over the phone, scans of credit cards and passenger IDs are often not stored securely to the highest industry standards. PayNode removes these risks.

One more benefit: Customers or brokers decline one out of seven trips because of payment issues, "and that's a huge amount of business," Henriksson says. PayNode is expected to reduce this number substantially.

Avinode is at [Booth 2219](#). —John Morris

Acorn Growth Acquires Raisbeck Engineering

ACORN GROWTH COMPANIES, an Oklahoma City-based private equity firm, has acquired Seattle-based Raisbeck Engineering from founder and chairman James D. Raisbeck, it was announced on Sept. 26.

Founded in 1982, Raisbeck Engineering ([Booth 434](#)) has developed dozens of modification systems for general aviation, utility and jetliner aircraft. It is best known for its Beech King Air systems, including enhanced efficiency propellers, drag reduction wing leading edge modifications, aft stabilizing ventral fins, fully enclosed main landing gear doors and extended capacity nacelle wing lockers.

Raisbeck, who celebrated his 80th birthday on Sept. 29, will remain as chairman and chief creative muse, roles he's played for 35 years. CFO Tony Armstrong assumes the role of interim CEO, with other members of the management team remaining in place.

"We decided to partner with Acorn

Growth Companies because we strongly believe that together we can continue to build on our legacy of delivering innovative products while growing our footprint beyond the markets we serve today," Raisbeck says. "Negotiations with Acorn have been in progress for nearly a year."

Raisbeck Engineering will continue to operate as a distinctive brand.

Acorn invests exclusively in aerospace and defense companies, including composites manufacturers, nondestructive testing firms, FAR Part 145 repair stations and aircraft financing firms.

Conscious of his age, Raisbeck elected to sell the firm to ensure its continued success after he retires sometime in the future. The firm also will be able to distribute products made by other aerospace firms owned by Acorn. Terms of the acquisition were not disclosed.

—Molly McMillin



James Raisbeck

Air BP and RocketRoute Launch Fuel App

Air BP ([Booth 1457](#)) has a new way of buying fuel: the RocketRoute Fuel app. The app streamlines the fuel purchasing process by providing online access to an extensive global network of aviation fuel locations, with convenient payment methods.

"The app is designed for the global operator...and is offered to anyone with a fuel requirement, not just current Air BP customers," the companies say. It is available free-of-charge from the Apple App Store for iPads, or from the RocketRoute website for all other devices. Once the registration process has been completed, users can request, plan and purchase fuel at any of Air BP's 800-plus locations worldwide.

Air BP Sterling card holders can also use the app to request, plan and purchase from 62 U.S. locations operated by Signature Flight Support that began accepting the Air BP Sterling Card from Aug. 1.

They can also use the app to offset their carbon emissions.

The RocketRoute Fuel app allows users to request, plan and purchase fuel at any of Air BP's 800-plus global locations.



LHT Wins BBJ 787 Contract

Lufthansa Technik has 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. The engineering services consist 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 parts provisioning service comprises the overall services for the aircraft and its cabin supporting the entry into service.



Boeing 787 dining/conference room concept by Lufthansa Technik (Andrew Winch Designs).

“We are permanently extending our technical support for this aircraft type,” said Walter Heerdt, LHT’s SVP, VIP & Special Mission Aircraft Services. “The engineering and initial parts provisioning services mark another milestone in further strengthening our expertise on the 787.”

The technical support agreement is a follow-on contract to a comprehensive cabin modification of this aircraft, which LHT will carry out in the coming weeks. So far the company supports more than 180 Boeing 787s from airline operators. Its product portfolio comprises maintenance, repair and overhaul services for commercial and VIP aircraft of this type, including engineering, spare parts supply, modifications and completions. LHT is at [Booth 2632](#).

FSI Vero Beach: 50 Years

FlightSafety International Academy in Vero Beach, Florida, celebrated its 50th anniversary on Oct. 17.

The Academy’s 160-strong staff includes more than 70 Certified Flight Instructors, and its fleet of nearly 90 aircraft boasts 20 new Piper Warriors, as well as Arrows and Seminoles, all with Garmin G500/650 series avionics. The 30-acre campus is equipped with a full array of

training tools including multimedia classrooms, flight training devices and an ATC communications lab.

“The FlightSafety Academy has made significant contributions to the aviation industry since its founding in 1966,” said Bruce Whitman, FSI’s chairman, president and CEO. “It is recognized worldwide for providing the highest quality training and helping to prepare each student to

pursue a career as a professional pilot. We sincerely appreciate the many contributions of our teammates in Vero Beach, and thank the 21,000 Academy graduates who fly for 62 airlines and over 100 corporate flight departments around the world for their confidence and support.”

FSI ([Booth 2679](#)) provides more than 1.3 million hours of training each year to pilots, technicians and other aviation profession-

als. It operates the world’s largest fleet of advanced full-flight simulators at locations in the U.S., Australia, Brazil, Canada, China, France, Japan, the Netherlands, Norway, South Africa and the UK.



