Sunday

22 May 2022

# FLIGHT EVENINGNEWS



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## Dassault's double

6X and 10X cabin mock-up make first appearance at EBACE, but Trappier warns of supply chain disruption as jet is delayed

Kate Sarsfield

assault is marking a double debut at EBACE, with its 6X appearing for the first time at a show, and 10X on its stand in mock-up.

However, it also announced this morning a six-month delay in the entry into service of the 6X, to mid-2023, blaming the ongoing effects of Covid-19 and the Ukraine crisis.

"I'd like to stress that the Covid epidemic is still active - fortunately not at the crisis levels we knew before, but strong enough to disrupt business," chief executive Eric Trappier said at a media conference this morning.

He notes that "the fast recovery with limited resources of the global economy is creating unprecedented

constraints on the supply chain, not only in our industry but across the entire manufacturing sector".

In addition, the war in Ukraine is "adding its own part of disruption" with a rise in energy prices, and shortages.

As a consequence, "our anticipated target of year-end 2022 for the entry into service of the 6X is shifting, and is now forecast by mid-year 2023".

The super-large 5,500nm

The super-large 5,500nm (10,175km)-range 6X was launched in 2018, following the company's cancellation of the troubled 5X programme. To date three aircraft in the test fleet have logged over 850 flying hours.

The 6X on the static (F-WZOA) is the fourth test aircraft and the first fully outfitted example. It is scheduled to embark on a global 40-stop "proving campaign" in June,

to ensure the reliability of the aircraft and onboard systems in "real world operating conditions".

A cabin replica of the 7,500nm, top-of-the-range Falcon 10X is on display on the airframer's stand.



### Daher talks up TBM 960

Daher is upbeat about prospects for its TBM 960, the latest version of its single-engined turboprop, the first delivery of which took place last month.

"The response of customers has been extremely positive to the TBM 960. We are sold out until September 2023," Nicolas Chabbert, senior vice-president for the French company's aircraft division said at the show today.

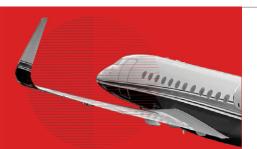
He describes the high-speed aircraft as a "quintessential TBM, representing the fifth evolution of our very fast turboprop aircraft family since the TBM 900-series' introduction in 2014. It takes the maximum advantage of today's turboprop technology to provide digital control of the engine and the propeller."

Priced at \$4.6 million, the six-seat aircraft was unveiled in April at the Sun n Fun show in Lakeland Florida. The first example was handed later that month to a German businessman. European certification is already secured while US approval is pending, says Daher.

The new model replaces the TBM 940 in the Daher line-up and features a more efficient Pratt & Whitney Canada PT6E-66XT turboprop, a "fully digital e-throttle" and a "digitally controlled cabin", together with a five-blade Hartzell propeller, linked to the PT6E with a "dual-channel digital engine and propeller electronic control system". The aircraft has Garmin G3000 avionics and Garmin's GWX 8000 weather radar a new feature, according to the airframer.

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#### Ten sales for ACJ **TwoTwenty**

Airbus Corporate Jets (ACJ) has TwoTwenty - the VIP version of its A220-100 narrowbody airlinei since it was launched in October 2020.

Revealing the new order total at the show this morning, Benoit Defforge, ACJ president, said that four more units had been added since the beginning of the year, for three US customers.

Defforge is hopeful of selling around five to 10 TwoTwenty aircraft per year, matching the combined annual sales figures for he rest of the ACJ range.

"When we have the first aircraft lying and are able to demo it then we will be able to really accelerate sales," he says.

Key to that effort will be ACJ's new "creative studio" for the TwoTwenty - a bespoke facility in oulouse that will allow customers to get up close and personal with their aircraft long before they are due to be delivered. It includes a life-size section of

the TwoTwenty's cabin - featuring sliding panels to illustrate how competing business jets stack up - plus virtual reality and digital design tools to help abin customisation.

"We want to offer our customers the experience, the iourney, to feel the space first of all. And with the latest technology available they will be able to elect the layout and all the naterials to create the perfect mbience," says Defforge.

Bombardier's eco discovery mission

Drone flights launch airframer on journey to BWB sustainable jet

#### **Murdo Morrison**

ombardier unveiled today the mock-up of a drone demonstrator it has been using to test sustainable technologies as part of a project called EcoJet, which is targeting a 50% reduction in emissions compared with today's aircraft.

Although the Canadian manufacturer stresses that EcoJet is a research study, it showed a short video of a blended wing body (BWB) futuristic concept with twin tail-mounted engines.

BWB is an area Bombardier has been looking at for more than a decade, says Stephen McCullough, vice-president engineering and chief of aircraft design and development. He adds that technology readiness is progressing, initial testing has demonstrated potential benefits, the technology is "scalable to our business jet needs", and is compatible with all types of future propulsion.

The airframer has been flying the demonstrator at a secret location in Quebec, and savs it is now developing a larger unmanned platform to progress the project McCullough says Bombardier



Ouellette and McCullough (r) this morning

wants to engage with suppliers and academia on EcoJet.

Bombardier also said this morning that it has issued an Environmental Product Declaration (EPD) for the Challenger 3500. It follows a similar mark for the Global 7500, the first business iet to receive an EPD.

An EPD analysis adheres to International Standards ISO 14020, which specifies requirements for environmental claims. Bombardier

says the EPDs demonstrate its "ongoing commitment to sustainability"

"Bombardier is the only business aviation manufacturer to hold EPDs, confirming that reducing the industry's environmental footprint is of the utmost importance to us," says Michel Ouellette, executive vice-president, engineering, programme management and Bombardier Defense.

#### G700 sets a new speed record

N706GD made its inaugural city



winjet is on the static alongside sta nillion G700 by year-end. The com-

range G650ER and G700s

#### Pearson takes the controls at Boeing Business Jets

Boeing Business Jets (BBJ) has a new chief, with newly appointed president Frika Pearson making her EBACE show debut just two days into the role.

Pearson, who has moved over from Boeing's airliner business, says she is delighted by her new post. "I'm honoured to be leading Boeing Business Jets at such a dynamic

time in business aviation," she said this morning.

"I'm really looking forward to taking my experience from commercial aviation and translating it to this unique market segment. This is my first time at EBACE and I'm really looking forward to the experience."

Meanwhile, the company unveiled orders for four new BBJ Max

aircraft which were booked in the first quarter on the back of "very strong demand", says Alex Fecteau. director of marketing

"We had a good 2021 coming out of the pandemic... and had four new orders at the start of this year and we are looking forward to finishing up the last half of 2022 even more strongly.



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#### VoltAero charges up ownership programme

French hybrid-electric aircraft developer VoltAero has launched a European fractional ownership programme for its five-seat Cassic 330 and will begin accepting initial expressions of interest in the scheme at EBACE

VoltAero - led by former Airbus chief technology officer Jean Botti · will subsequently expanded the nitiative to cover the follow-on six-seat Cassio 480 and 10-12-seat Cassio 600.

"Cassio will open a new era of highly sustainable air transportation in Europe with on-demand flight services for those who ioin our frac tional share ownership," says Botti.

"It's highly appropriate that we oring this mobility solution to Europe with Cassio - a truly innovative next-generation aircraft that is developed and built in Europe."

Powered by a 330kW parallel hybrid system configured in an aft pusher layout, the Cassio 330 will use the electric motors for taxi, take-off, cruise flight, and landing, while the internal combustion engine serves as a range extender to recharge the batteries during flight plus as an emergency back-up. Service entry is scheduled for 2024 The powertrain has been flight tested on the company's Cassio 1 demonstrator, racking up nearly

5,400nm (10,000km). Certification will be as a European Union Aviation Safety Agency CS23 aircraft. Ground will be broken this year

at a new production facility for the Cassio at Rochefort airport ir

oltAero describes the Cassio 330 as an

tive next-generation aircraft



US supplier pumps up market prospects after Akryl acquisition

#### **Kate Sarsfield**

itan Aviation Fuels - one of North America's largest fuel suppliers - is making its debut at EBACE where it is promoting its broad suite of fuelling services to operators, airports, FBOs and pilots.

Titan's arrival in Geneva comes on the heels of its acquisition earlier this year of European fuelreseller Akryl.

The European branch of Titan will be headed by Akryl founder and chief executive Daniel Coetzer. "The only thing that has changed is the name." he savs.

"We will still be providing reliable, simplified, and efficient fuelling services supported by our experienced team worldwide. but with the added benefit of a robust North American network," says Coetzer, who is now chief executive of Titan's European operation, based in Geneva.

