

Issue

3

THURSDAY  
19 October 2023

# FLIGHT DAILY NEWS

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# I challenges

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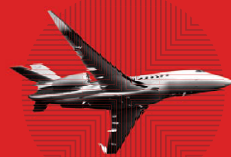
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## Back soon

After a memorable convention, NBAA may be leaving Las Vegas for now. But it will be returning to the city of pleasure on 22 October 2024. Showgirl Brittany Guinane takes a break from spinning the wheel of fortune on AEG Fuels' stand to wish attendees a safe trip home and a lucky year ahead.



# Vertical challenges

Emerging technologies star at NBAA, but hurdles stand in way for eVTOL developers

**Howard Hardee**

**W**ith several air taxi pioneers and other would-be sustainable aviation disruptors featuring prominently in this year's show, a new era of urban air mobility seems closer than ever.

Autonomous electric vertical take-off and landing (eVTOL) start-up Wisk and hybrid-electric, fixed-wing developer VoltAero are among those in the emerging technology zone. Meanwhile, Volocopter made its NBAA flying debut on Tuesday and expects to secure type certification of its two-seat VoloCity

in Europe early in 2024.

Days earlier, China's EHang announced that the Civil Aviation Administration of China had certificated its two-passenger, fully autonomous EH216-S aircraft.

However, significant obstacles stand in the way of the eVTOL sector, including uncertainty surrounding how civil aviation authorities will certificate an entirely new class of aircraft, says Matthew Broffman, head of partnerships and network, Americas, for German air taxi developer Lilium.

"There are lots of questions from regulatory agencies about what these aircraft can do," Broffman

told a panel yesterday on scaling eVTOL operations, moderated by FlightGlobal's Pilar Wolfsteller (see picture). "That uncertainty makes it very challenging for commercialisation, because people don't want to buy an aircraft when there is uncertainty about what it can do."

Major challenges will also arise regarding safely integrating air taxis with already busy airspaces, says Paul Fontaine, assistant administrator of NextGen for the Federal Aviation Administration.

"As we interface with various companies and applicants out there, we're looking at different performance levels and different

concepts for how they intend to use these [aircraft] for various applications," he says. "But at the end of the day, it all has to merge into the air traffic system, so that will be one of our big focus areas."

Then there's the unknown factor of public acceptance – especially for those developing pilotless aircraft designed to operate in heavily populated areas, such as Wisk.

"This is going to start small and continue to evolve," Becky Tanner, Wisk's chief marketing officer, tells *Flight Daily News*. "We have to bring people along and get them familiar, comfortable and trusting. I think all of us aviation companies have to prove the safety case."

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Straub: Major ambitions for the system

## Garmin out to Autoland big deals

Jon Hemmerdinger

Garmin has high hopes for wider adoption of its auto-throttle and Autoland systems – even making the leap to commercial airliners.

To date, the Kansas-headquartered avionics specialist has seen the Autoland technology installed on a range of light jets and turboprops but has bigger ambitions for the system.

"I think it should be there," says Garmin executive vice-president of aviation Philip Straub. "We have those conversations."

Garmin's Autoland is available on the Cirrus SF50 Vision Jet, Honda Aircraft HA-420 HondaJet Elite II, Piper M600 and Daher TBM 940/960. Textron Aviation will offer it on Beechcraft's in-development Denali and owners will be able to install it in 2024 on Beechcraft

King Air 200s with Garmin G1000 avionics.

More than 500 aircraft are already flying with Autoland, which is activated with the press of a cockpit button, or automatically in the event of cabin depressurisation.

The system picks a suitable airport, descends the aircraft and lands autonomously. It also communicates with other aircraft and with air traffic control, including through automated broadcast voice commands, such as "Mayday, Mayday. Pilot incapacitation. Emergency autoland activated", Straub says.

In recent days Garmin has scored sales successes for its auto-throttle system; it is now available on Embraer's Phenom 300E and Cessna's Citation M2 Gen2 and CJ3 Gen2.

Because an auto-throttle is a requirement for the Autoland system, those aircraft are also candidates for the latter feature, says Straub.

## F/List's material difference

Seeking a different look for your jet's interior beyond the usual beige leather and burnished walnut? Keen to make a positive impact on the environment by using more sustainable materials? Well, Austria's F/List might be just what you're looking for.

Starting from a small carpentry shop in Thomasberg in the east of the country, the company has since expanded to become one of the industry's

most innovative materials suppliers, dealing with high-end spaces, super-yachts as well as business jets.

Aiding that innovation is the company's F/Lab unit which develops new engineered materials that either do things others cannot or deliver improved environmental performance.

Products dreamt up by F/Lab include Whisper Leather – a corn starch and cotton-based material for

non-seat coverings – or Linfinium, a linseed oil-based resin that can be combined with other materials such as stone, or sand, or even mother of pearl shards, to create a bespoke surface that "tells the customer's story", says Melanie Prince (pictured), head of innovation at F/List.

Debuting at NBAA is a new use case for F/Lab's "morphing wood" technology – a flexible, solid-wood surface that can be rolled or folded.

"It solves a lot of practical use cases in the cabin where cabinet doors are always a little bit clunky – instead you can have a solid surface that folds," says Prince.

In addition, it has revealed its Smart Aenigma material, which has electrical systems and switches already built in.



## Red the news today?

Meet the team who have been delivering *Flight Daily News* to you around the convention this week, with distribution sponsored by CAE.

## Rolls-Royce aiming to fly Pearl 10X next month

Rolls-Royce is targeting November for the first flight of the new Pearl 10X engine that will eventually power Dassault Aviation's flagship Falcon 10X.

With the maiden sortie to take place aboard Rolls-Royce's Boeing 747-200 flying testbed, the engine manufacturer is deep into the aircraft modification and integration work required to install the powerplant on the Jumbo.

Rolls-Royce shipped the first flight-test engine to a site in Waco, Texas at the end of the summer, says Dr Dirk Geisinger, chief executive of Rolls-Royce Deutschland.

Development of the Pearl 10X has been conducted at the company's facility in Dahlewitz near Berlin.

"So actually the first flight was in August, but inside a 747 rather than on the outside," says Geisinger.

Rolls-Royce initially planned to mount the Pearl 10X on the 747's upper fuselage but has since moved the location, instead installing it on a specially designed pylon on the starboard wing, inboard of the aircraft's existing RB211 powerplants.

Once completed the 747 will be ferried to Rolls-Royce's flight-test

base in Tucson, Arizona, from where the maiden sortie will be conducted.

"November is what we are trying to target and we should be able to hold to that," he says.

In the meantime, extensive ground tests of Pearl 10X powerplants have been performed at Dahlewitz including red-line and maximum out-of-balance tests.

Geisinger says the engine has performed "perfectly", adding: "We expected a level of degradation, but it was minimal."

Meanwhile, crosswind testing has also been successfully completed at

the manufacturer's facility in Stennis, Mississippi.

In total, the programme has accumulated around 2,000h of running time, including on the earlier Advance2 demonstrator.

Certification for the powerplant, using a "limited number" of engines, could be achieved relatively rapidly, says Geisinger, although this may hinge on Dassault's schedule.

"We believe that we are typically so robust that the test campaign could be not the longest," he says.

Dassault is targeting late 2025 for service entry of the Falcon 10X.

# Cockpit crisis

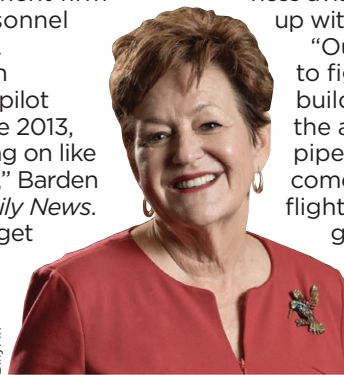
Warning that flightdeck squeeze will 'get worse before it gets better'

Pilar Wolfsteller

Business aviation must market itself better as an exceptional career path deal with the current shortage of pilots and mechanics, according to Sheryl Barden (pictured), chief executive of business aviation recruitment firm Aviation Personnel International.

"I have been following the pilot shortage since 2013, and it's coming on like a freight train," Barden told *Flight Daily News*. "It's going to get worse before it gets better."

Barden, who has



taken part in panel discussions during the show, says that business aviation has traditionally hired from the military or regional airlines, but that stream of candidates has dried up in recent years.

With commercial airlines now offering cockpit crew pay increases of up to 40% due to new contracts, business aviation has to come up with some new ideas.

"Our industry has to figure out how to build a pipeline like the airlines build a pipeline, where, you come out of school, flight instructor, then go to a regional [airline], then you upgrade to the mainline carrier," Barden says. "We just

don't have that defined path in business aviation."

The airlines, meantime, are "solving the pilot shortage problem with money" and business aviation has felt the brunt of that supply-versus-demand equation.

Compensation is part of the puzzle, with company culture and predictable schedules the other.

"A day off is only a day off if you know you have it in advance."

She says that flight departments should consider hiring more low-time pilots - those with less than 1,500h of total flight experience - and building a mentorship programme to set them up for success.

"There is a major opportunity for many organisations that have a deep bench of strength, they've got people

who can be mentor pilots," she says.

Mentorship can be a tool not only for the flightdeck, but also for mechanics and maintenance professionals. The average age of workers in those skilled trades is past 50 years old, and the industry is desperate to attract young people with airframe and powerplant certificates. Often they choose employers where the job is easier and the conditions less harsh.

"What is the job of a business aviation maintenance professional? It's not working at United [Airlines], where you're the airplane brake guy, and that's all you do. In a flight department, you may have the airplane from tip to tail, and everything in between."

"It takes a special kind of person to do that," she adds.



West Star will pay \$131 million for Gama subsidiary

## East to West

UK-listed business aviation services provider Gama Aviation has agreed to sell its US MRO business Jet East to West Star Aviation Enterprises in a deal valued at \$131 million.