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ATP Launches Mobile Application

Some 43 years ago, California-based ATP (Aircraft Technical Publishers) set out to create a single-source library service for aviation technical and regulatory publications using computer technology. Now it claims to be the premier provider of content management and information services with 5,600 customers in 96 countries.

Today it is launching what ATP CEO Charles Picasso calls the next evolution in making its library accessible: the ATP Aviation Hub Mobile App cloud platform, which enables maintenance providers and operators around the world to tap into extensive databases with any smart device.

"Instead of using a laptop, the information can be accessed anywhere at any time," he says.

ATP's libraries are built on the digitization and continuous updating of the manuals, technical specs and Service Bulletins for a multitude of aircraft types and their equipment,

supplied by 54 OEM manufacturers and regulatory and safety authorities. Next year, says Picasso, ATP will be able to provide full documentation by tail number.

This means ATP will be able to offer a maintenance logbook for individual aircraft accessible from anywhere. The logbook will record all maintenance actions, and prove compliance with Service Bulletins and safety regulations.

"If you can prove an aircraft has been properly maintained, its residual value will be higher," Picasso says.

ATP today delivers more than four terabytes of updated information every month.



Martin Lidgard, CEO and founder of Web Manuals, and ATP CEO Charles Picasso (right).

Web Manuals: Here for First Time

ATP and Sweden-based Web Manuals have joined forces to provide aircraft operators and maintenance organizations with constantly updated operating manuals as well digitized technical documents, maintenance manuals, and safety and regulatory alerts. Web Manuals recently extended its cloud-based services into the U.S.

"Both ATP and Web Manuals are helping the industry evolve through digitization and interconnectivity of workflows, processes and data," says ATP CEO Charles Picasso. "It's clear the rate of complexity and change in the industry will continue to rise. To keep pace with these changes, our customers will need to be more proactive in managing their operating manuals and related documentation."

Bringing together the two companies' cloud-based solutions should help clients drive greater operational efficiencies, boost regulatory compliance and improve collaboration with their customers.

Says Martin Lidgard, CEO and founder of Web Manuals: "We've already gained significant traction in the U.S., and we are confident that we will be able to accelerate our momentum through this partnership."

ATP is offering Web Manuals' functionality through the ATP Aviation Hub cloud application. Both companies are here at ATP's Booth 825.

—John Morris

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Snecma Silvercrest for Cessna Hemisphere



Textron Aviation's new Citation Hemisphere is to be powered by Snecma Silvercrest engines.

Textron Aviation kicked off this year's NBAA convention by naming Safran and Honeywell as key suppliers of engine and avionics for its new \$35 million, large-cabin Citation Hemisphere.

The company is debuting a full-scale Hemisphere cabin on the [Static Display](#).

The jet will be powered by the Safran Aircraft Silvercrest engine, with more than 12,000 lb. of thrust per engine. It will come equipped with Honeywell's advanced Primus Epic avionics and feature an integrated full fly-by-wire flight control system incorporating components from Thales.

First flight is expected in 2019.

The Silvercrest engines will consume up to 15% less fuel than other engines in their category and will reduce emissions by up to 40% and noise by 50%, Textron Aviation said.

"For the first time in more than 20 years, the large-cabin segment will see a clean-sheet design aircraft with the Citation Hemisphere," said Textron Aviation President and CEO Scott Ernest.

The 4,500-nm Hemisphere will seat up to

19 passengers in a three-zone, 102-in.-wide cabin with a 6 ft., 2 in. stand-up clearance and flat floor.

Textron Aviation is designing and building the interior furnishings of the aircraft, including the seats and cabinetry, in-house.

The seats, the widest in their class, according to the company, will feature thermo-electric technology for heating and cooling comfort.

"We've spent the past several months collaborating with our customer advisory board, which is comprised of industry executives operating various products in this class, to affirm what customers need in this segment," said Kriya Shortt, SVP of sales and marketing.

The input provides a key influence in the development of the aircraft, Shortt said.

The Primus Epic cockpit will provide a conformal 3-D view of the outside world in fog, rain or snow to improve situational awareness. Honeywell's connected aircraft solution will span satellite communications and connectivity airtime and integrate with Textron Aviation's LinXUs maintenance and diagnostics reporting system.

The Hemisphere will also include a full fly-by-wire flight control system, which will be fully integrated and include active control sidesticks. Thales has been selected to provide the flight control computers and remote electronic units to support the system.

—Molly McMillin



The Silvercrest engine is on display at Safran's Booth 1619.

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Wijet Forms World's Largest On-Demand Air Taxi

Wijet, a France-based executive air charter specialist, is taking over UK-based competitor Blink to create the world's largest on-demand air taxi company, with a combined fleet of 15 Cessna Citation Mustang very light jets.

The move is the latest step in the consolidation of Europe's business aviation industry. Earlier this year Luxaviation announced it is regrouping a number of operators - Execujet, Fairjets, Masterjet, Unijet, Abelag and London Executive Aviation.

Corentin Denoeud, Wijet's cofounder and CEO, explains that the acquisition of Blink should be seen as a merger in which two companies are going to keep the best of each other.