As one of the largest suppliers of aviation fuel in the USA, supporting a network of over 550 FBOs. Coetzer expects EBACE to give Titan a springboard to expand throughout Europe, the Middle East

He adds that expanding its Titan savs it will also be showcasing global footprint provides its US its portfolio of non-fuel support customers with a strengthened services including a carbon offsets network of fuel choices when programme, a pilot loyalty travelling internationally, notably programme, aviation card clients who are members of

processing, aviation insurance, Titan's bespoke contract quality control training, as fuel programme. well as equipment leasing During the show. and financing.



#### Full-time for Jota as liquidator steps in

providing charter flights for Premier League football and other professional sports clubs, is to be wound up, five weeks after suspending operations on 13 April.

Joshua Dwyer and David Pike from Interpath Advisory were appointed joint liquidators of the Biggin Hill, UK-based business on the eve of EBACE, on 19 May.

The liquidators say that the company had faced challenges on "multiple fronts" including the impact of Covid-19 travel restrictions and the UK's departure from the European Union, which hit its cargo revenues. "Despite significant efforts to

raise new investment to implement its strategic growth plans, new investment could not be secured and the directors reached the difficult conclusion that it was in the best interests of creditors to place the

company into liquidation," they add. A total of 44 staff have been made

## FlightGlobal



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# Flexiet flexes up in Europe Fractional operator adds Praetor 600s and G650s to regional fleet

**Murdo Morrison** 

lexiet is adding five aircraft to its seven-strong European fleet, including the first two Gulfstream G650s, and three Embraer Praetor 600s from the

mega order the fractional operator placed with the Brazilian airframer in 2019.

Flexjet's European line-up currently comprises four Praetor 600s and three of the type's Legacy 500 predecessor.

Flexiet was the fleet launch

customer for the smaller Praetor 500, taking its first delivery in December 2019, two months after announcing the order at the National Business Aviation

The company already operates the G650 in its US fleet.

Association convention.

Directional Aviation-owned Flexiet is also moving its European operations centre from St Albans, near London, to Farnborough airport.

Flexiet currently operates

four Legacy 500 types

The company says it has seen an 180% year-on-year uptick in flight activity in Europe in the first four months of 2022. It has been hiring pilots, adding 33 European flightcrew since November last year.

"Demand for our services continues to be exceptionally strong," says Flexjet's European managing director Marine Eugene. "New programme sales and forward bookings are also very robust, so we are well-prepared for a busy summer and second half of the year.' Meanwhile. Embraer also

announced this morning that it has installed Ka-Band in Flexjet's Legacy 500 fleet in Europe.

#### **Embraer and 4Air offer carbon offset opportunity** Embraer is to offer new business jet customers 25 business jet customers to make their own long-term

hours of carbon neutral flying in an effort to convert them to more sustainable thinking.

Owners who enroll in the airframer's Executive Care programme will be able to arrange for the complimentary carbon offset through specialist pairing company 4Air, the manufacturer said at the show this morning.

"Embraer is committed to ensuring that the future of aviation is sustainable," says Johann Bordais, president and chief executive of Embraer Services & Support.

"Our partnership with 4Air will incentivise

commitment to sustainability and demonstrate ways they can start acting now." 4Air president Kennedy Ricci says: "This initiative

will start owners and their new aircraft on the right foot for the beginning of their sustainability journey. The carbon offset credits Embraer is providing will have a real impact on the climate-changing emissions their jets generate."

Projects funded by the offset credits include renewable energy programmes, the planting of trees and local schemes that reduce deforestation.

The retrofit is available on the manufacturer's Legacy and Praetor families, and is also a factory option for the Praetor 500 and 600.

Produced by FlightGlobal, 1st Floor, Chancery House, St Nicholas Way, Sutton, Surrey SM1 1JB, UK ©2022 DVV Media International

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Printers ATAR Roto Presse SA. Geneva

#### **Tech trio** embrace automation

Three start-ups are jointly exhibiting n a "tech hub" at EBACE to show rators and owners the benefits of grating time-saving automation

nd processes, Aviowiki is a latabase of business aviation irports updated in real time, and L3XX (pronounced "flex") is a

ndependent of each other and are not offering bundled packages, he idea behind the collaboration is to highlight how embracing automation and information sharing 'Working together puts the

advance the whole ecosystem," he says. "In the digital world, it is all one platform to another. By using the same codes, we can demonstrate the

Diego Magrini from Aviowik



"What we do is remove the need for manual tasks, such as scanning for negotiating and making money letting you focus on the human

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#### **LunaJet cautions on** industry euphoria



GAMA data shows shipments continuing to rise but still behind highs of 2019

he latest figures on business aircraft deliveries present a broadly positive picture, with airframers shipping more jets and turboprops than in the previous two years, but the performance still lags 2019.

Data from the General Aviation Manufacturers Association for the first three months of the year, released just ahead of EBACE, also show that the overall value of deliveries - which include piston

aircraft – is down 5.9%, to \$3.7 billion, compared with the same quarter in 2021.

Without a detailed segment-bysegment breakdown it is difficult to draw conclusions, but, generally, increased unit deliveries at a lower total value suggests discounting. This is counter to conventional wisdom which holds that a shortage of used aircraft on the market means manufacturers can afford to hold firm on pricing of new equipment.

However, it can also mean that a higher proportion of lower-priced

aircraft were sold in the first quarter than in the same period in 2021. This could be due to an uptick in unit sales of more affordable piston types.

Total turbine deliveries in the first three months, at 228, were significantly higher than the 197 shipped in the first quarter of 2021, and that was better than 2020's figure of 185. However, manufacturers have still to catch up with the 263 deliveries achieved in the first three months of 2019.

"It is reassuring to see aircraft deliveries continue to show strong progress as we emerge from impacts of the pandemic," says GAMA president and chief executive

Turboprop deliveries saw the biggest year-on-year percentage increase in the first quarter at 31%, to 110 units. Business jet shipments – at 118 aircraft – were 4.4% higher than in 2021.

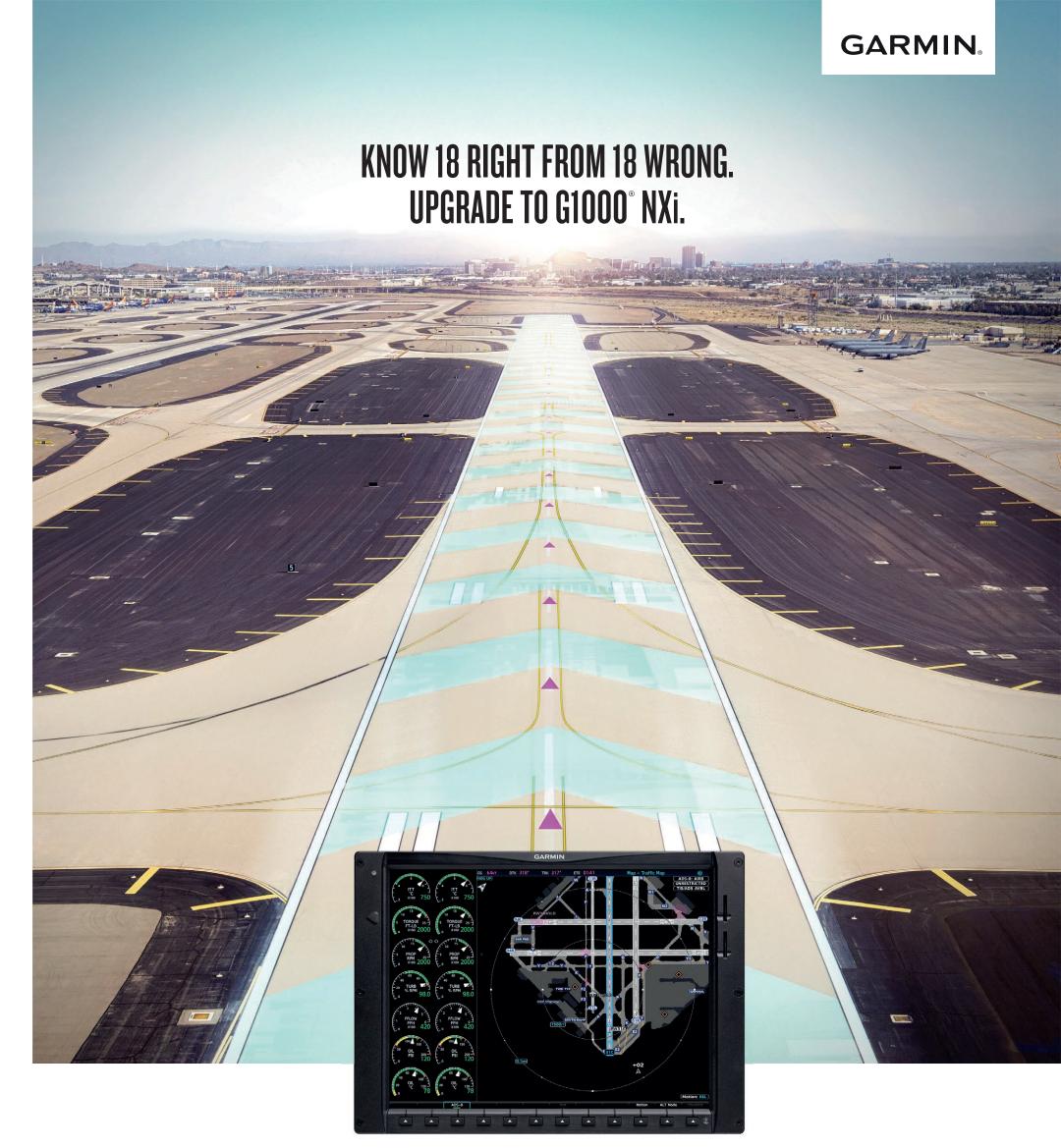
Textron, reflecting its broad range of types from small pistons to larger business jets, delivered the most aircraft at 107. This included 10 Citation Latitudes. Gulfstream was next, with 25 shipments, followed by Bombardier, which handed over 12 Globals, six Challengers and three Learjets, and Pilatus, also on a total of 21.