Gama says the disposal will generate net proceeds of around \$100 million; it paid \$11.9 million in 2021 for Solon, Ohio-headquartered Jet East, which it merged with its existing US maintenance operation.

Since that acquisition, the unit has seen consistent growth: 2023 first-half revenues were up 27% year on year to \$70.7 million - virtually eclipsing the full-year figure in 2021 of \$79.2 million. For the 12 months ended 31 December 2022 Jet East recorded revenues of \$118 million with adjusted EBIT of \$1.3 million.

"After interest from several parties, we are delighted to have agreed the sale of Jet East to West Star Aviation," says Marwan Khalek, Gama group chief executive.

Gama says it was approached in late 2022 by West Star's private equity owner Sterling Group about the possible acquisition of Jet East. Both MRO companies are exhibiting at the show.

"I believe the new owner will be an excellent guardian of our valued strategic relationships and, importantly, the people that deliver critical services to our customers every day," Khalek adds.

Gama shareholders will vote on the deal on 3 November. It intends to reinvest the proceeds of the sale in its other business units.

During its ownership Gama has invested around \$25 million in Jet East, including in new facilities in Millville, New Jersey, Las Vegas, Nevada, and Statesville, North Carolina.

## Sun Air and CAE to nurture fledgling pilots



Reflecting on success: Fares (second left) with Brian Hogg, Tina McCarthy, Jonathan Kenworthy and John Billington from CAE

Flight training specialist CAE and California-based private jet charter company Sun Air Jets have begun collaborating on a pilot-development programme to address the shortage of

business jet flightcrew. "We are very excited to implement this pilot development programme at Sun Air Jets to enhance safety within our operations and to meet the demand for pilots

and workforce challenges," says Ed Fares, the company's director of operations.

"The programme is designed to bring beneficial operating experience to our young pilots allowing them

the opportunity to grow into bigger jet aircraft and build a strong foundation as a safe and professional pilot."

The training scheme will allow young pilots to gain flight hours and aviation experience by operating flights as second-in-command on aircraft that do not require more than one pilot.

"With the increased demand for business aviation pilots, CAE is committed to working in partnership with operators like Sun Air Jets to ensure they have the highly trained pilots needed to maintain safe and efficient operations," says Alexandre Prevost, CAE's division president for business and helicopter training.

Sun Air Jets, which was founded in 1999, offers private charters on a fleet of Gulfstream, Bombardier, Embraer, Cessna Citation, Hawker, and Beechcraft King Air aircraft. The company also offers aircraft management, maintenance, and hangar services.

## The only way is app

Universal Weather and Aviation and software company Portside are to develop a mission management app for business aviation.

The service will combine Universal's flight planning tools with Portside's scheduling data, and will become Universal's primary trip

support platform.

Pictured (l-r) marking the partnership at the show are Charlie Mularski, chief operating officer at Universal; Portside chief executive Alek Vernitsky; Ralph Vasami, Universal CEO; and Guido Groeschel, executive vice-president at Universal.



Lufthansa Technik welcomed customers on the first day of the show with its traditional German beer celebration

## Triple seven haven

LHT teases BBJ 777-9 interior concept ahead of full Dubai reveal

Dominic Perry

Lufthansa Technik (LHT) is at NBAA to tease the last part of its interior concept for Boeing Business Jets' new-est model, the BBJ 777-9.

First disclosed at EBACE earlier this year, the concept sees LHT take advantage of the "vast space" available in the "largest business aircraft

in the market", says Jan Grube, sales director for VIP aircraft services.

Despite releasing several images of the overall design, it has still to reveal what the private quarters in the forward cabin will look like, as it is saving that detail for November's Dubai air show.

That event has been selected based on the expectation that most sales of VIP 777Xs will come from

customers in the Middle East looking to replace their existing 747 or Airbus A340 head-of-state aircraft, says Grube.

It has already received interest from clients in the region, but with the commercial variant of the 777-9 not due to be certificated until 2025, most prefer to wait until service entry in order to make a direct comparison with the Airbus Corporate

Jets ACJ350.

"Clients that we have talked to so far say it looks pretty interesting," says Grube, "but they also want to see the front section before making a decision."

If Boeing maintains its current service-entry goal for the commercial variant, a jet outfitted with the LHT concept could be delivered to a customer by 2026 or 2027, he adds.

## Jet Out adds to CJ4 fleet

Charter and shared ownership operator Jet Out has ordered four more Cessna Citation CJ4 Gen2 jets from Textron Aviation, with deliveries beginning in 2024. They add to a pair of CJ4s that the Milwaukee-based firm took delivery of in June.

Jet Out, which also operates Daher TBM 960s, says the existing CJ4s fly an average of 75h per month.

"We are confident that this aircraft is the best option for delivering the comfort and performance demanded by the growing mission profile of our clients, while maintaining the safety and efficiency they expect when flying with Jet Out," says chief executive Joseph Crivello.

"The CJ4 Gen2 is a great choice for co-ownership operators like Jet Out and will help provide its clients with the comfort and productivity they seek during their travels," adds Jonathan Waggoner, vice-president of sales at Textron Aviation.

## Shower power

Ed Harris (pictured) loves the challenge of custom jobs. He's been building aircraft showers since the 1980s and has overseen the design and installation of some 150 units since 2012.

"I can tell you after about five minutes of talking whether or not I can build it for you," he tells *Flight Daily News* at his exhibit.

Harris is vice-president of sales and marketing for JBRND, a Texas-based supplier for business and defence aircraft that builds showers, windows and lighting systems. In a 6,000sq m (64,500 sq ft) facility in San Antonio, the company has produced showers for the Gulfstream G650 and other business aircraft. JBRND even made light-proof window shades for Air Force One.

But showers are central to the company's business model. "We make our own hot water heater system that takes 40gal of their water, mixes it with 10gal of our water and allows someone to take a shower for about an hour if they just want to sit in it," Harris says.

Seeing hugely untapped potential in a related market, Harris expects that soon there will be two Japanese-made Toto bidets "on every Asian, Middle Eastern and European [business] aircraft".



## Comlux builds up in Indianapolis

Comlux is to expand its Indianapolis completions facility having acquired 1,020sq m (11,000sq ft) of off-airport space. Switzerland-based Comlux says the purchase will allow it to bolster production capabilities at the US site.

"This is the latest step on our journey to modernize our infrastructure to continue to provide our customers with the highest level of quality, a true VVIP experience," says Adam White, chief executive of Comlux Completion.

Comlux says the expansion is part of a two-year initiative to standardise its parts production and installation process.

"The main production efforts in this new facility will start with these critical parts," says Bryan Peterson, the unit's chief operating officer.

"Whether for completions, maintenance, or upgrades, increasing the ability to manufacture the parts we need will ensure we continue to maintain our schedules and continue to redeliver on time," he says.

Although Comlux has seen an uptick of work thanks to its involvement in the Airbus Corporate Jets ACJ TwoTwenty, it stresses that jobs performed at the expanded facility will not be confined to any particular programme.

## FLIGHT DAILYNEWS

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HOW TO CONTACT US

We are located in N120

Editor  
Murdo Morrison  
murdo.morrison@flightglobal.com

Executive Editor, FlightGlobal  
Graham Dunn  
graham.dunn@flightglobal.com

Reporting team  
Howard Hardee, Jon Hemmerdinger, Dominic Perry, Pilar Wolfsteller

Production Louise Murrell

Designer Sarah Eversfield

Picture editor James Robbins

Photography Tom Gordon

Distribution Stuart Burgess, Dawn Hartwell

Divisional Director, FlightGlobal Sophie Wild

Printers PrintPro, Las Vegas

Mattson: We want to be the best in the world

# Talking up Wheels Up

New chief outlines his strategy for restoring Delta-backed operator's reputation and finances

Jon Hemmerdinger

Just two weeks into the job, the new head of Wheels Up is at this year's show with a turnaround plan resting on operational rigour, more corporate business, fleet changes and closer ties with 39% owner Delta Air Lines. "There's an operational element to it, and there's a commercial element to it," chief executive George Mattson tells *Flight Daily News* of his recovery plan for Wheels Up, which has racked up hundreds of millions of dollars in losses in recent years. "We are making steady, significant year-over-year progress on all fronts."

Mattson took over the reins of New York-based Wheels Up on 2 October, days after the company landed a \$450 million financial lifeline from a consortium of investors including Delta. The deal left the carrier, previously a Wheels Up

investor, with an even larger chunk of the stock.

It has also led to tighter commercial ties between Delta and Wheels Up, and Mattson says heightened support from the mainline carrier features significantly in his recovery roadmap.

"Private aviation and commercial aviation have sat [in] separate silos forever," he adds. "We're going to seamlessly integrate Delta and Wheels Up's offerings into a single commercial relationship."

Formerly co-head of Goldman Sachs' global industrials group, Mattson came to Wheels Up with an aviation background, having been a Delta board member for 11 years and in 2014 leading investment in a small Florida airline called Tropic Ocean Airways.

Mattson gave up the board seat when he took the job at Wheels Up, which sells private aircraft memberships and owns or leases about 200 aircraft, including Beechcraft King Airs, various

Cessna Citation models and large-cabin jets like the Gulfstream G450. It also has access to many more aircraft via partner operators.

Mattson was on Delta's board in 2020 when the airline acquired 27% of Wheels Up and combined that company with Delta Private Jets. At the time, the pandemic was driving a huge surge in demand for private aircraft travel, and the future of Wheels Up - led at the time by founder Kenny Dichter - looked bright. The company went public in 2021 with huge ambitions.

Then things faulted. Demand for private travel slipped as the pandemic

eased and Wheels Up began racking up huge losses, including \$262 million in the first half of 2023.

This year the company sought to right the ship, embarking on a management and network overhaul that put Mattson in charge. He aims to return Wheels Up to profitability before the end of 2024.

"Now, we're basically consolidating it back to something that's efficient and profitable," Mattson says, noting the company has shifted from having five to three operating certificates and will eventually reduce that to just one. Wheels Up also recently opened a sin-

gle operations control centre near Atlanta that replaced several disparate units. The company also intends to move its headquarters to Atlanta - also home to Delta - from New York.