The Wijet name (pronounced wee-jet) will stay and "the idea is really to merge," he told Aviation Week. By November, one air operator's certificate (AOC) will be kept - the British one, as Blink operates nine of the 15 total aircraft. "A single AOC makes it much easier to have every pilot allowed to fly every aircraft," Denoeud says.

The Blink brand will disappear in the first half of 2017.

Thus far, Wijet has touted a single rate of 2,400 euros (\$2,636) per flight hour, claiming to make a quotation much more straightforward and transparent. For a roundtrip from one of Wijet's so-called bases, no extra fee is



Embraer's Phenom 100 - upward of 700 have now been delivered.

charged. The "bases" are Paris, Bordeaux, Lyon, Nice, Cannes, Brussels, Geneva and now London. Otherwise, a ferry flight costs 1,600 euros (\$1,758) per hour.

The new entity's offices for day-to-day operations will be at Blackbushe Airport, near London. Paris will be a back office.

For maintenance, Blink's Genoa, Italy, workshop is expected to help cut costs by 30%. A go-team will be created for repairs at remote locations. Cessna's maintenance services at Paris-Le Bourget Airport have been deemed expensive.

The expanded Wijet will be run by two CEOs: Denoeud and Blink's Cameron Ogden. Salespeople will keep their areas of expertise. Blink is doing business with brokers, while Wijet has direct customers in the corporate and leisure market segments.

Denoeud sees the merger as a stage in a longer-term growth strategy. By 2019, the fleet could be 50 strong. "What about replicating our business model with a larger type, Citation CJ4 or Phenom 300, or in Asia?" he asks.

A regular client since 2014 has been Air France, to which Wijet has been providing a connection service for first-class passengers. "The activity accounts for less than 5% of our business," Denoeud says.

A Wijet Mustang flies an average 600 hr. per year, the company says. Combining workforces is bringing the number of pilots to 55. There are 130 shareholders, and the takeover is a way to use the 15 million euros (\$16.48 million) raised since 2015.

—Thierry Dubois

Could the Concept Make a Comeback?

Very light jets were all the craze when Embraer launched the Phenom 100 and 300 in 2005; the company confidently predicted it would deliver 1,000 of them in 10 years and capture 36% of the world's business jet market by deliveries. But few could have predicted the global financial crisis of 2008. With it came the collapse of the VLJ market and the end of many plans for air taxi service.

Today, 90% of business jet sales are to replace older aircraft, says Marco Túlio Pellegrini, president and CEO of Embraer Executive Jets. "The several billion dollar question is what is needed to grow the executive aviation market?" he says. "How do we grow it? What's missing?"

"Somehow we should be connecting with the airlines. Passengers are not well served by the system and are not using business jets. Why not?"

"Air taxi? Maybe something like that is missing. A fleet of very light jets flying 1,000 hr. a year would be a very economic way to do it. But someone needs to buy them, and develop the business model." The Phenom 100 now costs \$4.16 million, meaning a fleet of 100 would need an initial investment of some \$400 million.

"Yes, the air taxi concept could come back, providing there is no crisis," Pellegrini believes.

Recalling that it took 20 years for Richard Santulli to bring to fruition his plans for fractional ownership, Pellegrini says it might only be a matter of time, conviction...and deep pockets. And confidence, of course, in the future of the world economy.

—John Morris



Blink CEO Cameron Ogden (left) and Wijet CEO Corentin Denoeud.

Duncan to Build \$50 Million Utah Maintenance Complex

Duncan Aviation plans to build a \$50 million business aircraft maintenance, modifications and paint complex at its facility in Provo, Utah. It will add nearly 220,000 sq. ft. of space, comprising a 166,000-sq.-ft. maintenance and modifications center and a 53,000-sq.-ft. paint facility at Provo Municipal Airport. Groundbreaking is scheduled for 1Q 2017,

with completion two years later.

The facility will include large hangars, backshop and office space. The paint facility will include downdraft airflow technology, which includes automatic monitoring and alarms. It is designed to hold multiple aircraft at once, and will accommodate large business jets such as the Gulfstream G550, Bombardier Global Express and

Dassault Falcon 7X.

“The Provo area is the perfect complement to our other full-service facilities in Battle Creek, Michigan, and Lincoln, Nebraska,” said company president Aaron Hilkemann. “That is why we initially started our Provo facility. Although the economy prevented us from building an all-new facility there at the time we initially planned, we are pleased to begin work on the infrastructure needed to care for upcoming maintenance and completions demand from the area and around the world.” Duncan Aviation is at [Booth 3126 and the Static Display](#).



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Blackhawk Modifications wants to replace 1,050-shp PT6A-60A engines on King Air 350s with 1,200-shp PT6A-67As.