Embraer and Honda Aircraft notched eight and four deliveries respectively. Airbus recorded three deliveries, including its first ACJ TwoTwenty. Boeing Business Jets failed to ship any aircraft, while Dassault Falcon only reports



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Lufthansa Technik is showing its latest concept for A330 and other widebodies, aimed at globetrotting adventurers

**Murdo Morrison** 

widebody cabin concept for a "flying hotel", complete with a veranda, spa, and space for cars or motorbikes in the lower deck, is getting a full reveal at EBACE after Lufthansa Technik offered a glimpse of its Explorer concept at November's Dubai air show.

The idea is that the private jet doubles as a luxurious "base camp" for excursions to remote parts of the world, says Wieland Timm, head of sales VIP and special mission aircraft services at the German airline subsidiary.

The Explorer design has been developed for an Airbus A330 freighter airframe, as the existing main deck cargo door provides the opening for the retractable platform that serves as the external balcony. However, it could be adapted for other widebody aircraft, says Timm.

Additional features include a projection system, developed with Diehl Aerospace, mounted in the

**Jet Aviation** 

gets into line

and two private ramps to the

General Dynamics subsidiary's

existing facility in the Swiss city. The Zurich station will provide

line services for Gulfstreams and

other business aircraft.

the company's base

Stefan Verkaik, director

AOG at Jet Aviation says line

maintenance will complement

maintenance and AOG service

key hub for our customers and

in combination with our large

the perfect location to further

between FBO services, handling,

servicing and pre-flight checks,

footprint at the airport, it's

support their maintenance

needs. We are now able to

provide a turnkey solution.

fueling, line maintenance,

all in one location," he says.

troubleshooting, aircraft

offer in Europe. "Zurich is a

of aftermarket services &

at Zurich



sidewall and ceiling that creates "large scale visual impressions" of anything from the night sky to disco lights.

At EBACE, Lufthansa Technik will have a mock-up of part of the cabin, and will be offering visitors the chance to experience the full concept using 3D goggles.

Meanwhile, Lufthansa Technik is reporting its "best ever year for cabin completions", with "huge demand" anticipated at least until 2025. "We have more requests than slots at the moment," says

Timm, who adds that the outfit is booking slots up to 2026. Lufthansa Technik has the capacity to carry out between four to six aircraft completions a year.

The Hamburg-based business is one of a handful of specialists in head-of-state and other large-aircraft completions, and Timm believes the increase is being driven by more governments realising the need for secure and reliable air travel. "Many are recognising that they don't have sufficient aircraft

for the larger delegations that they want to transport," he says.

In March, Lufthansa Group said it was moving ahead with plans to sell a minority stake in Lufthansa Technik to an investor or through an initial public offering this year. The unit's main revenues come from airliner maintenance, repair and overhaul. Lufthansa Technik reported an EBIT of €201 million (\$221 million) on revenues up 7% to just over €4 billion in 2021, following a loss of

€383 million the previous year.

# Textron takes sustainability step with Pipistrel takeover

Jet Aviation is now offering a line maintenance service at its new hangar in Zurich, after acquiring the former ExecuJet FBO last June. The acquisition added a terminal, an adjacent 2,500sq m (27,000sq ft) hangar, a 5,000sq m arched hangar

business unit.

This has brought together expertise from across the firm's subsidiaries, including Bell, Textron Aviation and Textron Systems, to pursue a "long-term strategy to offer a family of sustainable aircraft for urban air mobility, general aviation, cargo and special mission roles".

Rob Scholl, who has been leading Textron eAviation since its inception has now been named as president and chief executive of the segment.

"Pipistrel has already achieved what many other companies only aspire to - certifying and delivering highly regarded electric aircraft to customers around the world," says Textron chief executive Scott Donnelly.

"We are excited to accelerate Pipistrel's development and to welcome its talented people into our organisation, where we will pool expertise to make Textron a world leader in sustainable aircraft for a wide range of missions."



While Pipistrel has traditionally been a manufacturer of gliders and piston-engined light aircraft, it has lately moved towards all-electric and hybrid designs. This includes the Velis Electro, the first electric aircraft to receive full type-certification from the European Union Aviation Safety Agency (EASA). Additional hybrid and electric models are in development.

Pipistrel will remain a distinct brand under Textron's ownership, alongside fellow fixed-wing aircraft manufacturers Beechcraft and Cessna. Its headquarters, research and development and manufacturing facilities will remain in Slovenia and Italy; Textron plans additional investments in those sites to expand the firm's capabilities.

Under the terms of the transaction, Pipistrel founder Ivo Boscarol will retain a 10% stake in the company for a two-year period, during which he will serve as an advisor on future product plans and strategies. Textron's purchase price includes a sum covering the cost of buying out Boscarol's holding.

# Elit'Avia hails major African opportunity

Management company and distributor confident of more sales after delivering Nigeria's first HondaJet

#### **Murdo Morrison**

frica is the business aviation "market of the future" as its transport infrastructure is not keeping pace with many countries' burgeoning economies.

So believes Michel Coulomb, whose company Elit'Avia has just delivered Nigeria's first HondaJet to a private owner, under a management contract, and is confident of securing further sales in the coming months.

Elit'Avia, which is based in Malta and Slovenia, has been an aircraft management specialist for 15 years, but in 2021 diversified by taking on the Honda Aircraft distributorship for France and 16 African countries, including Ghana and Nigeria.

Coulomb says Nigeria in particular has huge potential for business aviation, with a large territory and existing fleet of 160 privately-owned aircraft, but poor airline connections. It and many of its neighbours are seeing waves of inward investment from China and elsewhere.

"There are more and more African clients with the capability to acquire a private jet," he says. However, unlike regions such as North America and Europe, it is under-served by business aviation companies.

But to sell aircraft in Africa, vendors need to be able to offer solid aftersales support, he adds. To this end, Elit'Avia's next step is likely to be into aircraft maintenance, through a partnership with a Maltese provider, says Coulomb. "Malta is a good location for much of Africa," he says.

ontent being a boutique

Coulomb says Elit'Avia, which he set up in 2007 in Ljubljana, expanding to Malta in 2014, is content to remain a "boutique" management company. It has a fleet of around 25 aircraft, several of which are available for charter. "We never wanted to be running 50 or 100 aircraft," he says.

In 2021, the company also moved into cargo charter, taking a Boeing 747-400F onto its Malta air operator's certificate.

# Drought of used jets for sale

The number of used business jets for sale hit an all-time low in the first quarter, with just 3.1% of the active fleet on the market compared with 8.1% a year ago, according to valuations firm Asset Insight.

It says the phenomenon is "fueled in large part by first time buyers" who have been snapping

In its latest report, the company says that advertised prices, or "posted ask prices", rose by 14% year on year, "as expected during a high-demand market".

Young, low-time aircraft sold the quickest, many without being formally listed, with sellers "generating final transaction values that met or exceeded ask price", adds the report.

"Two years ago, as we headed into the Covid-19 pandemic, nobody foresaw the frenetic buying environment we continue to experience," says Tony Kioussis, Asset Insight president. "Twenty-four months later, the pre-owned business aircraft market has achieved record high transaction rates, and a record low inventory level. Buyers are obtaining their best ask prices, if not more, and owners of high-quality, low-time, recent model aircraft may not even have to list their asset to secure a sale."

in the shortest supply, according to the report, with just 2.4% and 2.9% respectively of the active fleet for sale. The figures for midsize and light jets are slightly higher at 3.8% and 3.2%.

# Satcom Direct celebrates Plane Simple STCs

Satellite communications provider Satcom Direct is celebrating its 25th anniversary at EBACE after securing a flurry of supplemental type certificate approvals for its Plane Simple Ku-band tail-mounted antenna and modem unit.