Network changes are perhaps most conspicuous. Previously, Wheels Up's membership plans included guaranteed pricing for flights throughout the USA, but this year it stripped the central USA from that network. Wheels Up still offers flights to mid-America but now charges market-based rates.

"We were flying to the middle of the country, and losing money... because of utilisation, efficiency, lack of density," Mattson says. "We have taken negative-margin flying to the middle of the country and made it positive-margin."

Just weeks ago, with its cash dwindling, Wheels Up landed the \$450 million in financing from Delta, Cox Enterprises and New York investment group CK Wheels. Through the arrangement the partners acquired huge chunks of Wheels Up's stock; Delta ended up owning 39%, securities filings show.

That deal has changed how Delta and Wheels Up interact. Their commercial relationship previously involved Delta referring customers to Wheels Up, but the companies now have an "integrated" sales effort, with specific targets, joint sales calls and, critically, the ability for Delta to roll Wheels Up services into its contracts with corporate customers.

As things now stand, some 85% of Wheels Up's demand comes from leisure travellers, and 15% from corporate. As a result, "weekends are very busy - weekdays not so much," Mattson says. With Delta's help, he aims for a 60% leisure-40% corporate ratio, or even a 50-50 split.

As that shift happens, Mattson expects Wheels Up will change the composition of its fleet to include fewer smaller aircraft and more large-cabin jets, which corporate clients prefer. In the short term, he says the number of aircraft in Wheels Up's fleet might decline before rebounding.

At the same time, Mattson is focused on improving Wheels Up's operational performance, pointing as a model to Delta, which in recent years significantly improved its operation, reducing delays and cancellations to industry lows.

"We are trying to bring that type of reliability and... discipline," Mattson says. "We want to become the most operationally excellent, best-run private aviation company in the world." See News P14

"We're going to seamlessly integrate Delta and Wheels Up's offerings into a single commercial relationship"

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# Getting you into tight spots

Howard Hardee

A hybrid-electric aircraft capable of taking off and landing within a 90m (300ft) space could broadly impact the business aviation market – at least that is according to Marc Ausman, chief product officer of Virginia-based start-up Electra. Ausman tells *Flight Daily News* that he believes the company's conceptual "blown-lift" aircraft will eventually take off with corporate customers.

"We've seen demand from Part 135 charter operators flying nine-passenger aircraft, plus or minus – everything from Caravans, Beavers, Otters, Islanders, even King Airs and PC-12s – who are looking for something more modern, more sustainable and quieter," he says.

"We're also now seeing more demand from corporate flight departments, which typically need smaller aircraft to move people around within a region." Designed to achieve lift



Ausman with his mock-up at the show

at relatively low speeds, the hybrid-electric short take-off and landing (eSTOL) aircraft will feature eight electric motors mounted on its wings. It will have a payload of 1,133kg (2,500lb) and be capable of carrying two pilots and nine passengers on routes of more than 400nm (741km), plus reserves. The start-up envisions air-

port-to-airport operations in addition to flights directly to campuses, factories, farms and other work sites.

"This aircraft can land on a runway... the size of a soccer field or a football field," Ausman says. "We'll get into these new areas – it could be a dirt road, a gravel parking lot, a paved strip, or it could be new infrastructure."

For example, Ausman imagines a future in which Electra's aircraft flies directly into industrial or corporate facilities. "Whether that's a factory or warehouse, or a corporate office with some extra space for take-off and landing, that's a new value proposition," he says. "Helicopters are just too expensive to do that, and a larger

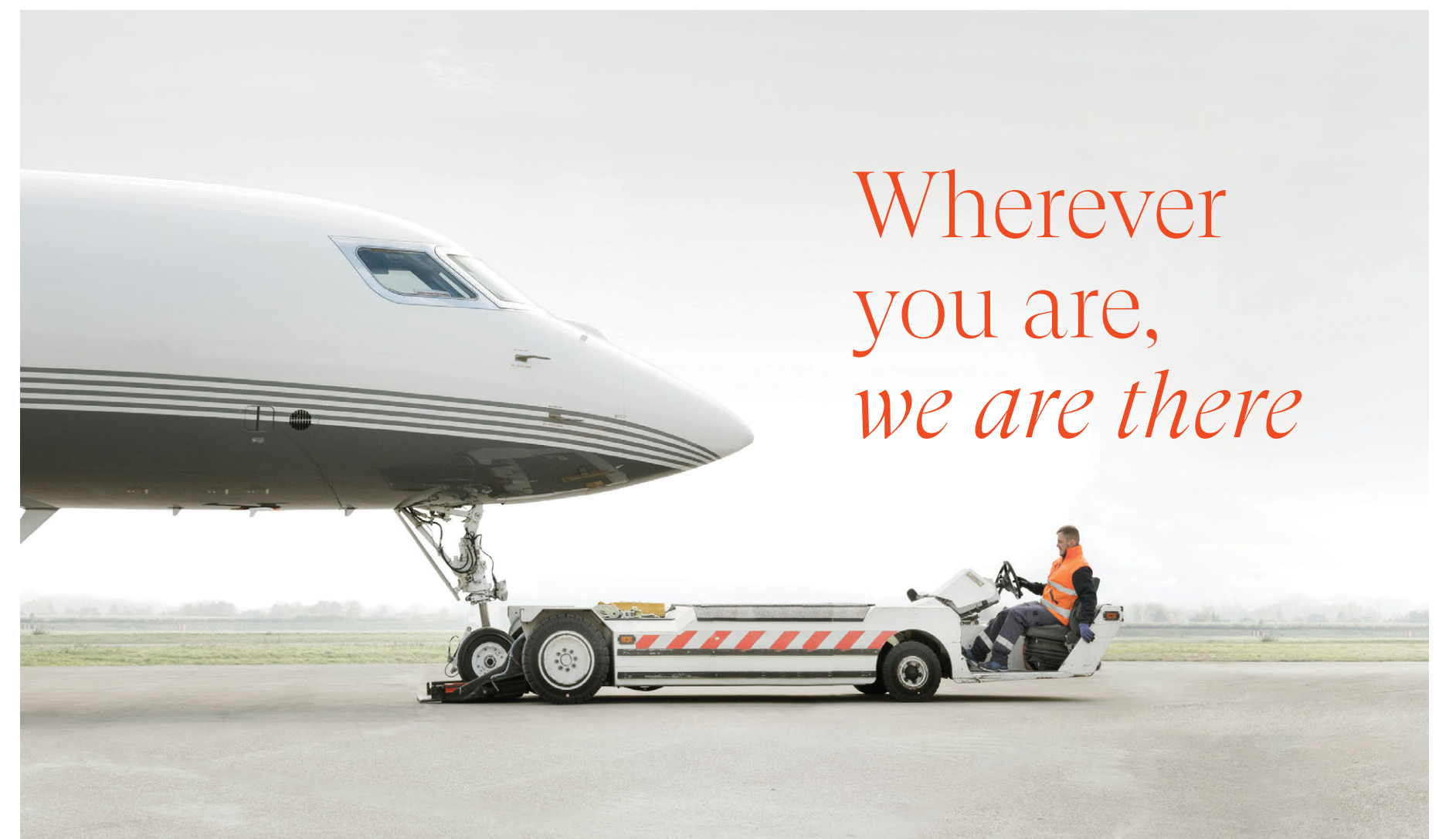
aircraft like a jet needs a longer runway."

Ausman says Electra has secured 1,600 tentative aircraft orders through letters of intent, representing a total value exceeding \$6 billion.

"We see that as a huge vote of confidence that there's huge demand for this kind of sweet spot of regional aircraft for both passenger and cargo users," he says.

During the Paris air show in June, Electra unveiled its two-seat technology demonstrator, the Model EL-2 Goldfinch. It also disclosed a deal with Safran Helicopter Engines to develop a 600kW (805hp) hybrid propulsion system.

"For the production aircraft, all the components will be sourced from vendors," Ausman says. "We're down-selecting the batteries, motors and propellers from vendors who make those components. We did our own [engineering] for the technology demonstrator so we could really deeply understand the engineering issues around those individual components."



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In brief...

JetWave X

Honeywell has unveiled at the show JetWave X, the latest generation of its in-flight connectivity offer for business aviation. The service uses Viasat's Ka-band network as well as the Global Xpress satellites from Viasat's newly acquired Inmarsat business, "offering the highest capacity available in the market", says Honeywell.

CAE Masters

CAE has launched the latest version of its Master Technician Programme at NBAA, which the company says "addresses the need for independent certification of technical and leadership skills as the industry faces unprecedented demand". CAE's 2023 Aviation Talent Forecast predicts a need for 402,000 new maintenance technicians over the next 10 years, 74,000 of them in business aviation.

R-R in New York

Rolls-Royce is opening a new AOG (aircraft on ground) support storage site near New York City, as well as expanding its global network of authorised service centres.

# Doctor on call



Medic David Streitwieser deals with an in-flight incident at the show

Murdo Morrison

Visit the MedAire stand and you will see - and hear - its doctors deal with a real-life, real-time, in-air emergency. For the third year, the medical and security sup-

port firm is carrying out live demonstrations of its MedLink service on the convention floor.

Attendees can listen to actual calls via headphones in a dedicated listening area - all personal, company or aircraft details are anonymised for confidentiality. Typically, the company's medical team

deals with about 300 of these calls every day, or one every three to five minutes.

"MedLink is the bedrock of MedAire's commitment to aviation safety," says Bill Dolny, chief executive of MedAire Worldwide.

"Our MedLink doctors are trained in both emergency room procedures and

aviation medicine, including altitude physiology."

In addition to medical support, MedAire has been growing the security advice side of its business, something it launched after the 9/11 terrorist incidents.

Recent high-profile attacks on business aircraft by environmental extremists have meant more operators are keen to assess the risks and implement mitigation plans when visiting certain destinations.