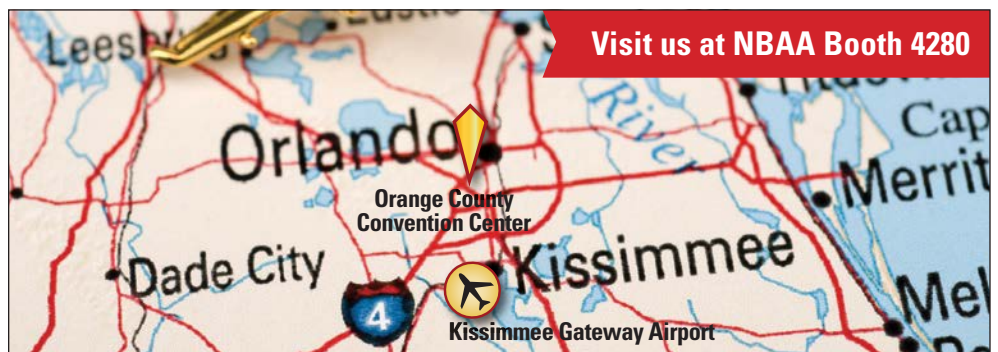


Blackhawk Advances KA 350 Engine Upgrade

Blackhawk Modifications (Booth 1119) has revealed details of its latest XP67A Engine + Upgrade program for King Air 350s. The program will replace the aircraft's existing 1,050-shp Pratt & Whitney Canada PT6A-60A engines with 1,200-shp PT6A-67As. Blackhawk expects to receive an STC for the modification in 2Q 2017.

Performance has exceeded forecasts during initial test flying. In hot climate conditions, the XP67A will climb from sea level to its FL 350 service ceiling in 18 min., more than doubling rate of climb. Typical cruise speeds are increased by up to 37 KTAS and can settle at up to 340 KTAS if an operator chooses to fly at maximum engine power limits. Those looking for increased endurance and range can throttle back and extend capabilities due to better specific fuel consumption ratings, Blackhawk says.

Since the PT6A-67A will require a more robust propeller assembly than the PT6A-60A, Blackhawk has selected a five-blade natural composite unit from German manufacturer MT. The 102-in. diameter propeller provides greater clearance, has unlimited blade life and offers offer significant reductions in noise and vibration levels while improving overall performance. Hartzell's 105-in. diameter five-blade composite propeller is also likely to be included as an option in the initial certification.



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Uber In 'Learning Mode' for VTOL Air Taxi



"Urban air transportation is simply a continuation of our mission," says Uber product manager Nikhil Goel.

Ride share company Uber confirms it is studying the potential use of vertical takeoff and landing (VTOL) vehicles as an option for future urban transportation, and is interested in partnering with concept developers to transform its vision into reality.

"Right now we are in learning mode and trying to figure out how we can most effectively do that," says Nikhil Goel, product manager at Uber. "There's a clearly a lot of great work going on in this space."

"At Uber we are super-obsessed with cities and improving cities and unblocking their immense value through urban mobility.

"To us urban air transportation is simply a continuation of our mission, not only because it can cut congestion, and it has dramatic potential to do that, but also because it allows us to move people

from point A to point B much faster than we would otherwise be able to do. If we do it with electrically powered vehicles we can do it with zero emissions, so we are super excited about that."

Uber's interest in future VTOL concepts comes amidst a surge in development of novel manned and unmanned aerial vehicles (UAV) with potential for urban transport and delivery modes. It also comes as service providers and distribution specialists such as Amazon continue to explore more ambitious trials of package delivery by VTOL UAVs. —Guy Norris

E-volo Seeks 'Multicopter' Class by Late 2017

German startup E-volo, developer of the two-seat Volocopter V200, the first manned, certified, electric-powered vertical takeoff and landing (VTOL) aircraft, has laid out a provisional road map targeting urban air services as early as 2020 and development of a larger, four-seat follow-on by 2022.

Described by E-volo as a "multicopter," the VC200 has an array of 18 battery-powered propellers on a fixed, branching structure above a centrally positioned fuselage. The two-blade props are fixed pitch, and thrust is controlled by individually managing motor speed for flight control. Despite the multiple propellers in the array, E-volo says the relatively low noise of the concept, compared to a conventional helicopter, will make it acceptable for urban flying. In recent acoustic measurement tests against a Robinson R22 single-piston helicopter, the VC200 was measured at 80 dB during a climb from ground level to 75 meters (246 ft.), compared to 90 dB for the conventional rotorcraft.

"Our ultimate goal is to be operating within cities like San Francisco. This is where we clearly want to get to and this is the path," says Florian Reuters, managing director, strategy and finance of E-volo. —Guy Norris



E-volo's two-seat Volocopter V200 is lofted by 18 battery-powered propellers.

Airbus Plans Urban Air Transport Projects

Airbus Group's Silicon Valley outpost A³ has revealed more details of the self-flying air taxi it is developing under Project Vahana. A full-size prototype is planned to fly at the end of 2017, followed by a production-representative demonstrator by 2020.