The US Federal Aviation Administration has approved the installation on Gulfstream G550, G450, G350, GV and GIV types, while the European Union Aviation Safety Agency has given its green light for several Bombardier Global variants.

An approval for Dassault Falcon aircraft is also pending.

Satcom Direct is demonstrating

Satcom Direct is demonstrating the technology at EBACE on its company-owned Gulfstream G550, after the kit was fitted at Gulfstream's Appleton, Wisconsin facility.

Meanwhile, in a second trial, ACC Columbia jet Service in Hanover, Germany has installed Plane Simple on a privately owned Global Express, the first aircraft with the equipment outside the USA.

Satcom Direct launched the hardware two years ago, stating that it "completes our connectivity puzzle adding to our existing software, ground infrastructure and hardware".

The company expects to have more airframe approvals by the end of June, with entry into commercial service in the third quarter. The company plans to follow up next



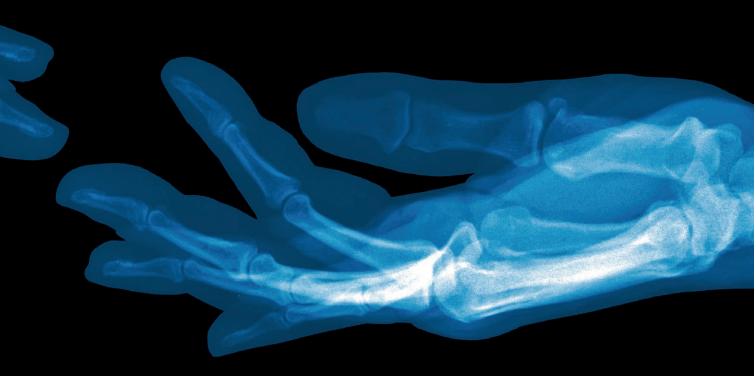
year with a second antenna system
- this time Ka-band compatible and
linked to Inmarsat satellites.
Last month. Satcom Direct

said Gulfstream had selected

its FlightDeck Freedom communications platform as "default" datalink system for Gulfstream G500, G600 and G650ER types.

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Completions firm reports new interest in CRJ200 conversion amid shortage of used jets

# ExecLiner taking off for Flying Colours

#### **Murdo Morrison**

anadian completions specialist Flying Colours is seeing renewed interest in its ExecLiner conversion of the CRJ200 - the 50-seat regional jet that was last produced by Bombardier in 2006 - and says it is close to securing a customer for three examples.

Flying Colours, which is exhibiting at EBACE, has converted 30 former airline CRJ200s into both VIP aircraft and corporate shuttles, but its last delivery was seven years ago, says vice-president Eric Gillespie.

Bombardier also produced its own Challenger 850, a production-line business jet based on the CRJ200. delivering around 70 over 20 years from the mid-1990s.

The market for repurposed regional jets, both new and used

- Embraer also offers the Legacy 650 and Lineage 1000 - has been sluggish to non-existent in recent years, as manufacturers have pushed latest-generation models creating plenty of replacement aircraft activity.

However, Gillespie says a shortage of used aircraft and long lead times for new jets, with the charter market in particular booming during the pandemic, has spurred demand for alternatives.

Many operators and owners are looking for Bombardier Challenger 650-sized aircraft for domestic US travel, says Gillespie.

While not providing the 4,000nm (7,400km) range of a Challenger 650, the ExecuJet can fly for around 2.300nm.

This can be raised to 3,000nm with auxiliary fuel tanks that Flying Colours can install under a supplemental type certificate.



The ExecLiner interior looking aft

"With inventory on the used side drying up, things have really picked up in the past six months," he says. "We are knocking on lots of doors."

The potential first customer

has earmarked three CRJ200 conversions: one a 29-seat "hybrid shuttle", fitted with executive seats and a separate VIP section, comprising four club seats, a divan and a half-club area.

The others are "full VIP". None of these aircraft are fitted with the auxiliary fuel tanks.

Gillespie says there are at least two other interested buyers for the conversion programme

Although around two-thirds of Flying Colours maintenance and completions business comes from North America, Gillespie says the company also targets Europe and the Middle East for conversion contracts, and has a sales representative in the region.

The Peterborough, Ontariobased firm has a site in St Louis in the USA, as well as an in-plant facility at Bombardier's service centre in Singapore.

#### Luxaviation expands its UK fleet



Charter giant Luxaviation is expanding its UK fleet with a Bombardier Global 6500, while an Embraer Legacy 500 has joined its French fleet.

The 6,600nm (12,200km)-range Global 6500 will operate from Farnborough airport and Luxaviation says it is the first in the UK.

It come as Luxaviation reports strong charter demand since travel restrictions began to be lifted across Europe in mid-2021. And, although George Galanopoulos, Luxaviation UK chief executive, admits the Ukraine crisis has had a dampening effect in recent months, he says he is "very optimistic about the rest of the year".

Luxaviation has become one of the world's biggest charter operators 13 years after being founded with a single Cessna Citation XLS. Its global fleet stands at around 250 aircraft, operated under a series of air operator certificates. It also runs the ExecuJet network of fixed-base operations, although it last year divested the maintenance side to Dassault.

#### Pilatus pair on display after record year

NGX and a PC-24 on the static display, on the back of a record year for aircraft deliveries.

During 2021, the Swiss manufacturer of business and military trainer aircraft shipped 45 PC-24 light business jets and 88 PC-12 NGX single-turboprops, as well as 17 PC-21 turboprop trainers, and two examples of its PC-6 short take-off and landing utility type.

A "boom" in the business and general aviation market "greatly benefited" sales of the PC-12 NGX and PC-24, says Pilatus.

However, the airframer says "supply bottlenecks" impacted its operations and forced up costs. Chief executive Markus Bucher notes that "unreliable supply chains and continuing deglobalisation" will remain challenges in 2022.

In July, Pilatus detailed an avionics update for its PC-24, which competes in the light jet category with the Embraer Phenom 300, the Honda Aircraft HondaJet, Textron

Aviation's Cessna CJ range, and the out-of-production Bombardier Learjet brand. It is also operated by the likes of the Swiss and Qatari air force as a VIP transport.

In April the company handed over a fourth PC-24 to German charter operator Platoon Aviation, which operates a fleet exclusively made up of the twinjet. It took its first PC-24 in 2021 and Pilatus says the Hamburg-based business has orders for an undisclosed number of the type.



Pilatus PC-24 over Las Vegas

As EBACE returns for the first time since 2019, many believe prospects for the sector are stronger than at any time since before the financial crisis. Evidence bears that out

# Golden years grew during lockdowns as line services dried up, but

#### **Murdo Morrison**

s the industry converges at the Palexpo for the first EBACE in three years, its prospects have arguably not been as bright for a decade-and-a-half. Back in 2007, the global financial crisis lurked around the corner, and today the Ukraine conflict casts its shadow over the world economy.

However – unlike its commercial counterpart – business aviation has navigated an even bigger crisis, the Covid-19 pandemic, with relatively little turbulence, and the community will be gathering again in Geneva in a spirit of confidence.

Evidence for the powerful recovery can be seen in the OEMs' output projections as well as high-profile orders. The emergence of the urban air mobility (UAM) segment - one that some analysts believe could be bigger than conventional business aviation is today by next decade - has added further dynamism to a market already seeing a high degree of new product development. This year's show will feature a number of UAM electric air taxi start-ups exhibiting in their own right, no longer with quirky, experimental designs but with flight-proven platforms they insist are ready for service.

The industry's big beasts too are bullish. Gulfstream chief executive Mark Burns said in March that the General Dynamics unit - which has three new models in advanced development - is "building at an unprecedented pace", with backlog at a six-year high. While the 119 aircraft delivered in 2021 was less than 2020's 127, shipments will rise to 123 this year, and to 170 by 2024, the company predicts. In fact, General Dynamics chief executive Phebe Novakovic says that a fixable wing supply problem, rather than sluggish demand, is the main brake on Gulfstream producing more this year.

#### **Guidance** beater

Bombardier plans to ship more than 120 Globals and Challengers in 2022, and says that, assuming the market remains strong, this is likely to be higher next year. In 2021, its first year as an exclusive manufacturer of business jets, the Canadian firm delivered 120 aircraft, smashing its own guidance by 10 units. Meanwhile, Dassault – which has the Falcon 6X and 10X due to come on stream – also had an excellent 2021, with 30 Falcons delivered, down four on 2020's total, but beating its own guidance by five units. The French manufacturer's backlog stood at 55 aircraft at the end of last year.