Dolny highlights the protest at May's EBACE convention by activists who chained themselves to aircraft on the static display. "What happened there made some of our customers think more seriously about this. When you fly in a business jet to some of these cities, it's noticed," he says.

"Our experts are prepared to help flight operations of any size minimize the security risks that threaten the safety of passengers, crew, and their assets."

Dolny says one of MedAire's features is that customers who pay a per-aircraft subscription can use its expertise as much as they need to, including for advice ahead of a flight. "It's not a 'break glass in emergency' service," he says.

## WAI Offers Programs for a Lifetime in Aviation and Aerospace

Women in Aviation International is the largest organization in the world dedicated to increasing the number of women who are involved in all aspects of aviation and aerospace.

				
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<ul style="list-style-type: none"> <li>Free Junior Membership</li> <li>Girls in Aviation Day events</li> <li>Aviation for Girls magazine</li> <li>Aviation for Girls app</li> <li>Monthly AFG content</li> </ul>	<ul style="list-style-type: none"> <li>WAI Scholarship Program</li> <li>International University Scholarships</li> <li>Collegiate Chapters</li> </ul>	<ul style="list-style-type: none"> <li>Mentor Connect</li> <li>Conference Networking</li> <li>Worldwide Chapter Network</li> </ul>	<ul style="list-style-type: none"> <li>WAI/Harvard Emerging Leaders Course</li> <li>Annual Conference gatherings</li> <li>Professional Development Seminars and Workshops</li> </ul>	<ul style="list-style-type: none"> <li>Mentor Connect</li> <li>WAI International Pioneer Hall of Fame</li> <li>Advanced Education Sessions</li> </ul>

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# Serious business

As always, the static display at Henderson airport features an array of aircraft, from single-engine pistons to the latest intercontinental jets, and from cabin mock-ups to a range of models for sale



Two cool: ACJ TwoTwenty making its NBAA debut



Tall tails: Vista's Bombardier fleet



Slick Cesnas: A line-up of Citations



Dirty dog: Aviat Husky



Plenty to see: Some of the dozens of aircraft on display



People mover: Airbus Helicopters H125



Poise from Brazil: Phenom 300E



Blade in Switzerland: Pilatus PC-12



Past glory: Douglas DC-3



Enjoying the view: new spectator gallery



# Airshare goes national

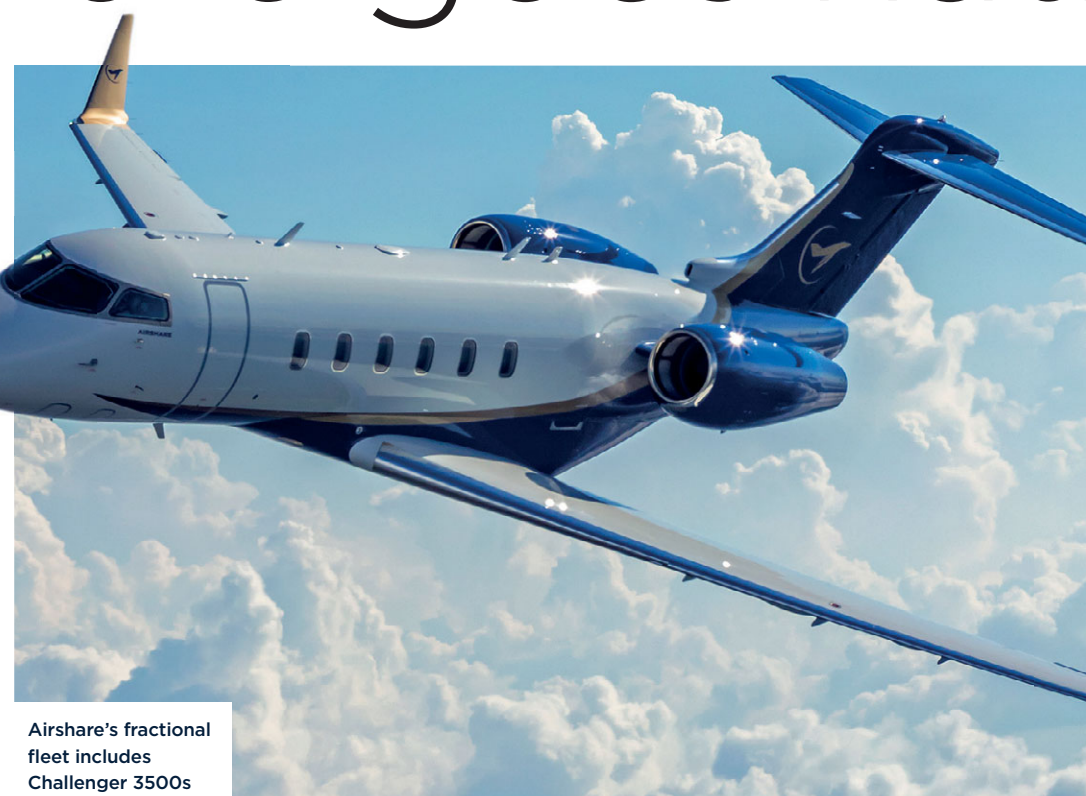
Wheels-Up deal sees Midwest fractional and management operator expand to coasts

Murdo Morrison

**K**ansas-based fractional ownership, aircraft management, and charter operator Airshare says it is becoming a national player for the first time after more than doubling in size following its acquisition of Wheels Up's aircraft management business.

The deal – finalised on 2 October, roughly two months after the Kansas City-based company signed a letter of intent with the troubled, Delta Air Lines-backed charter operator – adds around 90 third party-owned aircraft to Airshare's roughly 60-strong fleet, and almost trebles the size of its management business.

Airshare, which began as a fractional operator with a fleet largely of Embraer Phenoms, had been searching for an opportunity to boost its approximately 35-aircraft management business for



Airshare's fractional fleet includes Challenger 3500s

some time.

"We had been looking at possible acquisitions, but nothing was coming up," says Airshare's president and chief executive John Owen. "Then Wheels Up came along. It was a perfect fit. It's an amazing team and an amazing fleet."

Until now, Airshare's business has largely focused on the Midwest, but the acquisition will help extend its presence into business aviation hot spots on the east and west coasts, says Owen.

Airshare, which launched operations in 2000, has been expanding fast since Owen

joined seven years ago. In May 2021, it began adding Bombardier Challenger 3500s to its fractional fleet, after ordering three aircraft along with 17 options.

In July this year, it added a commitment for a further 20 Challenger 3500s – an update of the Challenger 350. Eight of the 40 aircraft have been delivered so far, joining a fleet of 16 Phenom 300s, giving Airshare a current fractional fleet of 24 aircraft.

Like other fractional operators, Airshare offers customers a jetcard option alongside conventional shared ownership options,

but differentiates itself by offering aircraft by the day, rather than by the hour, says Owen.

"You can buy, for instance, 20 days with a jetcard, but that gives you unlimited hours each day, crew time regulations permitting, of course," he says.

Airshare had already been expanding its reputation beyond its heartland. "We have traditionally been very concentrated from the Lakes down through Kansas and neighbouring states to Texas. We knew that to get to the coasts we needed larger aircraft,

so that is why we moved into super-midsize with the Challengers," he says.

The Wheels Up acquisition will help that strategy because many of that company's managed aircraft are based in states such as Connecticut, California, and Florida, he says.

"We have been dominant in the central part of the US, but now we're expanding to areas where private aviation is a bigger deal," he says. "A lot of people don't know us because we don't do a lot of pomp and circumstance. But now we will be looking to build our brand in more locations."

Owen is cautious about overstretch. "It is hard to operate profitably if you spread too quickly, so we are very much going to let our customers' flight patterns decide it for us," he says.

On 20 September, a consortium led by shareholder Delta Air Lines offered a rescue credit package worth a total of \$500 million to Wheels Up, in return for a 95% shareholding, after the company reported a series of losses. Wheels Up, founded 10 years ago, offers access to private aircraft under what it calls a membership model.

KC Ihfeld, who ran Wheels Up's management business will transfer to Airshare to head its aircraft management division, along with 316 employees.

## Baldwin adds geo-locating

Baldwin Safety & Compliance has added a geo-locating feature to its safety reporting system.

The integrated mapping system allows users to pinpoint and monitor the exact location of safety-related events. The company says an advantage of the tool is its ability to monitor data collected from a wide range of sources.

"We are excited to integrate this mapping feature into our reporting functionality to help determine patterns of high risk in specific locations," says Jason Starke, director of safety, Baldwin Safety & Compliance. "We have been beta testing this with the air medical community due to their high volume of safety reporting. The real value lies in the long-term analysis to determine recurring safety hazards and patterns unique to specific areas. This feature leverages state-of-the-art technology for reporting and analysis."

## Heritage hooks up with Avfuel

Avfuel has expanded its network of affiliated FBOs with Heritage Aviation at Vermont's Burlington International airport.

Unusually, Heritage Aviation is an employee-owned company that also provides Federal Aviation Administration-certified maintenance services. It says its US Customs & Immigration station on site makes it an "ideal international transitioning point", adding that its location near the Canadian border makes it well suited to benefit from the business

aviation community around Montreal.

"Joining forces with Avfuel presents an exciting opportunity for Heritage Aviation to further enhance our offerings and continue leading the way in FBO service standards and sustainability," says Heritage's chief executive Matthew Collins.



Heritage Aviation

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# About time for Biggin Hill

Murdo Morrison

Half an hour can make all the difference when you are a time-pressed business magnate or international banker flying from North America to early-morning appointments in London.

That is the claim of Biggin Hill airport, which believes its 06:30 opening gives it an edge over many of its competitors serving the UK capital, whose runways open 30min later. This is especially the case in the transatlantic market, where many business visitors to London arrive on "red eye" flights.

An added time-saving advantage is a helicopter service - offered by Biggin Hill tenant Castle Air - which can transport arriving passengers to Battersea heliport in central London on Leonardo Helicopters AW109s or AW139s in seven minutes, says the airport's commercial director Robert Walters. "You can be having coffee in your West End boardroom by 7:15," he adds.