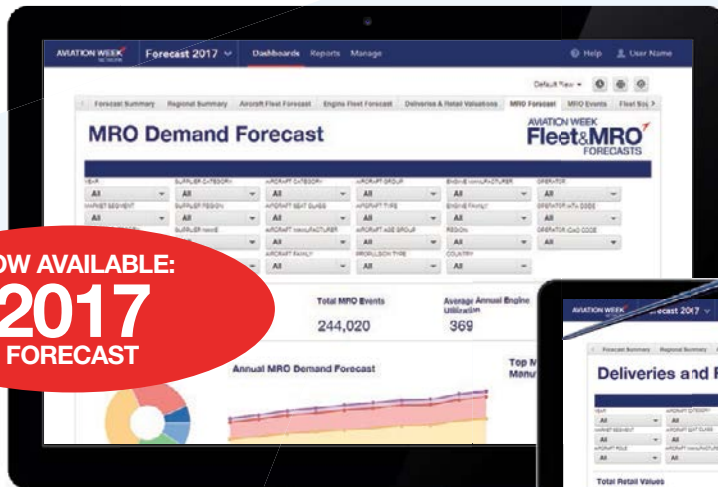
Vahana is clearly based on NASA Langley's HyperCommuter concept for a runway-independent air taxi with distributed electric propulsion. The vehicle has tilting forward and aft wings, each immersed in the wash of four electric-powered propellers.

In a post on project website vahana.aero, new A³ CEO Rodin Lyasoff says the Airbus unit started work early in 2016 and aims to make Vahana, designed to carry a single occupant or cargo, "the first certified aircraft without a pilot."

Lyasoff says battery energy density and safety are now adequate for airborne applications; reliable low-cost avionics are becoming available thanks to unmanned-aircraft developments; and obstacle detection and collision avoidance technology has matured.

A³ believes "full automation will enable us to achieve higher safety by minimizing human error" while making the vehicle smaller and lighter. Vahana will follow predetermined flight paths, "with only minor deviations of obstacle avoidance as needed." It will be fitted with a ballistic parachute that can deploy at low altitudes. —Graham Warwick

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Greenpoint's luxury interior for Crystal AirCruises' 777-200LR includes a grand lounge with a stand-up bar.

Greenpoint Completes VIP Boeing 777 for Crystal AirCruises

Greenpoint Technologies has designed and completed a new luxury interior for Crystal AirCruises' Boeing 777-200LR. It includes a grand lounge with a stand-up bar, sofas and tables for guests to dine, relax and socialize. The aircraft also features custom executive-class seats that fully recline to form lie-flat beds, custom blankets and pillows, flat-screen TVs, Wi-Fi connectivity and inflight entertainment.

While the B777-200LR can accommodate up to 380 passengers, this interior was designed to ensure maximum personal space and comfort for only 84 travelers. "From the beginning, Crystal AirCruises embedded the vision of providing the ultimate experience

and luxury of travel for its guests," explains Annika Wicklund, Greenpoint design director. "We teamed closely with Crystal AirCruises' design team to understand their ship designs and brand value, and while pulling similarities we embraced the company's unique experience in flight. I believe guests will enter and feel excitement, refinement and ultimate care."

The aircraft is currently undergoing completion at Greenpoint's facility in Moses Lake, Washington, and is on schedule for delivery next year, when it will enter service transporting VIP guests in accommodations on 14-, 21- and 28-day itineraries to the world's most exotic locations. Greenpoint Technologies is at [Booth 2276](#).

TRAQPak-FlightBridge FBO Reservations

Cincinnati-based ARGUS International Inc. has completed integration of TRAQPak FBO business aviation flight tracking software with FlightBridge Inc.'s online reservation and communication tool.

"We are very excited to offer this integration with our TRAQPak FBO program," said Shirley Mason, SVP of ARGUS Market Intelligence. "This will be a huge benefit to FBOs that already use FlightBridge and TRAQPak FBO, and will be a great tool for any FBO that wants to improve efficiency and customer service by managing flight tracking and reservations all in one system."

FlightBridge president Dudley King added, "Our mission is to make the lives of

FBO personnel easier, and support the best possible experience for aircraft operators, passengers and crew. Through our integration with TRAQPak, FBOs now have everything they need at their fingertips without having to jump back and forth between multiple systems. The team at ARGUS shares our commitment to enhancing the customer

experience, and through our mutual integration efforts, we've made both of our platforms even more valuable to the FBOs that rely on us."

The FlightBridge online reservation integration will be offered as a complimentary service to TRAQPak FBO customers. ARGUS International is at [Booth 3435](#) and FlightBridge is at [Booth 3207](#).



Argus TRAQPak FBO business aviation flight tracking software

Iraq Wants More Combat Caravans

THE U.S. STATE Department has approved a possible foreign military sale to Iraq of two Cessna AC-208 Combat Caravans and related equipment, training and support, with a total contract value of \$65.3 million. The government of Iraq's requests to purchase the aircraft included dual rail LAU131 Hellfire launcher capability on each wing, an AN/ALE47 electronic countermeasure dispenser, AN/AAR60 Missile Launch Warning System and AN/AAQ35 ElectroOpti-

cal Infrared Imaging System. In 2008, Iraq purchased three AC-208s and three C208 Caravans to support military operations against al Qaeda.

Earlier this year Cessna announced the availability of underwing hard points for the Grand Caravan EX. Tom Hammor, president of Cessna parent Textron Aviation's defense company, noted, "It's essential that we continue to tailor solutions for our special mission operators' needs.



Textron's Cessna Grand Caravan EX has special hard points for weaponry.

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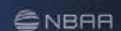


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*Comparison of overall annual operating costs of a Cessna XLS+ with those of a Piper M600, using the Conklin & de Decker Aircraft Cost Evaluator.