Textron Aviation - which offers piston types up to the super midsize Longitude Citation jet - delivered 292 Cessna and Beechcraft aircraft in 2021, up from 245 the previous year, with chief executive Scott Donnelly



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Inoting in January that demand for business jets throughout the period was "very robust". Embraer saw revenues in its executive aviation division rise 5% in 2021, driven by higher deliveries and prices. The Brazilian airframer delivered 93 Phenom and Praetor jets during the year, and expects this to grow to between 100 and 110 in 2022.

Business aviation analyst Rolland Vincent insists the industry is entering a "golden age" after its "acceleration out of the pandemic". with the wealth of many high-networth individuals increasing over the past two years as they continue to resume pre-pandemic work and leisure travel patterns. Commercial aviation's faltering attempts to restore flight schedules and



routes after the first phase of the pandemic - combined with lingering worries over Covid-19 security have resulted in "people of means discovering a better way to travel by air", declares Vincent.

#### **Unsatisfied demand**

With book to bill ratios at two to one, and backlog value at the big five OEMs growing 39% in 2021, manufacturers are enjoying their "best order and backlog condition in 14 years", says Vincent, who also asserts that there are not enough used aircraft for sale to satisfy demand from customers, many of whom are new to business aviation. Duncan Aviation aircraft sales and acquisitions consultant Tim Barber describes the pre-owned market

> manufacturers will "not be in a rush" to ramp up production to meet anticipated demand, instead choosing to remove discounts and "take profits". This is because "manufacturers have a long memory", he says. "They recall the financial crash and how demand fell off a cliff, leaving them with inventory." Instead, "the industry is getting producer power, which it hasn't had for a long time". Despite this, Foley expects business jet production to start rising significantly next year, reaching around 900 deliveries in 2024, from around 700 today.

operators are also expressing

as "very lively", with the available aircraft inventory at just 3% of the global fleet. "Aircraft are being secured within hours of coming on the market." he says. The Ukraine crisis remains a

worry, but analyst Brian Foley is convinced that the collapse of the Russian market as a result of sanctions will have a limited effect. "With 18-month waiting lists, any cancelled orders from Russia will be backfilled quickly," he says. He believes that first-time business aviation users are driving the recovery by being behind a fifth of all orders. These new customers have helped to drive a 10% rise in aircraft use over 2019 and, despite airlines now restoring capacity, are "here to stay", maintains Foley. who adds: "The industry as a whole is at a new paradigm."

However, he cautions that

Leading charter and services

optimism. In January, Vista Global, the parent of VistaJet and XOJet, said 2021 had been a "recordbreaking" year, largely thanks to new market entrants. The Maltabased company, which offers on-demand, subscription and membership options to business travellers, added that flight hours in 2021 were 57% greater than prepandemic figures, although this was partly as a result of an ambitious fleet expansion programme that the Bombardier operator committed to before Covid-19.

US fractional ownership specialist Flexjet said on 7 April that it is planning to hire 350 pilots to cope with the acquisition of 50 more aircraft this year. The Cleveland, Ohio-based firm says that demand began to ramp up during the Covid-19 lockdowns, and has continued despite the lifting of restrictions on movement. Meanwhile, rival NetJets is continuing a recruitment campaign, begun in late 2021, to find 110 new pilots as it too sizes up for strong demand for its fractional ownership model.

George Galanopoulos, managing director of Luxembourg-based charter and aircraft management group Luxaviation's UK business is also "very optimistic about the rest of the year" after a strong performance in the second half in 2021. "Things went mad again after June [when social contact and travel rules were relaxed in many countries] and we had some of our best months ever in that period," he says. "We covered



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Foley believes business

jet production will rise

significantly next year

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flightglobal.com/ebace Industry **Overview** 



) our losses from the early part of the pandemic and exceeded 2019 by some margin."

#### **Sanctions effect**

The Ukraine crisis will inevitably have some impact on business aviation in Europe and the Middle East, given the importance of the Russian market both for aircraft sales and charter. Before February this year, it would have been hard to visit a private airport terminal in London, Paris or Dubai without spotting expensively clad Russian businessmen and their families. Galanopoulos believes the sanctions regime "will affect the whole market going into the summer" but adds that "we have very little exposure to it, so I don't think we are going to

While curtailing the effective inability of many wealthy Russians to travel around Europe will hit some charter operators and fixed-base operations, aircraft manufacturers, lessors and maintenance providers

39%

Increase in backlog value at the big five OEMs during 2021, while book to bill ratios are now at two to one

will also be caught up, with the complex nature of aircraft ownership and overseas registration making it tricky at times to comply with the law. And although Russia accounts for a "relatively small part" of overall business aircraft sales – albeit weighted to more expensive, large-cabin types – "for the wider

ecosystem the impact is likely to be deeper", argues Foley.

Worries over the ripples from the Ukraine conflict aside, the organisers of EBACE - the USbased National Business Aviation Association (NBAA) and the European Business Aviation Association - are promising a "show to remember", after the event was cancelled because of Covid-19 concerns in both 2020 and 2021.

"We have all the major OEMs committed, and there is a palpable enthusiasm across the industry to get back to the excitement and magic of being together face-to-face again," says NBAA president Ed Bolen.

#### **Touching times**

NBAA held its annual convention in Las Vegas last October after a two-year gap, and while "the energy and excitement was off the charts", says Bolen, the show suffered by having few international visitors, as the USA was still largely closed to

international travellers at the time. With Switzerland open to vaccinated visitors, this year's EBACE should attract an international audience, with many keen to "touch and feel" equipment and interact socially with industry colleagues for the first time in years.

Bolen adds that EBACE will be "an opportunity to celebrate our industry, who we are and what we value". Business aviation, he says, has for decades "been doing great things by getting people where they want to be and when, by creating jobs and economic development and connecting communities to the world". During the pandemic, he says, the industry played a key role in keeping the global marketplace functioning, as well as helping humanitarian efforts by transporting medical goods and personal protective equipment.

This year's show will have a focus on two major industry trends: sustainability and UAM. While UAM - or advanced air mobility (AAM) - featured at EBACE 2019, it was more about start-ups "talking about their vision", says Bolen. This time, many of the exhibitors from last time, and others, are "well capitalised and talking about moving from aircraft to infrastructures, so it is an exciting time".

He adds: "Our industry has always embraced innovation, and AAM is all about getting people to where they want to be. This is a new chapter in the evolution of business aviation."

The emphasis on reducing business aviation's carbon footprint will also "resume from where we left off in 2019", when more than a dozen exhibitors' aircraft flew to Geneva on blends of sustainable aviation fuel (SAF), says Bolen. However, he notes: "So much has changed since 2019. Back then, the goal was to raise awareness of SAF, that it existed, that it was safe. We are moving now to a different stage - creating a demand for it." SAF, he says, will play a major part in the sector's drive to net zero carbon emissions by the century's half-way point.

Additional reporting by Kate Sarsfield in London



Although it has just one application - the Bombardier Global 7500 the GE Aviation Passport is one of the most successful new engines in business aviation. Melvyn Heard, Passport product leader at GE Aviation, discusses the engine's prospects

# Passport to success

Passport powered up nine years ago and has now been in service for four years on the Bombardier Global 7500. What has market response been and what lessons have you learned from that operational experience?

A Passport is setting the standard for ultra-long-range business jet reliability and efficiency. As a clean sheet design, it was purpose built for maximum range and comfort. To date, more than 100 Global 7500 aircraft have been delivered to customers, and that means more than 200 engines are in service. Passport has surpassed 80,000 flight hours and 30,000 cycles since entry into service, and we expect more than 100,000 hours by the end

CFM International has been making improvements to the Leap commercial engine, which is a cousin of the Passport. What technology do the engines share and how will Passport benefit from those synergies as the Leap evolves?