The former Battle of Britain airfield, which became a business aviation airport



A line-up of Textron Aviation Citation Longitudes by the airport's terminal

in 1995, has been a regular exhibitor at the NBAA convention as it adds to its reputation on this side of the Atlantic. "We've done a lot of work building the US market," says Walters. "Our US flights in Q2 this year increased by 40% over 2022." Although it competes with Farnborough - the UK's busiest business aviation gateway - as well as commercial

aviation counterparts such as Luton, Stansted and City, Biggin Hill is the only dedicated private aviation airport within the M25 London orbital.

The privately owned airport has also been successful in attracting major third-party tenants in recent years. Bombardier last year opened its largest European service centre, replacing a smaller

facility at the airport. The latter is now occupied by diversified aviation group Avia Solutions, which shares the building with Dubai-based fixed base operator Jetex.

An airport-owned hotel - used mainly by visiting aircrews - opened earlier this year. Biggin Hill also plans to refurbish its in-house VIP terminal by 2025 and open a long-promised aviation skills

college in partnership with an education provider the same year.

"We had a fantastic year in 2022, and although things have cooled off a bit, we are still way ahead of 2019 in terms of traffic," says Walters. "We are attracting new customers, and the continued investment in facilities has really helped cement growth."

## Web Manuals gets bigger in America

Digital documentation specialist Web Manuals is continuing its push into the US market after taking on 20 stateside customers so far this year.

The Swedish company, which provides a cloud-based document storage and management system to business aviation and other clients, opened its first US office, in San Diego, in 2016. It has since added a New York operation.

Web Manuals, which has 560 customers in total, has its headquarters in Malmo and an office in Singapore. Making his NBAA debut with Web Manuals is director of operations, Russ Gerdali (pictured). He says the show is a good opportunity to demonstrate the product to prospective operators, as well as to hear feedback from existing customers.

The company also holds a customer forum in San Diego every spring, and while it gives the development team from Sweden a chance to talk about the latest features, it is very much a two-way process, according to Gerdali.

"One of our selling points is our responsiveness. Some of our heavy users have the best ideas, and we're always keen to listen to them," he says.



## FlyRight reigns with latest King Air sim

Charlotte-based training provider FlyRight has gained regulator approval for its latest Beechcraft King Air C90 level C simulator at its base at Concord Regional airport.

The simulator, manufactured by ASE, is equipped with Collins Aerospace Pro Line II, EFIS 85 avionics, and Garmin GPS. The new simulator is the fourth full-motion King Air simulator for FlyRight, joining its existing King Air 350i Pro Line 21, King Air 350 Garmin G1000, King Air 200 G1000, and King Air B200 EFIS devices already in service.

The company, which is marking its 20th birthday, moved into new, larger premises in 2016 and this has helped drive growth, says Andy Bauer, vice-president of sales and marketing. "With the addition of our new simulator, we enhance our ability to cover the complete King Air series," he adds.

FlyRight, which says it is accepting training reservations for King Air C90 initial, recurrent, and custom training for 2023 and 2024, also offers Cessna Caravan 208 and De Havilland Canada Dash 8 courses.



The new simulator at the company's Charlotte training centre

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Dassault's new service facility in Florida is the latest in a series of initiatives by the French manufacturer, begun in 2019, aimed at becoming bigger in the aftermarket

Murdo Morrison

Dassault Aviation arrives at the convention with its latest factory-owned maintenance facility – in Melbourne, Florida – about a year from opening, and keen to keep up with the efforts of arch-rivals Bombardier and Gulfstream to invest in their service networks.

All three of the large-cabin jet manufacturers have been spending heavily on in-house MRO provision since just before the pandemic, with the Canadian airframer adding extensively to its global portfolio, with new hangars built or under way in London, Melbourne, Australia, Singapore, and Abu Dhabi.

Dassault has taken a different tack. Aside from the investment in the 16,200sq m (175,000sq ft) Florida site – announced in October last year – it has largely expanded through acquisition, buying in 2019 the ExecuJet MRO Services business from Luxaviation, as well as the Swiss- and London-based operations of TAG Aviation, which it has rebranded Dassault Aviation Business Services or DABS.

While the acquisition strategy has taken Dassault's factory-owned footprint from a handful of sites to around 25 – over 40 including satellite sites – it has created somewhat of a brand soup.

Three existing US sites, in Reno, Little Rock, and Stuart, Florida, plus one near Sao Paulo in Brazil, form the service arm of the French airframer's US subsidiary Dassault Falcon Jet.

Meanwhile, Dassault's original European facility in Paris Le Bourget – in existence since 1967 – together with another hangar opened next to its Merignac assembly line near Bordeaux in 2015, trades as Dassault Falcon Service.

DABS is the new name of the former TAG Maintenance Services business, which comprises full-service shops in Geneva and Farnborough, as well as smaller



An artist's impression of Dassault's Melbourne centre, which will open next year

facilities in Basel, Lugano and Sion in Switzerland, Lisbon, London Luton, and Luanda, Angola. It also runs a fixed base operation in Geneva.

Finally, ExecuJet MRO Services has operations in Belgium – Brussels and Kortrijk – Kuala Lumpur, Johannesburg, Tianjin, Perth, Melbourne, and Sydney in Australia, and a newly-opened hangar at Dubai's Al Maktoum airport.

In addition to that, Dassault uses more than 20 authorised service providers, which include major business aviation names such as Duncan Aviation and Standard Aero in the USA, as well as Aero Dienst in Nuremberg, Germany.

However, Jean Kayanakis, appointed in 2019 as senior vice president in charge of Dassault's expanding customer service network, insists the multiple branding approach makes sense. When they were acquired, DABS and ExecuJet both came with customer bases that were far from exclusively Dassault, and keeping those non-Dassault operators makes a great deal of sense to ensure those businesses remain viable.

"We want to create a consistent experience for Dassault customers around the world, somewhere that feels like home," he says. "But in certain places there is simply not enough volume to have Dassault exclusivity."

The relationship with ExecuJet in particular remains relatively arms-length, with the entity, which originated in South Africa, retaining its own management team and identity – although its logo now carries the wording: "A Dassault Aviation company".

ExecuJet insists it has strong relationships with other OEMs – in fact, for years it acted as Bombardier's sales and service representative in the Middle East, Australia and South Africa and some 60% of its revenues derive from outside Dassault. In many ways the link is the same as that between Gulfstream and Jet Aviation, which is owned by Gulfstream parent General Dynamics.

"When we bought ExecuJet, we always knew they would remain

multi-OEM," says Kayanakis. "We bought them for their expertise and didn't feel a need to rebrand. It is more profitable for us to benefit from their expertise, and to introduce them to our expertise gradually. Markets are different, competition is different around the world."

Around 2018, Dassault Aviation decided that it had to become a bigger global player in the aftermarket. General Dynamics had bought Jet Aviation a decade earlier, and an ailing Bombardier had decided to bet all its chips on business aviation by divesting its other interests, including the CSeries airliner programme, train manufacturing, and aerostructures.

"What attracted us to ExecuJet was that we wanted to ensure we had capacity in the right places as the capabilities of the Falcon fleet grew, with larger, longer-range aircraft," says Kayanakis. "The fleet was expanding from our traditional core markets of North America and Europe."

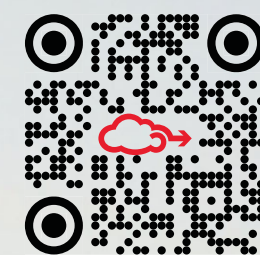
With around a quarter of Dassault's roughly 2,100 in-service aircraft operating outside the Americas, it has been increasingly important to cater for those not near one of the company's established service centres. "We want to make sure all our customers have a place to go within the network," adds Geoff Chick, Dassault Aviation's senior vice-president worldwide service. ▶

The Dubai maintenance facility is the latest in the ExecuJet MRO Services network



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With climate activists targeting business aviation, what progress is the sector making towards achieving its sustainability targets?

A group of protesters targeted the EBACE show in Geneva during May



# Under scrutiny

**Mark Pilling**

“100 activists storm Europe’s biggest private jet sales fair” was one of the lurid headlines from May’s EBACE exhibition in Geneva.

Europe’s premier business aviation show was targeted by climate protesters, who chained themselves to aircraft stairs and “stuck giant tobacco-style health warning labels on the jets marking them as toxic objects and warning that ‘private jets burn our future’, ‘kill our planet’, and ‘fuel inequality,’” according to Greenpeace.

The EBACE protest was one of the most vivid examples of a wave of increasingly visible campaigns by

activists demanding a ban on private jets. It is spreading to become a global movement, emanating from vociferous voices in Europe, but protests have taken place in Australia too.

The US market, where the industry is at its largest and most accepted, has not been immune.

“As industry leaders, we are always looking for opportunities to identify and tap future sustainability technologies”

Andrew Collins Co-chief executive, Flexjet

In November 2022, for example, a co-ordinated series of demonstrations took place at several busy business aviation airports, including Teterboro in New York and Van Nuys in Los Angeles, causing mostly minor disruption.

The business aviation industry has a long record of defending itself

from accusations of being a luxury activity. That is an old, although still peddled, story, and one still being rebuffed. The rise of climate protesters and their tactics of direct action, however, is new.

Kurt Edwards, director general of the International Business Aviation Council (IBAC), which represents the business aviation industry at ICAO, says that while anyone is entitled to peaceful protest, action beyond that is unacceptable.

“Protests where people are breaking into airport perimeters, where they are approaching and even damaging aircraft, are illegal acts against civil aviation, and we wish governments were doing more to dissuade that type of conduct,” Edwards says.

Laurent Gilleron/EPA-EFE/Shutterstock

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He describes the upswing in protest activity as “supremely frustrating for the industry” and argues that protesters wrongly attach the luxury tag to business aviation and lack an understanding of its true emission levels. Business aviation is a tiny proportion of aviation’s total annual carbon emissions, he says.