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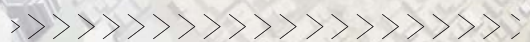
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Daher Delivers 800th Production TBM



Daher's 800th TBM turboprop single was a TBM 930, rolled out Sept. 21 at Tarbes-Lourdes-Pyrenees Airport in France.

On Sept. 21, Daher rolled out its 800th TBM turboprop single from the final assembly line at Tarbes-Lourdes-Pyrenees Airport.

The milestone aircraft was a TBM 930, the latest addition to the TBM family, which is in production along with the TBM 900. "The 800th TBM represents another important achievement and highlights the success of

our very fast turboprop aircraft family, whose first model - the TBM 700 - entered into production 25 years ago," said Nicolas Chabbert, SVP of the Daher Airplane Business Unit. "Year after year, our customers and operators appreciate the TBM's speed, comfort, operating efficiency and excellent handling characteristics.

"We remain confident in the

distributor for North Dakota, South Dakota, Nebraska, Minnesota and Iowa.

TBMs have logged a combined total of 1.37 million flight hours, which is equivalent to 8,500 around-the-world flights. The global fleet is operated by more than 730 customers in 35 countries on six continents. Daher is at [Booth 4882](#).

TBM family's future, backed by continuous developments that brought us to the latest TBM 930 and TBM 900 versions today, creating a strong foundation for the years to come."

The 800th aircraft was later ferried to Elliott Aviation in Des Moines, Iowa, which is the authorized TBM

TBM Owners Gather in Arizona

This year's TBM Owners and Pilots Association (TBMOPA) convention, which took place in September in Phoenix, attracted 305 members. They arrived in 101 aircraft, including five new TBM 930s, as well as many TBM 900, TBM 850 and TBM 700 models. The main focus of the three-day gathering was on airmanship and safety, with the emphasis on low-level loss of control and pilot situational awareness.

Howard Janzen, who has replaced Frank McKee as TBMOPA's chairman, commented, "This year's TBMOPA convention marked another step in meeting our association's goal of promoting safety and providing opportunities to maximize the pleasure and utility of the TBM ownership experience. We very much appreciate Daher's efforts in supporting safety-based enhancements to existing aircraft as well as to their new production aircraft. It is a sign of their long-term commitment to the product line."

Janzen, CEO of Cool Planet Energy Systems, is well acquainted with TBM. Of his total 7,000 flight hours he logged 3,700 hr. on his TBM 700C2 prior to purchasing a TBM 900 in 2014. A TBMOPA member since 2006, he has fulfilled various positions as a member of the board of directors.

The next TBMOPA annual convention will be held in San Antonio from Oct. 18-21, 2017. Daher is at [Booth 4882](#) and the [Static Display](#).

Hartzell Swept Airfoil Props Boost TBM Performance

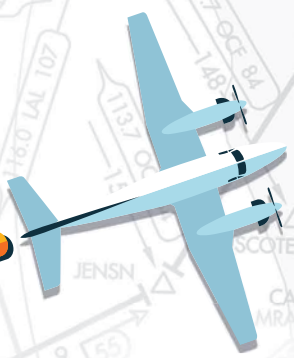


"Shorter takeoff rolls, better rate of climb, better cruise speeds, very smooth rides and a shorter stopping distance, with less noise."

Since gaining FAA approval in 2014, Hartzell Propeller has delivered 230 advanced swept airfoil five-blade props for the Daher TBM 700/850/900/930 series of single-engine turboprops. The propeller is standard equipment on new TBM 900/930s, and available for retrofit on earlier TBM 700/850 aircraft. It increases takeoff acceleration from 0-90 kt. by 10% and increases climb rate by 100 ft./min. Cruise speed is 2 kt. faster than with the Hartzell four-blade metal prop and 5 kt. faster than its five-blade wood-core propeller. Cabin noise is also reduced. The strength and light weight of its composite structure optimizes blade chord thickness and sweep while achieving maximum strength.

"Hartzell's high-performance structural composite propellers are now flying on roughly 30% of the TBM fleet after less than three years on the market," says Hartzell EVP JJ Frigge. "The reasons are simple. These attractive, high-performance propellers perform with shorter takeoff rolls, better rate of climb, better cruise speeds, very smooth rides and a shorter stopping distance, with less noise."

The props come with the longest warranty offered anywhere in the GA industry, Hartzell claims, all the way through first overhaul, and are available through its Top Prop conversion program or via Daher's dealer network. Hartzell Propeller is at [Booth 2026](#).



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Bob Hoover, 'Last Touchstone to the World of Aviation'

Experimental test pilot and favorite performer at air shows around the world pulled off precision aerobatic maneuvers in the North American Aircraft P-51 Mustang and Aero Commander Shrike.



Robert A. Hoover, 1922–2016



Bob Hoover's Shrike Commander at the Smithsonian's Udvar-Hazy Center at Dulles

R. A. "Bob" Hoover, called the "greatest stick-and-rudder pilot who ever lived" by Lt. Gen. James Doolittle, USAF (Ret.), died peacefully of heart and kidney failure early Oct. 25, 2016, at Torrance Hospital, near his home in Palos Verdes, California. He was a favorite performer at air shows around the world, thrilling his audiences with his precision aerobatic maneuvers in the North American Aircraft P-51 Mustang and Aero Commander Shrike.