↑ Passport is built with the same core architecture as the CFM International Leap, which has nearly 20 million total hours since EIS in 2016 and is running up to 12 cycles a day. The combustor leverages this large engine commercial design for advanced, rich-burn combustion for the most fuel-efficient design in its class. If fact, Passport was a key enabler to Bombardier making history in 2020 by issuing the first-ever Environmental Product Declaration for a business jet on its Global 7500. As both Passport and Leap mature, we expect to be able to leverage what we



learn for each engine's long-term lifecycle and potential future engine enhancements. Both engines are also assembled at our GE site in

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we've worked hard to achieve. We continually rank first or second in product support surveys, and have a high success rate signing Global Lafayette, Indiana. 7500 customers up to our OnPoint Service programme. This is a full coverage, concierge, flight hour, service program with no hidden costs - it will maximize the Global

> service centres that support us around the world. More than 50% of those have Passport capability We've beefed up our personnel, tooling and material logistics to focus on critical areas that we're going to have a higher concentration of Global 7500s. That's Asia, the Middle East, Australia, as well as obviously the big regions like the EU

7500 aircraft's availability and long-

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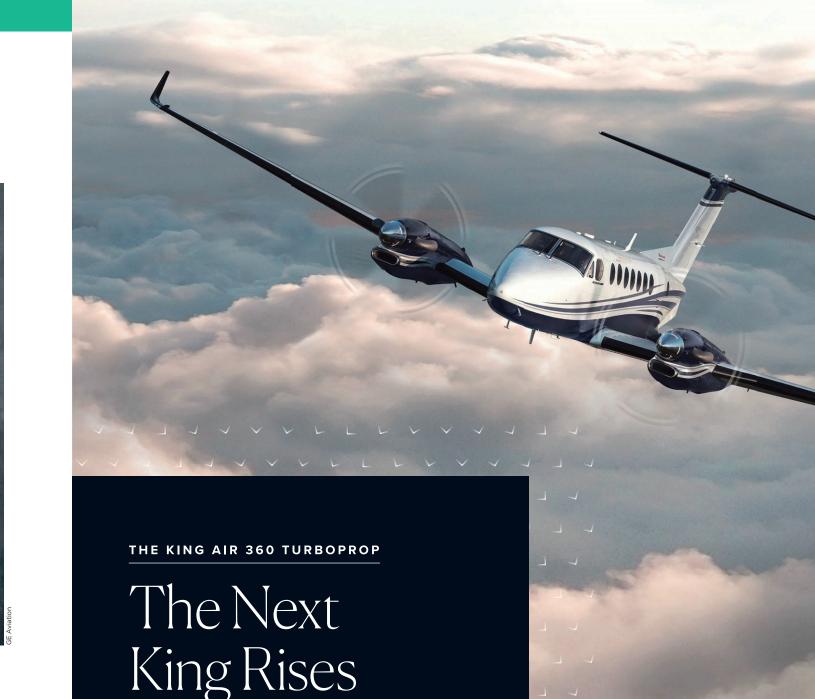
We've seen two business iet programmes launched in the Global 7500 segment recently, neither of which will use the GE engine. Is there still potential for further applications for Passport? Indeed, is there potential for

other engines, based on Passport architecture, to be developed for other parts of the market?

Passport has a bright future. It is the testbed for the recently announced hydrogen demonstration programme with Airbus and it will also form the basis for the future of flight with CFM. The combustion design is being leveraged to design RISE, which is an open fan architecture that will propel the next generation of flight.

Finally, how good is it to be back at a face-to-face business aviation convention in Europe for the first time in three years? What are you expecting from the show?

It feels great to get the opportunity to be back faceto-face! Being able to interact in this way with our customers and partners can't be underestimated. I think sustainability will be a major theme for the show and am looking forward to seeing those themes come forward as the industry is on a collective journey towards net zero.



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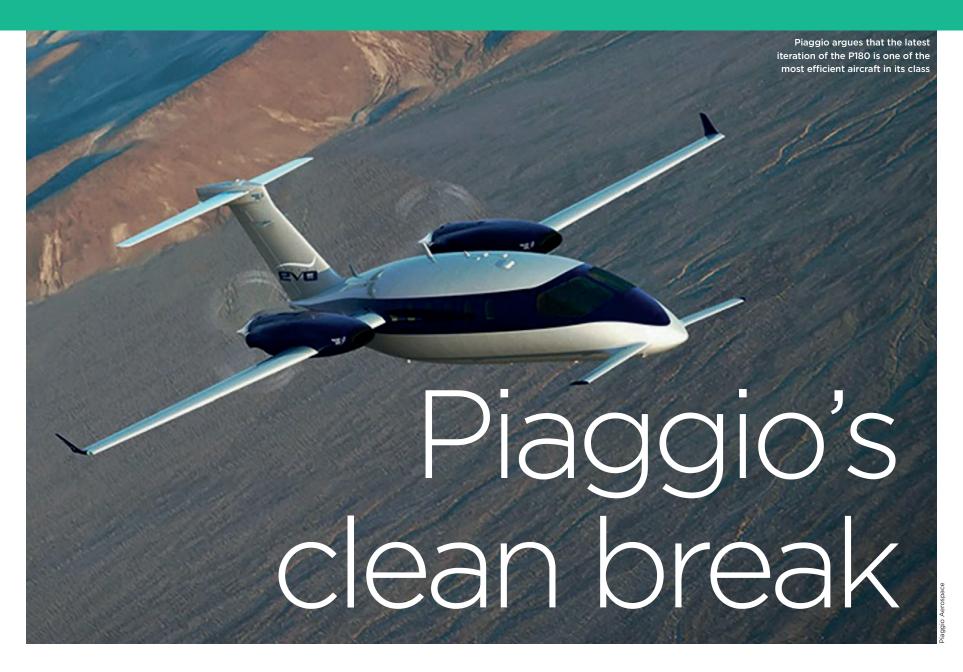
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#### **Dominic Perry**

iaggio Aerospace arrives at EBACE with the ultimate destination of its ownership still unclear but seemingly already planning for a cleaner, greener future.

The Italian airframer, which has an Avanti Evo on display on the static, has been in extraordinary administration – a form of business restructuring – since December 2018 with potential bidders due to submit offers in the coming weeks.

In the meantime, however, Piaggio has begun studying how to address the need for zero-emission aviation in the not-too-distant future and appears to be leaning towards a clean-sheet design to address the business aviation and commuter markets.

At present, the company favours a hydrogen fuel cell-based propulsion system for the future aircraft that would likely arrive at the tail-end of the decade, says chief technical officer Antonio Sollo.

Presenting an overview of the airframer's strategy during a 10 May environment-focused webinar, Sollo said Piaggio had rejected a batteryor hydrogen-electric version of its P180 Avanti having conducted several feasibility studies.

"To modify an existing airplane is very, very complicated," he says. "With these novel concepts you have to start with a clean sheet of paper."

Based on Piaggio's analysis of current battery energy density, and its likely improvement over the next decade, the manufacturer calculated that to achieve a minimum 300nm (550km) range with four passengers and two pilots on board, the P180's maximum take-off weight would need to rise from 5,500kg (12,100lb)

to 9,070kg, says Sollo.
Aside from the weight of the cells,
Piaggio also identified their thermal
management as another challenge
to overcome, he adds.

Piaggio also modelled the use of hydrogen on the P180, maintaining its distinctive pusher-propeller configuration but adding a pair of bullet-shaped fuel tanks forward of the wing in place of the engine nacelles to feed aircooled "advanced fuel cells", in turn powering twin electric motors.

Based on each fuel tank holding 56kg (123lb) of liquid hydrogen, the aircraft would be able to meet the

300nm threshold. Currently, the twin-turboprop-powered P180 can fly up to 1,500nm.

However, the airframer highlights the low technology readiness level of cryogenic storage tanks and affordable but high-power fuel cells.

Piaggio says it is instead looking to a clean-sheet design that could potentially incorporate fuel cell technology.

"This will be part of our upcoming technology plan for 2023-2027 that we are currently defining, based on funding from the EU's Clean Aviation programme and also Italy's PNRR Covid recovery plan," says the manufacturer.

Technologies supporting a "new business aviation/commuter airplane" should be ready in the 2027-2030 timeframe, Piaggio adds.

However, any future development programme will have to be approved by Piaggio's new owners.

Earlier this year five potential bidders began due diligence on the Italian manufacturer in a process running until 28 April. Any resulting offers need to be submitted by the end of May.

Although Piaggio sees a need for a future clean-sheet aircraft to tackle

environmental challenges, Sollo argues that the current iteration of the P180 - the Avanti Evo - is one of the cleanest aircraft in its class. According to the airframer's data,

According to the airframer's data, the P180 burns less fuel and emits less carbon dioxide than similarly sized jet aircraft and comparable turboprops. And with a top speed of 405kt (745km/h) the Avanti Evo loses little in the performance stakes, Sollo argues.

He points to the aerodynamic design of the aircraft, plus its use of three lifting surfaces – the wing, tail and forward canards – and low-drag natural laminar flow wing.

"The fuselage and nacelles are designed to an aerodynamically optimised shape – it has 8% less drag than a conventional aircraft," he claims

Additionally, the Avanti Evo is certificated to run on blends of up to 50% sustainable aviation fuel (SAF). Engine supplier Pratt & Whitney Canada is undertaking its own programme of testing and qualification to enable the Avanti Evo's twin PT6 powerplants to run on 100% SAF, while Piaggio is addressing any modifications required to the fuel system.