“What we are seeing among these protests is a conflation of perceptions of inequality with an exaggerated view of business aviation’s contribution to carbon emissions,” says Edwards. “My view is these folks don’t understand the missions of business aviation.”

Stewart D’Leon, director, environmental and technical operations at the National Business Aviation Association (NBAA), agrees: “I think the bigger challenge is not necessarily the protest or even what they are protesting, it’s the fact that there’s such a disparity between what they’re protesting and what is happening in aviation and more specifically, business aviation.”

The industry does not deny that there are plenty of ultra-high-wealth individuals that own and operate business aircraft. However, this is a minority, with the majority of aircraft being used by companies big and small as a valuable business tool, and, as the Covid-19 pandemic demonstrated, for medical missions.

#### Extending reach

In the USA, for example: “It allows small town USA to reach and compete on a level they wouldn’t be able to do if they didn’t have those aircraft,” says D’Leon.

But the arguments to support business aviation are not landing with the protest movement. “There is a concern that actions could continue either in Europe or spread beyond and go elsewhere,” says Edwards. “It is at the forefront of everyone’s minds in this business.”

Industry associations are stepping up event security to ensure there is no repeat of the EBACE incursion, but will work with campaign groups to allow peaceful protest, which took place with other groups at the show. “We must keep attendees and exhibitors safe, while giving the opportunity to those who want to say something,” says D’Leon.

Industry leaders accept that it is a mighty task to alter perceptions of the sector. “We live in an age where everyone has a microphone, regardless of whether they have accurate information or not,” notes D’Leon. “Our goal is to make sure that the correct information is shared when it needs to be shared.”

Over the past decade and more, the industry has communicated its messages better, acknowledging its climate impact and establishing strategies to address its carbon

NetJets is supporting carbon reduction projects via its Blue Skies programme

emissions, Edwards says. A key component of this in 2021 was the updating of its NBAA-BACE show in Las Vegas as the perfect opportunity.

Whether it is encouraging greater production of sustainable aviation fuels (SAF) or delivering better

communications, the industry does need to do more. It will use the staging of its NBAA-BACE show in Las Vegas as the perfect opportunity. “Watch this space, but the industry is working on campaigns and on messaging and is focused on figuring out to whom and how we should be getting out our very positive story,” says Edwards.

While it tackles perceptions about its validity, the industry is also fighting for another fundamental right: airport access. Last year, the European Business Aviation Association (EBAA) noted an increase in political calls for greater regulation of private jet flights, including the idea of bans or more taxation.

The most high-profile case has been at Amsterdam Schiphol airport, where the airport operator and later the Dutch government were proposing to reduce the number of flights per year and bring in a ban on business jets and night flights at the hub.

The government announced its decision in early September. There will be a reduction in flights from 500,000 per year to 452,000, implemented by November 2024, but a suggested ban on private aircraft has “come to a halt, following EBAA’s effort to voice the crucial connectivity role played by the sector in the Netherlands”, the association says.

A ban at Schiphol may have been averted, but the industry is

concerned about the proposal spreading to other countries, not just in Europe.

“These actions are short sighted and politically motivated,” says Edwards. “Communities that bring in bans or reduce operations are going to lose out. Ultimately, the use of business aviation is going to continue, and the traffic will simply go somewhere else nearby.”

In the USA – up until now – the main environmental issue has been around noise at airports and there have not been calls for bans. But it is an issue the industry watches closely, to see if such sentiment creeps into the US market, says D’Leon.

Kennedy Ricci, the president of 4AIR, is well-placed to judge



“For our programmes, we see people start with offsets as their first move into sustainability”

Kennedy Ricci President, 4AIR

business aviation’s progress on sustainability. He founded 4AIR in early 2021 with the aim of developing sustainability programmes that enable operators and airlines to meet industry commitments, satisfy

regulatory compliance needs or undertake voluntary action.

“Two years ago, the conversation around sustainability was mainly at the introduction level, but that has moved on,” says Ricci.

“The questioning has matured,” he adds. “People are asking if carbon offsets are the right solution. How sustainable is my SAF? What is the right mixture of offsets and SAF in my operation? How do I build a five-year plan for SAF procurement?”

“For our programmes, we see people start with offsets as their first move into sustainability,” he says. “It is the easiest way to get involved and helps put a price on carbon against your carbon footprint.”

4AIR has 100 clients, ranging from fixed-based operators (FBO) like Clay Lacy Aviation to business jet operators like Verijet and OEMs such as Embraer and GE Honda Aero Engines.

Many ask 4AIR to design a sustainability approach that meets their needs. It can then help deliver a programme that includes offsets and SAF, says Ricci. Since it began operating, 4AIR

has offset or reduced well over 2 million tonnes of carbon dioxide (CO<sub>2</sub>) using verified carbon offset credits and SAF.

Ricci estimates the total annual CO<sub>2</sub> footprint of business aviation globally to be 20-30 million tonnes. “There’s a long way to go to meet carbon neutrality for the industry, but being able to show we have addressed almost 5% of the industry’s footprint per year shows we are making significant steps,” he says.

If 4AIR’s offset contribution is added to those of other programmes, the 5% figure rises. The industry’s largest fractional aircraft ownership company, NetJets, says it supports multiple carbon reduction projects via its Blue Skies programme. This began in 2008 and to date 210,000 tonnes of CO<sub>2</sub> have been offset globally.

Leading US-based fractional jet provider Flexjet was an early adopter of offsetting and has been working with partners across sustainability, SAF and electric vertical take-off and landing aircraft.

“As industry leaders, we are always looking for opportunities to identify and tap future sustainability technologies,” says Andrew Collins, co-chief executive of Flexjet. “For example, we offset at 300% all flying in Europe at no cost to our customers.”

Flexjet and its sister brands, including jet card pioneer Sentient Jet, bespoke charter providers FX-AIR and PrivateFly, as well as MRO providers Constant Aviation and Flying Colours, are owned by private aviation investment player Directional Aviation.

Collins says that Flexjet has planned its offset strategy carefully, ensuring customers are fully aware of what they are buying and why. “And unlike other providers, Flexjet includes complimentary carbon offsets to its customers – eliminating the guesswork. It is interwoven into the programme because that way we feel it has the most impact. Combine this with our brand and our credibility and clients trust us,” he says.

As the number of business



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aviation players buying offsets rises, so too are the number buying SAF, despite its low production volumes today. This is changing as more SAF plants come on stream.

### Providing incentives

Regulations and incentives to promote the manufacture and uptake of SAF are helping as recognition grows of its importance for aviation to collectively reach the 2050 net-zero target.

In February, the US government launched the 'SAF Grand Challenge', which set down US SAF production goals of 3 billion gallons by 2030, and 35 billion gallons by 2050.

The US Inflation Reduction Act had already provided support for SAF the previous month, with the US government offering tax credits for every gallon of SAF produced.

As a sector, business aviation has taken strongly to SAF, first during the pandemic, when airlines did not need it and private jets were the only way to fly. That early uptake has continued, with large players making commitments and an increasing number of corporate flight departments and family offices taking SAF blends for their aircraft.

"In North America, only 3.5 to 4% of the total amount of jet fuel delivered to aviation is consumed by business and general aviation, and yet in 2022 14% of the SAF produced was bought by this sector," says Keith Sawyer, manager of alternative fuels at Avfuel, a leading independent supplier of aviation fuel and services based in the USA.

Avfuel is one of the players, others being Flexjet and NetJets, that have invested in SAF production firms to deliver a strong demand signal.

"We have invested early in SAF because we're trying to drive its growth in business aviation," says Collins. "By 2030, SAF will be at least 12% of our in-plane fuelling," he says of Flexjet's plans.

"In 2021, NetJets Europe became the first private aviation company to purchase a stake in the production of SAF with BP," the operator says. It adds that globally NetJets purchased more than 4.2 million gallons of SAF last year, making it the largest buyer in the industry.

Sawyer, who spent 40 years with Chevron, took on his role five years ago to build Avfuel's supply of SAF - in addition to its other sustainability-related programmes - for its business and general aviation customer base. Most is currently supplied from Neste's SAF plant in California.

Avfuel supplies a consistent inventory of SAF to 14 FBOs in western states, such as California and Colorado. For instance, SAF is available



Truckee Tahoe airport, serving the Lake Tahoe region of the USA, uses 100% SAF

at FBOs like Monterey Jet Center and Del Monte Aviation at Monterey Regional airport, and six Atlantic Aviation FBOs in those two states.

That number and its geographic scope is growing, in addition to consistent SAF supply directly to numerous corporate flight departments and major aircraft OEMs. "It is somewhat easier to add SAF for the business aviation market, as the lower volume required, compared to airline operations, means it can be delivered by truck," notes Sawyer.

### Increasing production

The number of locations with SAF on tap will mushroom as production increases in the USA, Canada and Europe, and the industry will likely secure more than its fair share. "I expect business aviation will continue to acquire more supply. We are very active in that arena and anticipate having additional supply available in North America soon," says Sawyer.

In parallel with increased SAF capacity, the concept of book

and claim for SAF is being widely promoted. This is where operators buy SAF at an airport where it is unavailable and receive credit for its supply and use at one where it is.

Several players, including Avfuel, are now using their own book and claim systems, allowing customers to count the SAF they buy as their own for environmental, social and governance (ESG) reporting purposes.

There is also an industry-led initiative, supported by IBAC and the NBAA, along with major global aviation associations including IATA, called the Council on Sustainable Aviation Fuel Accountability (CoSAFA), to develop transparent, credible book and claim accounting and auditing methodology.

"In the absence of wider distribution of SAF we need a system to both encourage more producers to come online and to enable them to sell their product at places where it is not available, and book and claim is key," says Claude Hurley, director environment and flight operations at IBAC.