"He was our last touchstone to the world of aviation," says aerobatic champion and Hoover's close personal friend Sean D. Tucker. "He knew Orville Wright, Lindbergh, Doolittle, Yeager, Schirra, Armstrong and Cernan. He was so revered around the world."

He started his flying in a 40-hp E-2 Piper Cub in 1937. He then became a decorated U.S. Army Air Corp aviator during World War II. In the late 1940s and early '50s, he became an accomplished USAF and North American Aviation experimental

test pilot. He flew on Chuck Yeager's wing when he broke the sound barrier in the Bell X-1 in October 1947. He later taught military pilots how to fly the F-86 Sabre safely and effectively during the Korean War.

He captained the U.S. aerobatic team in the 1960s; qualified as a carrier pilot in the Grumman F8F Bearcat; learned to fly helicopters, hot-air balloons and helium-filled blimps; and served as president of the Society of Experimental Test Pilots. He helped launch the Reno Air Races and Air Show in 1964, beginning a 30-year tradition of being the official starter for the unlimited heats.

He left North American Rockwell in 1986 and joined Del Smith's Evergreen International Aviation, flying a P-51D in company livery. He eventually logged time in more than 2,000 air shows.

In his 1996 autobiography, *Forever Flying*, Hoover noted that test flying was considered a very-high-risk activity. "On the contrary, the loss rate for

air show pilots remains high. Performing close to ground leaves little room for error." During his air show career, he watched dozens of pilots make minor mistakes that ended in catastrophe.

He once told Tucker that air show performers have the opportunity to thrill and inspire thousands of spectators about aviation. But they also can emotionally traumatize millions if they crash and burn. Tucker took those lessons to heart.

Hoover was well known for his meticulous preflight preparations and his emergency planning in case of engine failure or loss of control. Several well-known pilots credit Hoover's critical "always have an out" lessons for saving their lives.

Hoover's planning became critically important in May 1978 when his piston-engine-powered Aero Commander Shrike suffered double-engine failure on takeoff from San Diego's Brown Field due to mis-fueling with Jet-A. Hoover calmly glided the aircraft to a controlled crash

in a rock quarry, deep in a dry river valley, just north of the airport. Fortunately, the accident site couldn't be seen from the bleachers.

The aircraft was a total loss, but all occupants walked away from the accident. Hoover flew the P-51 in the air show the following day, much to the delight of the crowd.

But the Reno Championship Air Races remained Hoover's favorite event. "He lived for Reno. He knew that September 2016 would be his last appearance. He never really recovered after that," Tucker says.

The death of Colleen Hoover, his wife of 68 years, from complications associated with Alzheimer's disease in March 2016 actually took a much greater toll on Hoover's health. "The two of us were holding each other in bed. I held her in my arms during her final moments," Hoover told *Business & Commercial Aviation* in May.

"Bob taught us the value of life. He was more than a mentor and father figure. He was a gentleman's gentleman. He lived life tenfold and he died on his terms, peacefully, with dignity and grace. We need to be living our own journeys like Bob. We need to be more like Bob," says Tucker.

In the past 80+ years, no one in the aviation community had more adventures on and off airport, made more friends or encouraged more aspiring pilots than R. A. "Bob" Hoover. He made everyone he met feel respected and valued. He will be sorely missed, but his life will be celebrated for years to come.

—Fred George

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OPINION

BY MARCO TULLIO PELLEGRINI
PRESIDENT & CEO, EMBRAER EXECUTIVE JETS

Flight to Quality

Predictions of year-end reports for business aviation have already been surfacing, and while they vary by degrees of optimism, the final numbers will continue to be well below pre-crisis levels. I believe that the only way for the industry to reverse this inertial trend is to rethink convention and introduce innovative and disruptive business models that will drive aircraft utilization by current business aviation customers and add at least one million more customers to the market annually, in the short to medium term.

New aircraft deliveries over the next decade are only expected to grow at the same rate of the past 10 years (3% CAGR), in our estimation, which means approximately 8,400 aircraft valued at \$244 billion, versus 8,166 worth \$198 billion delivered in the past decade.



Our projection reflects the deceleration of emerging market economies due to a strong dollar, low commodity prices, a slowdown in China and India, and a volatile financial and political scenario in Latin America. We believe that the U.S. and Europe are poised to remain the largest markets, and that small- and medium-jet segments are expected to account for almost two-thirds of market deliveries.

When Embraer first decided to test the waters of business aviation, we introduced the Legacy Executive and the Legacy Shuttle, variants of the ERJ-135 regional jet, whose platform has accumulated over 26 million hours with 99.9% availability. Corporations that needed to move teams between operational sites were the first to recognize the higher net present value of business aircraft that met the requirements of high utilization, high availability, low operating costs, for the right price.