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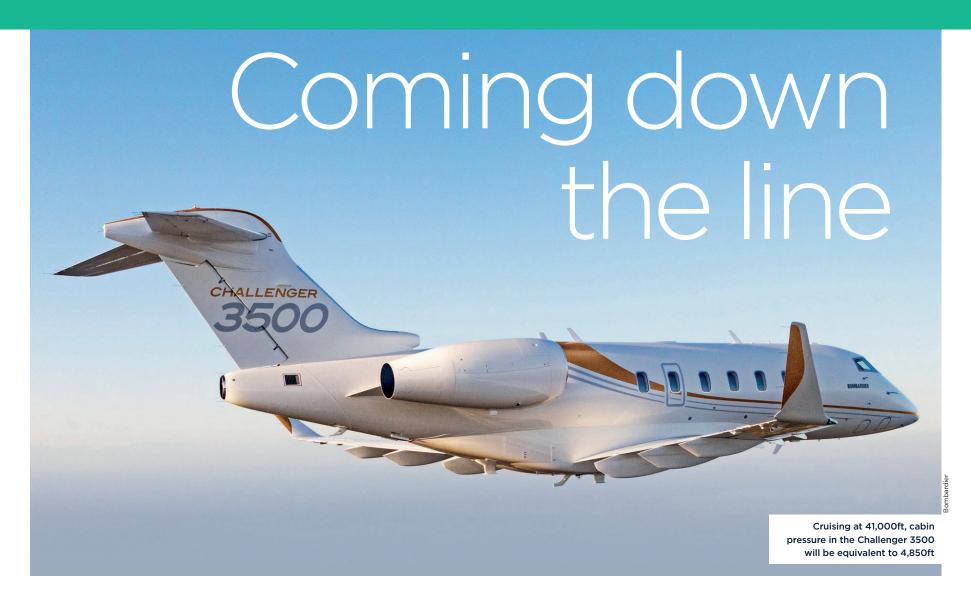




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Business aircraft manufacturers have continued to invest and innovate during Covid-19, with launches from Dassault and Gulfstream among the announcements. We round up the major developments under way



Kate Sarsfield

#### Airbus

Airbus has flown and begun to secure customers for the ACJ TwoTwenty, the corporate jet version of the former CSeries unveiled in October 2020.

First flight of the Pratt & Whitney PW1500G-powered variant - the smallest in an ACJ family that extends to the ACJ350 - took place in December last year, and the first example is now being outfitted at launch customer Comlux's US completions facility. Under an exclusive arrangement with the charter operator, Comlux will install the cabins in the first 15 ACJ TwoTwentys, and has announced Dubai luxury resort group Five as one of the purchasers and operators of the iet.

Meanwhile, earlier this year German charter and management firm K5 Aviation received the first ACJ330-300, the first time the -300 variant of the widebody has been configured as a corporate jet. All other A330s in VIP or government service have been smaller -200s.

#### Boeing

Airbus's commercial airliner rival has traditionally been the more successful of the two when it

comes to selling the market's largest business jets, with versions of its 747 operated by several governments and the 737 BBJ a solid seller for decades.

In 2018 Boeing announced that it would be offering a BBJ version of its new flagship, the 777X, which it said would be the longest-range business jet in the world, able to fly 11,645nm (21,600km).

BBJ versions of the 737 Max 8 and 787-8 were also redelivered to customers last year following cabin completion.

#### Bombardier

Since becoming a pure-play business aircraft manufacturer last year, following the divestment of its aerostructures, commercial aircraft and rail transport divisions the Canadian airframer has been focusing on its top-selling brands and opportunities to strengthen its product line further. The decision in February 2021 to shutter production of the Learjet light business jet family has positioned Bombardier at the upper end of the market with its two Challenger and four Global variants.

The move to terminate production of the iconic brand after 60 years - the final Learjet, a 75 Liberty, was delivered on 28 March, from the company's Wichita

Number of ACJ TwoTwenty jets that Comlux will convert, under an exclusive agreement with Airbus

facility - has also freed up valuable capital to invest in these more profitable programmes.

Bombardier will be looking to repeat the success of the past four years, during which it certificated and delivered three new versions of its Global family - the 5500, 6500 and 7500 - with the last of these marking its 100th delivery in March to long-standing customer VistaJet

While the Global family has consumed a large chunk of Bombardier's research and development spending in recent years, questions remain about the status of the Global 8000 Bombardier launched the 7,900nmrange aircraft in 2010 as a smaller sibling of the 7000, now known as

**Update Programmes** 

While conceding it has moved away from its original plan of building a shortened 7000 with slightly more range - thanks to the 200nm-range performance increase and rebranding of its sister aircraft -Bombardier has vet to publicly move forward with its development.

Although the Global family has been a core focus for the Canadian manufacturer. Bombardier is also developing the Challenger range. Last year saw the launch of the Challenger 3500, the latest iteration of the 300-series super midsize business jet.

The Challenger 3500 features a host of improvements over the current and second-generation version, the Challenger 350, which it replaces.

These include a revamped galley and modern cabin - complete with features standard on the Global family such as Nuage leather seats Technical changes to the \$26.7 million 3500 include an autothrottle system and a reduced cabin-altitude pressure. When cruising at 41,000ft, that pressure will be equivalent to 4,850ft about 2,000ft less than the 350. Bombardier says the change has been made by reinforcing the jet's baggage-compartment bulkhead.

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Challenger's entertainment system. The 3500 has voice-control cabin technology that works through an app on personal entertainment devices. The app will allow passengers to control various cabin features – lighting, temperature and audio – by speaking commands.

The 3500's performance specifications remain unchanged from the 350, which entered service in 2014. Bombardier insists that while manufacturers often focus on the range and speed of their products, customers are largely driven by the quality of the cabin. The 3500 will be a 10-passenger jet powered by twin Honeywell HTF7350 engines, with 3,200nm of range and a top speed of Mach 0.83.

Bombardier says that flight testing and certification activities are running to schedule and deliveries are on track to commence in the second half of the year. Speaking during the company's recent annual earnings call, Bombardier chief executive Eric Martel said the 3500 had become "a huge success on the sale front... significantly contributing to our team achieving the best order intake in the last eight years".

A revamp of the Challenger 650 is also on the cards. Bombardier is believed to be considering new avionics and engines – possibly a lower-thrust application of the Rolls-Royce Pearl 15 turbofan – for the \$32.4 million large-cabin jet, which was introduced in 2015 as the fifth iteration of the 40-year-old Challenger 600.

#### Dassault

It is a busy time for the French airframer, which is working to bring two new high-end business jets to market.

First across the finish line will be the Falcon 6X. The superlarge model was launched in 2018, following the company's cancellation of the troubled 5X programme, and is on track to secure type certification and enter service by year-end. The three-strong flight-test fleet has logged more than 700 flying hours, with one example recently completing extreme weather and endurance testing in Iqaluit, a tundra town in the north of Canada.

A fourth, fully outfitted 6X recently joined the line-up and has embarked on a global tour to "demonstrate the operational maturity of systems", Dassault says.

Meanwhile, serial number 5 - the first customer aircraft - is undergoing completion at Dassault's US facility in Little Rock, Arkansas. The 6X's Pratt & Whitney Canada PW812D engine received Transport Canada certification in December 2021, and European and US validation are expected shortly.

Once in customer production, the 5,500nm-range 6X will have the largest cross-section dimensions of any purpose-built business jet, with a width of 2.28m (7ft 5in) and a cabin height of 1.98m.

After years of speculation, Dassault has also finally made its move into the increasingly crowded ultra-long-range market, launching the Falcon 10X last year to rival the Bombardier Global 7500 and Gulfstream G700. Although the 10X, which is scheduled for use from 2025, will be the last to arrive - the Global 7500 entered service in 2018 and the G700 will follow in late 2022 - Dassault believes a focus on innovation, plus the widest cabin in the category (2.77m compared with 2.44m for the Global 7500 and 2.47m for the G700), will give its new flagship a step-up on its rivals.

Powered by twin Pearl 10X engines – the first Falcon to feature a R-R powerplant – the \$75 million 10X will cruise at Mach 0.85, have a top speed of M0.925, and be able to access airports with steep approaches such as London City.

Range is pegged at 7,500nm - matching that of the G700, but 200nm short of the Global 7500 - with a cabin designed for eight passengers in addition to four crew.

Dassault has not disclosed when the 10X will make its maiden sortie, but it is confident the aircraft will enter service as scheduled in 2025.

Market response to the twinjet has been positive, Dassault says – reflecting the demand for and desirability of high-end business jets today – and helped to boost order performance for the company significantly in 2021.

#### Daher

French manufacturer Daher in April announced the latest version of its TBM range of single-turboprops. The TBM 960 is the fifth generation of the TBM line, which Daher last updated with the 2019 launch of the TBM 940.

The 960 has a single Pratt & Whitney Canada PT6E-66XT turboprop, a "fully digital e-throttle" and a "digitally controlled cabin", together with a five-blade Hartzell propeller, linked to the PT6E with a "dual-channel digital engine and propeller electronic control system". The aircraft has Garmin G3000 avionics and Garmin's GWX 8000 weather radar – a new feature, according to the airframer.