"In North America, only 3.5 to 4% of the total amount of jet fuel delivered to aviation is consumed by business and general aviation"

Keith Sawyer Manager of alternative fuels, Avfuel Corporation

The CoSAFA effort is being presented at ICAO and to several states to generate support, so that the methodology can be recognised at a global level to ensure acceptance and widespread implementation. "This is important to achieve credibility of the SAF system as a whole," Hurley says.

The idea is that ICAO and individual states do not need to develop their own book and claim system. If they understand what it is designed to achieve, they will gain trust in the methodology so that SAF use is never double counted, offering all parties confidence for ESG reporting, adds Edwards.

"If we can get the CoSAFA methodology over the finish line, this will show the industry they can have confidence in the fuel attribute as it moves around without physically moving the fuel," says D'Leon. "I think that's going to be a 100% game changer and generate a significant boost in demand."

For business aviation, the availability of greater volumes of SAF, plus the introduction of a credible book and claim scheme, will be crucial as the industry strives to meet its sustainability targets. Both are gaining momentum.

Some also want to move fast to ensure public opinion does not turn against them. "There are airports that are very keen to profile themselves as environmentally sensitive and reflect the environmental values of their community," notes Sawyer.

He points to the example of Truckee Tahoe airport, which serves the Lake Tahoe region, a popular leisure destination in the western USA. "It is public information that this airport, which is in one of the most pristine environmental areas of the world, is currently at 100% SAF," he notes.

Being ahead of the game like this is essential, says Scott Cutshall, senior vice-president development and sustainability at Clay Lacy Aviation.

"We need to take control of our own future in business aviation, and everybody must do their part by starting to operate more sustainably," he says.

The alternative - greater regulation - is unappealing, says Cutshall. "The more we take the action, the less regulation there will be, because we're taking responsibility for ourselves."



"What we are seeing is a conflation of perceptions of inequality with an exaggerated view of business aviation's contribution to carbon emissions"

Kurt Edwards Director general, IBAC

Battery safety and pilot training concerns have prompted US unions to oppose adoption of eVTOL types, as the Federal Aviation Administration hones its 'powered-lift' certification model

# Power struggle



Joby says proposals would require it to significantly modify current design

Jon Hemmerdinger

Despite fanfare about an envisioned electric aircraft revolution, cracks are now emerging within the aviation industry over safety and how such vehicles should be regulated.

The issue has become evident as the US Federal Aviation Administration (FAA) advances with developing regulations for these novel aircraft.

As part of that process, air taxi developers are finding that their ambitious plans face both regulatory hurdles and pushback from powerful industry groups and community organisers.

"ALPA is concerned with aircraft battery standards, and the use of batteries as the sole energy source for aircraft propulsion," the Air Line Pilots Association, International (ALPA) told the FAA in a 16 August letter.

The union was among hundreds of groups, companies and

individuals who submitted recent comments to the FAA as part of the regulator's development of rules governing electric vertical take-off and landing (eVTOL) aircraft and the broader sector, known as advanced air mobility (AAM).

Aircraft developers – companies like Archer Aviation, Beta Technologies, Electra and Joby Aviation – insist their concepts will revolutionise short- and medium-distance travel, with significantly less carbon emitted. Many aim to have models certificated within a few years.

In June, the FAA proposed a set of operational and pilot certification regulations for eVTOL models, which it categorises as "powered-lift" aircraft; its existing categories include "airplane" and "rotorcraft".

Because air taxis have unique characteristics, the FAA has proposed that their pilots hold "powered-lift" licences and, attached to those, type ratings specific to air taxi models.

The air taxi sector is railing against

the proposal, because it would require pilots to complete training in those specific types, with FAA rules requiring training aircraft to have two sets of flight controls. The problem is, most in-development air taxis have only one.

"Many powered-lift aircraft have flight controls and human machine interfaces that make the need for dual controls unnecessary," air taxi developer Supernal told the FAA.

Industry group the Vertical Flight Society says the FAA's plan means pilots would need "25h of training on a type-certificated, dual-control, powered-lift aircraft – none of which currently exists. Nor is there any dual-control eVTOL aircraft known to be in certification."

#### Single controls

Air taxi developers view single controls as critical to their designs, reducing weight and opening space for another passenger. Developers insist they should not be required to develop dual-control models and say pilots can receive adequate

training in simulators.

"The Joby aircraft has been designed with a single set of controls," the developer notes. "The FAA's proposal would mandate Joby significantly modify its proposed type design or develop an additional type design for the purpose of training."

Flight training providers agree. "This will require [manufacturers] to get two aircraft type certificated, creating a cost burden of developing a dual-control aircraft, which will cause delays to [type certification]," FlightSafety International says.

"The FAA should provide a path for solo endorsement without requiring in-aircraft training," CAE adds. "Obtaining a type rating without flight time in the aircraft is commonplace in the industry."

But those industry players face opposition from a powerful group. "ALPA is strongly opposed to allowing only a single set of controls, preventing an instructor or second pilot from being able to immediately intervene in the control of the



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-Henry Maier, President and CEO, FedEx Ground



Beta, which is developing electric aircraft for cargo and passenger use, says charging stations are needed

powered-lift aircraft," the USA's largest pilot union argues.

Air taxis without dual controls "should not be operated in commercial civil operations", it told the FAA. "ALPA will oppose any operation of a single-control system."

Industry players are also sparring over the FAA's proposal to require air taxis to have the same flight-time reserves as traditional aircraft: 30min in visual and 45min in instrument flight conditions. The rules require aircraft have enough fuel – or electricity – to fly that long after flying to their intended destinations.

"The fuel reserve requirement stands out as a potential source of a significant incremental cost" and would "disrupt optimised charging cycles", says a study submitted to the FAA by Supernal. It estimates an aircraft's battery system would need hundreds more charges as a result, leading to "reduced battery life".

Because air taxis will have minimal range to begin with, Joby says operators might be unable to "commence flights merely because of disproportionate energy reserve mandates".

Archer also "recommends that the FAA consider performance-based requirements for energy reserves".

But ALPA sees things differently.

"While current battery technology will make it difficult for electric powered-lift aircraft to comply at this time, typically limiting flight times from 15-45min, this is a necessary reserve requirement to achieve an equivalent level of safety," the union says.

One aircraft developer, Electra, which is designing a fixed-wing electric commuter aircraft, agrees with ALPA. "Electric energy storage technologies still have significant uncertainties, which warrant this more conservative approach," it says.

Unlike an eVTOL aircraft, Electra's concept has wings to provide lift, meaning it will not expend the huge stores of electricity required for vertical flight.

Separately to its proposed rules, the FAA recently solicited public comments as part of a much-broader effort by the agency to craft a

strategy for overseeing AAM operations. That sector includes highly automated electric and hybrid-electric small aircraft, including fixed-wing types and eVTOL models.

Some heavyweight lobby groups took the FAA's request as an opportunity to flag concern.

ALPA, for instance, urges the FAA to evaluate "whether the safety baseline of [battery] functionality can be performed reliably and repeatedly".

"Lower-flying aircraft operating closer to buildings and the ground have a reduced time period for pilots to overcome mechanical issues during flight," the Transport Workers Union of America (TWU), which represents aircraft mechanics and other workers, told the FAA. "AAM aircraft present an increased risk to our transportation system due to maintenance issues."

The union therefore urges the FAA to require air taxi operators to use human dispatchers and to require mechanics to hold "traditional airframe and powerplant certifications".

#### Automation issues

The unions also question the safety of automation.

"The TWU believes it is unlikely that uncrewed aircraft will ever demonstrate a sufficient level of safety to carry passengers low to the ground in urban areas", the union says.

"It is far too soon to believe that highly automated technology has undergone the proper vetting to be allowed," ALPA adds. "Without having years of data and safety risk justifications to prove that these technologies are safe and trainable, it would be very naive to believe that levels of high automation can replace having two pilots onboard

an aircraft."

Broadly speaking, air taxi developers intend for their initial designs to be operated by single human pilots. They eventually plan to develop fully autonomous iterations, a shift viewed by the industry as critical to maximising operating economics.

Some start-ups think full autonomy is close at hand.

Those include California firm Reliable Robotics, which is working to certify a fully autonomous Cessna 208 Caravan. In a 22 June letter, Reliable urged the FAA to establish "digital flight rules" – a new category applying to automated flight that would sit alongside visual and instrument flight rules. Reliable insists its automation can improve safety.

Airports are also highlighting hurdles.

"The overwhelming majority of airports reported that they do not have the electric capacity to support these new aircraft," the American Association of Airport Executives (AAAE) told the FAA. "Airports... are already struggling to meet the demand for [electric vehicle] charging stations, and AAM would strain limited capacity."

Broader viability concerns have left airports loath to embark on the costly infrastructure updates that electric aircraft require, the AAAE says. FAA certification timelines are unclear, and air taxis will likely only operate in visual flight conditions, "which could limit their commercial value".

"These factors, along with an unproven business model, create some uncertainty as to how much demand there will be," the airport group adds.

Air taxi developers agree infrastructure updates are needed. "It

will also require a rethinking of the nation's transportation system, as it relates to power grids," Beta tells the FAA. The Vermont-based company, which is developing an electric aircraft initially for cargo use, suggests the agency, through its Airport Improvement Program, should help to fund the installation of electric charging stations – an idea specifically opposed by the AAAE.

Another player, California air taxi company Overair, says overhauling airports would be a project similar to the ongoing shift toward electric ground vehicles.

"Electric aircraft are not particularly different than electric vehicles in charging requirements. The battery pack size is about the same," Overair told the FAA.

The City of Los Angeles insists more analysis is required, including studies into electricity availability. It notes that electric aircraft will "require both a lot of power, and provision of that power quickly".

"Cities have seen first-hand the negative impacts that can occur when new transportation technologies and modes enter the market without adequate community engagement and effective regulation," it adds.

Community groups have also been quick to raise concern about noise pollution created by air taxis buzzing overhead. The "FAA must conduct rigorous, transparent and independent research on the potential negative impacts of AAM", including studies about "expected aviation noise impacts and annoyance", say several citizen groups, including those from Los Angeles, Miami, Minneapolis-St Paul and New York.