Flight Options, now Flexjet, was the first fractional program

to adopt the Legacy, and other charter operators followed, with annual flight hours per aircraft often surpassing 1,200 flight hours per year. The value that the Legacy aircraft delivered to customers was the key market requirement for the Phenom 100 and Phenom 300, which were designed for 1,200 annual flight hours for 30 years, high utilization, high availability and low operating costs, in addition to premium comfort and outstanding performance. Today, the Phenom jets deliver the highest availability rates to our customers, ranging from owner-pilots to corporations, charters, fractional programs, and flight-training academies.

In 2015, the airlines served more than 700 million passengers, while business aviation tallied only two million passengers. In order for the industry to add one million annual customers, the bridge over the vast span between business and commercial aviation must be expanded to deliver aviation services to companies, executives and professionals who will recognize the tangible productivity gains of nonstop business from affordable premium transportation solutions.

The availability of apps and the broad adoption of this technology for transportation support the viability of new business models, as long as the aircraft selected are designed for an intensive operational schedule, with low maintenance requirements. Big data on business and commercial aviation allow unserved or underserved markets to be identified for specific 60- to 90-min. routes in aircraft with four-to-nine-passenger capacity.

Charter operators in the U.S., Brazil and Europe are already consulting with us to identify these opportunities, beginning with fleet rationalization, route selection and market targeting to focus on segments, such as legal, accounting and consulting firms.

A decade ago, not all the requirements to support innovative and disruptive business models of premium transportation were available. Today, app technology is universal and business aircraft with high availability and low operating costs are proven to be profitable to fleet operators. With the right app, the right aircraft and the right operator in the right market, aircraft leasing partners hold the key to the success of new premium transportation business models, which requires a long-term commitment from all parties.



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David Longridge

In 1991, shortly after graduating with an engineering degree from the University of British Columbia, David Longridge joined Boeing, where his father was a senior sales executive. While initially assigned to the flight-test engineering certification office working on the 737-500 and 777-200, he eventually transferred to marketing, and then to the newly formed Boeing Business Jet arm, at first assigned to Amsterdam and then to the main office at Boeing Field. Following years in commercial aircraft sales in Europe, he was appointed to his current position in December 2014. He is a pilot and part owner of a Cessna 180 along with Capt. Stephen Taylor, his predecessor at BBJ.

Questions for David Longridge

President, Boeing Business Jets, Seattle, Washington

1 BBJ was in the spotlight at EBACE in May. What's your follow-on for Orlando?

Longridge: Well, it's awfully tough to top a brand-new 787 Dreamliner BBJ like the one that stole the show in Geneva. But we are thrilled to unveil the latest member of the BBJ family, the BBJ MAX 7, at the NBAA Convention. Customers are going to love this airplane, and we're eager to share more about it. We are also launching some products we've developed in-house at BBJ and in concert with our partners in the completion business to help customers buy and sell pre-owned BBJs. Plus, there's our usual updates of sales, green airplane deliveries and completed airplanes' entries into service since the last NBAA.

2 How do you go about finding customers, and what are their profiles?

Longridge: I'm happy to say they come to us, often at events like the NBAA Convention. It's by word of mouth mostly among owners and their friends. They find us; we don't find them. As for their profiles, when BBJ began, we expected the customer base to be split evenly among corporations, wealthy individuals and governments. As it's turned out, however, about half our sales have been to individuals, another 30% to governments and 10% each to charter operators and corporations. Our airplanes are luxury products that are too readily identifiable as airliners – too many windows on the sides! – for most corporations to feel comfortable operating them.

3 When the company launched the Boeing Business Jet in 1996, it was a 737-700 with an -800's wing. Now it's the entire Boeing line. So, what is a BBJ?

Longridge: We define a BBJ as any aircraft sold and supported through this office. That support includes our involvement with contracting, completions and field service. So, the BBJ lineup today involves 11 different Boeing models. And our oversight includes government executive and special-missions aircraft delivered through Boeing Military, which technically becomes our customer. And, yes, that includes Air Force One.

4 Most manufacturers of purpose-built business jets have yet to fully recover from the post-recession slump. Is BBJ similarly affected?

Longridge: Not really, because our volume is so small. For example, Gulfstream has delivered more G650s since 2013 than the 218 aircraft we've delivered since we started in 1999. [Former BBJ President] Steve Taylor delivered 12 aircraft – that's huge – just before I took over. I must remember to thank him for raising that bar. But still, we did eight the following year, which was good. As a rule, we sell six to eight green aircraft per year and deliver about the same number from completion houses. So, while we're not completely separate from the general market, we don't see booms the way other business jet manufacturers do, but we don't see busts, either.

5 Some airlines have signed for 100 aircraft in a single order, and Boeing's jetliner backlog now exceeds 5,500 airplanes. Why does the company even bother with BBJs?

Longridge: When Phil Condit and Jack Welch [former chairmen and CEOs of Boeing and GE, respectively] first conceived the BBJ, their vision was to introduce Boeing aircraft to world influencers who don't normally see such a Boeing product and interact with Boeing executives. And that vision has been borne out. In fact, there's one world leader who was so enamored with his government's 787 that he collected the BBJ caps from the delivery crew and even wears them at international gatherings.



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