"The public is unaware of how this world-changing tech will alter the character of neighbourhoods, impacting quality of life for all," commenters warn the FAA. "The rush to implement AAM must be slowed."

A community group in Portland, Maine says it is "very concerned about aircraft noise and insists "affected communities [need] more equitable consideration".

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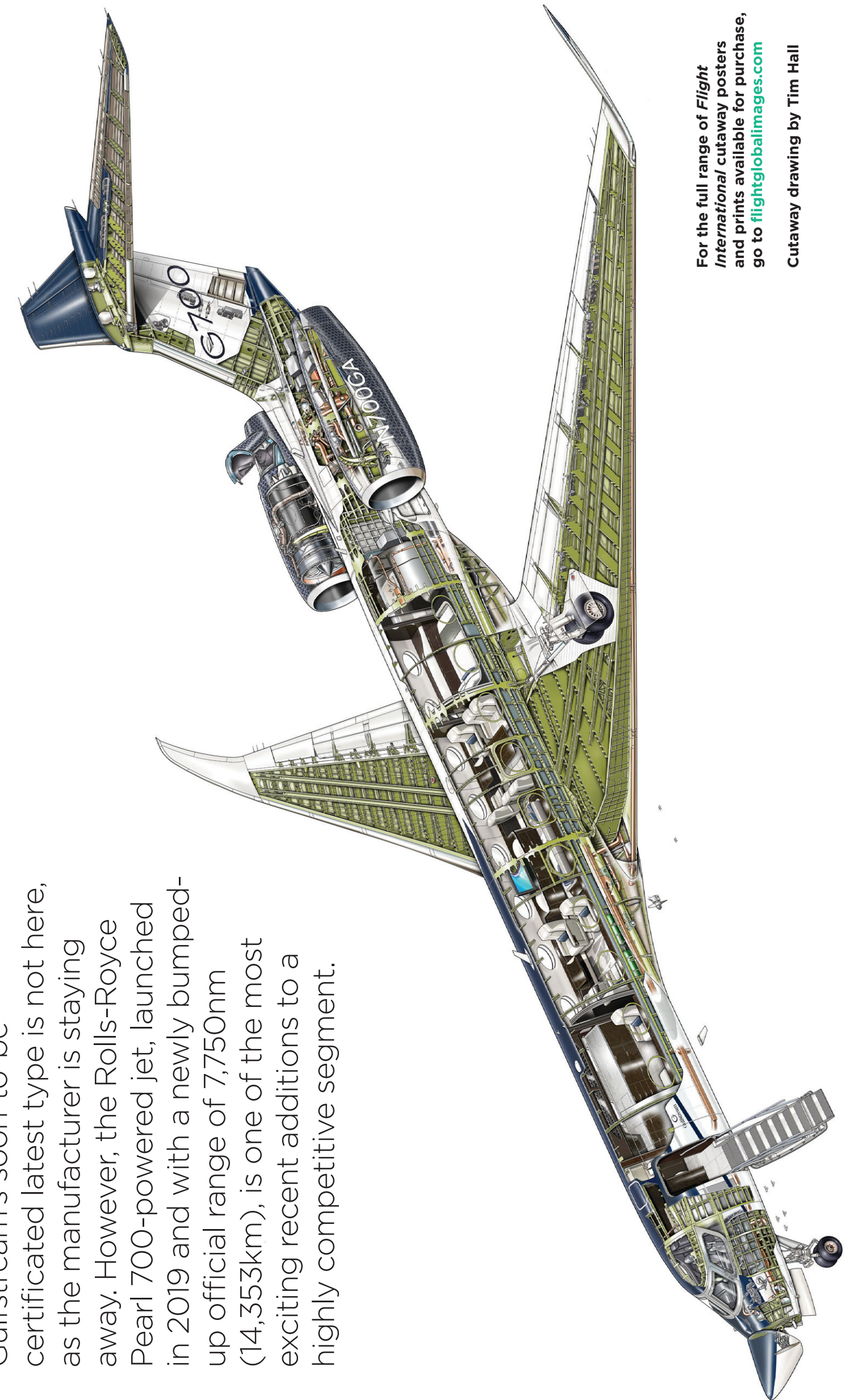
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# Gulfstream G700

Gulfstream's soon-to-be-certificated latest type is not here, as the manufacturer is staying away. However, the Rolls-Royce Pearl 700-powered jet, launched in 2019 and with a newly bumped-up official range of 7,750nm (14,353km), is one of the most exciting recent additions to a highly competitive segment.



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Cutaway drawing by Tim Hall

Over the three days of the show, we are profiling two aircraft likely to be catching the eye of visitors on the static display

# Italian style, Canadian icon



**Tecnam P2012**

Tecnam describes its twin-piston P2012 as the first new-generation nine-seat commuter aircraft in decades, in a sector dominated by the Cessna 402 and the Britten-Norman Islander. The aircraft, built in Capua near Naples, can be powered by either the Lycoming TEO-540 or the Continental GTSIO-520 and was designed primarily as a mini airliner - its biggest customer is US shuttle airline Cape Air which flies mainly to and between islands off the US coast. However, Tecnam says its interior can be rapidly reconfigured to transform it into a low-cost, six-seat VIP transport, or for medevac or cargo - hence its appearance again at the show.

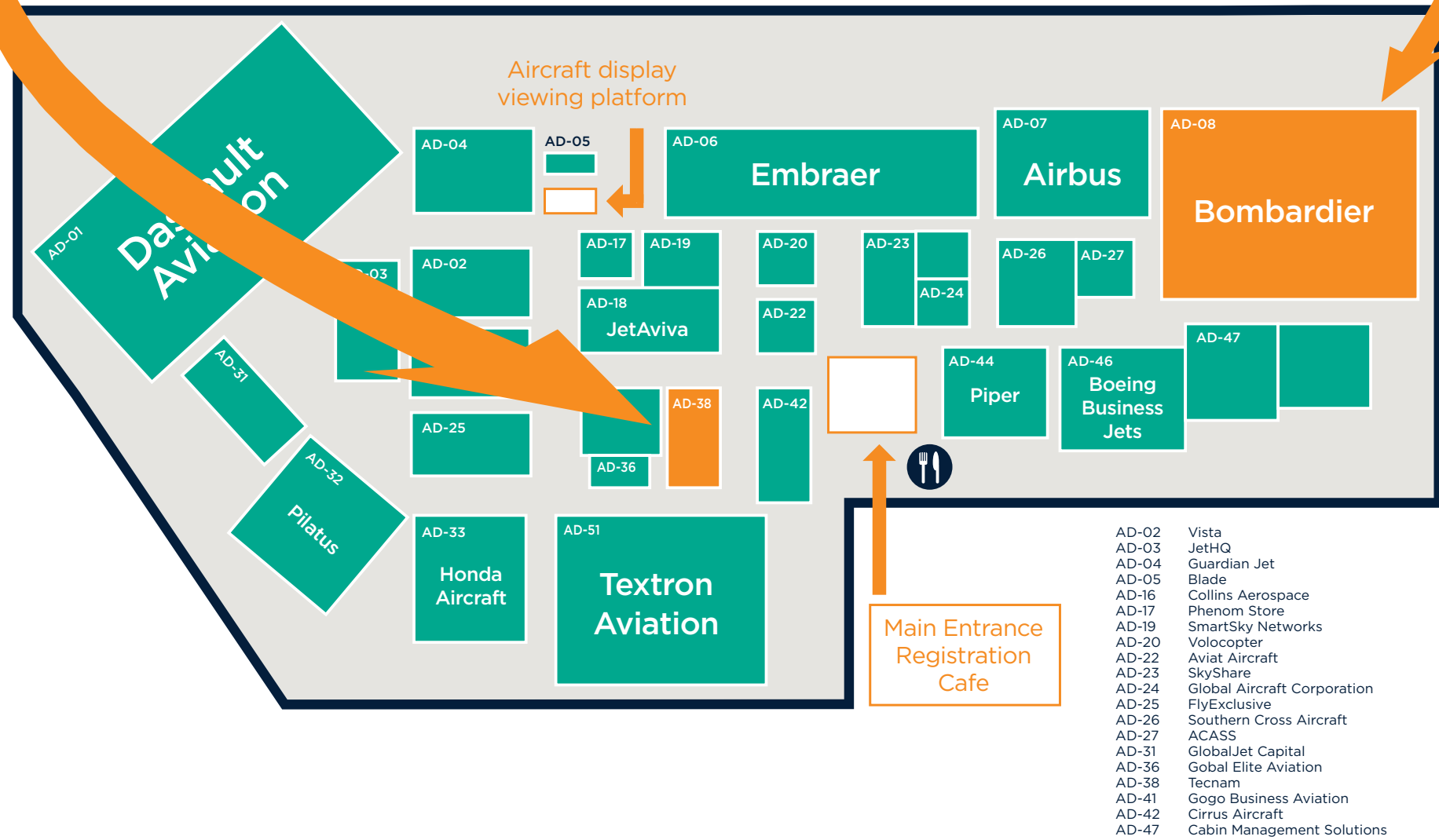


**Bombardier Global 7500**

Since starting to deliver its largest aircraft in 2018, Bombardier has had the small but prestigious ultra-long-range market to itself. The 7,700nm (14,300km)-range Global 7500 is currently the longest-range business jet available, but now faces competition from the still-uncertificated Gulfstream G700/800 and Dassault Falcon 10X. Originally the Global 7000, the GE Aerospace Passport-powered type was announced in 2010, along with its Global 8000 stablemate. An evolution of Bombardier's Global Express, the fuselage is 3.43m longer than the original long-range variant, creating a bigger cabin for those intercontinental trips.

## STATIC DISPLAY OF AIRCRAFT AT HENDERSON EXECUTIVE AIRPORT

Note: Details correct at the time of going to press



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