Daher has already achieved certification for the 960 from the European Union Aviation Safety Agency and hopes that US approval will follow shortly.

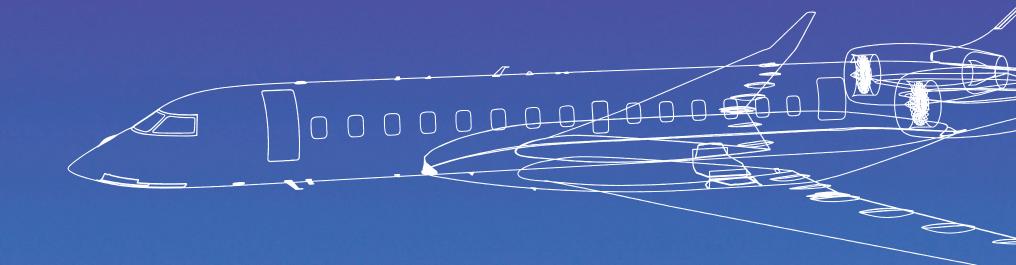
The company aims to begin delivering the type in the first half of 2022.

#### **Embraer**

After the dissolution of a planned merger of its commercial aviation division with Boeing at the start of the pandemic, Embraer has spent two years reappraising its entire strategy. Although its corporate aviation business was to have stayed out of the merger, the failure of the tie-up has left the Brazilian airframer constrained when it comes to investment funds. Embraer's attention has also been focused on developing its urban air mobility offshoot, Eve, which has enjoyed some success with early orders.







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Although Embraer has not launched new products since revamping its Legacy pairing as the Praetor 500 and 600 and announcing the Phenom 300E in 2018, its products - particularly the light jet - continue to sell well, with the company marking a major addon order with fractional ownership giant NetJets last year.

Embraer launched the origina Pratt & Whitney Canada PW500powered Phenom 300 in 2009.

#### Gulfstream

The US airframer is experiencing one of the busiest periods in its history with no fewer than three publicly declared business jets in development, bringing its line-up of aircraft models to eight. Of this trio, the G700 is at

the most advanced stage of development, with pre-certification flight testing - involving five test aircraft and more than 2,200 flighttest hours - now wrapped up. Gulfstream is proceeding at speed with the final stages of the G700's validation process and aims to secure type certification and deliver the first units to customers at the end of the year.

The G700 was launched in 2019 as a rival to Bombardier's top-of-range Global 7500 - which entered service a year earlier and arguably reset the standards of traditional ultralong-range business jets. Gulfstream says the G700 has the largest cabin in the sector: it is 17.4m long - nearly 1m longer than the 7500 and slightly wider, at 2.44m - and will accommodate a choice of five passenger layouts.

Priced at \$78 million, the G700 is equipped with the Honeywell Epicbased Symmetry flightdeck with dual head-up displays, combined vision system, and predictive landing performance system. It is powered by two R-R Pearl 700s, rated at 18.250lb-thrust (81.2kN).

It has a maximum cruise speed of Mach 0.9 and, at M0.85, a range of 7,500nm - the same as Gulfstream's in-service flagship, the G650ER, That model, along with the baseline G650, is set to be replaced eventually by the G800.

Gulfstream's latest ultra-longrange offering was launched to great fanfare in October 2021 along with a new large-cabin aircraft, the G400.



Price for the G800, which has the longest range of any currently announced business jet, at 8,000nm

Scheduled for service entry in 2023. the \$72.5 million G800 has the longest range of any currently announced business jet, at 8,000nm.

To the untrained eye, the G800's interior and exterior profile are similar to the G650 - including its 16 oval cabin windows - but it borrows many of the elements designed for the G700. They include cabin seats. cabinetry, and lighting. Symmetry flightdeck, head-up display, wing, tail, and Pearl 700 engines. Compared with the G650's R-R BR725 turbofans, the Pearl 700s are 18%

more fuel-efficient. Gulfstream savs. The date of first flight has not been disclosed, but Gulfstream says its two flight-test aircraft have already performed engine runs at its Savannah base. Given its commonality with the G700, many tests can be carried forward and

Gulfstream is confident of securing

type certification in 2023.

The G400 will follow its sibling into service two years later. This 4,200nm-range large-cabin business jet fills a gap in Gulfstream's product line left by the G450, which ceased production in 2018. "No one has built a new aircraft in this segment for over 20 years - this is a great opportunity for us," says Gulfstream.

The G400 has the same fuselage cross-section as its large-cabin, longer-range stablemates, the G500 and G600, but is slightly shorter. It also has 80% parts in common with the pair, including the Symmetry flightdeck and active control sidesticks. It will be powered by a slightly different variant of the 500/600's PW800 engine - the PW812GA - and is scheduled to make its first flight in early 2023.

Gulfstream says the G400, G500 and G600 will have common pilot type ratings, as will the G700

Gulfstream's drive for product line commonality could result conceivably as early as this year in the launch of a new model in the super-midsize space, currently occupied by the \$24.5 million G280. Its entry-level product was launched in 2008 as a replacement for the G200, a programme Gulfstream acquired in 2001 from Israel Aerospace Industries (IAI), where it was known as the Galaxy business jet. IAI remains involved in the programme, assembling the model in Tel Aviv before shipping green aircraft to Gulfstream's Dallas facility for outfitting.

Gulfstream president Mark Burns has hinted at a new business jet perhaps dubbed the G300 - but pledged his commitment to G280 production with the introduction of a couple of enhancements available on new models from mid-2023. These include a cabin altitude of 4,800ft - a reduction of 1,200ft compared with the current models - and new exterior LED lights for increased visibility and maintainability. These improvements will be also available for retrofit.

#### Honda Aircraft

The Japanese-owned company is hoping the success of its HondaJet HA-420 high-performance light jet - which has logged more than 200 deliveries since the first iteration entered service in 2015 - will provide a springboard and a ready customer base for its new concept aircraft, unveiled last October.

Dubbed the HondaJet 2600, the aircraft has a transcontinental range of 2.625nm with a midsize cabin that seats up to 11 occupants. It will have upper-wing-mounted engines, like its smaller stablemate, along with a composite fuselage and a new wing with a 17.3m span. The cabin will be several inches wider than the HA-420 at shoulder and foot level. Honda Aircraft says.

The 2600 is being developed in a similar fashion to the first HondaJet, with its developer presenting the concept for market feedback before deciding to formally launch the programme.





# Celebrating 40 Years of Patient Flights

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Thank you to the flight departments, corporate sponsors, and donors who continue to make CAN's mission possible. If you have an empty seat on your aircraft, contact CAN today to see how you can help someone in need. We look forward to the next 40 years!

"The gratitude we see every time we participate in a CAN flight reminds me how important it is that we all lead with love and step up to help those in need."

- Jeff McClean, Vice President Global Flight Operations, Procter & Gamble





for Honda Aircraft

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The Swiss company surprised the industry when it took the wraps off its first jet - the PC-24 - almost a decade ago. Since then, Pilatus has had a waiting list of buyers bigger than its production numbers.

Last year the company detailed the aircraft's first significant update, with a new avionics suite that packs in a host of safety improvements. It says the enhancements are based on customer feedback from more than 50,000h of operation since the type's service entry in February 2018, and have been devised with avionics supplier Honeywell. They include flight controls that now provide tactile feedback to the crew in both the roll and pitch axes to prevent unintended unusual attitudes, even when the autopilot is not engaged. It can, however, be manually overridden.

In addition, if the aircraft rolls through a bank angle of 51°, roll limit protection will automatically bring that back to 31°. Overspeed protection via the pitch servo adds another laver of safety.

The standard auto-throttle system gains a new speed protection function - automatically engaging the auto-throttle to adjust power, ensuring that the aircraft always remains inside the entire speed envelope across all flight phases.

FADEC software governing the PC-24's Williams International FJ44-4A engines has also been tweaked to reduce power oscillations in cruise and descent.

#### SyberJet

The SJ30i test aircraft has logged about 200h since making its first flight in October 2019 but delivery of the high performance business jet is now likely to be from 2024, two years later than planned.

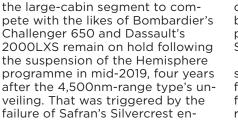
The \$8.5 million SJ30i is an updated version of the SJ30-2. which was certificated in 2005 by its former owner, Emivest Aerospace. Four examples were delivered and remain in service.

The FJ44-2A-powered SJ30i features a redesigned, lightweight interior and a bespoke flightdeck based on the Honeywell Epic 2.0. cockpit - called SyberVision. It has a top speed of 480kt, a range of 2,500nm and an operating ceiling of 49,000ft.

SyberJet is also working on the new standard version of the jet powered by more fuel-efficient, higher-thrust FJ44-3AP-25 turbofans with dual FADEC controls. Scheduled to enter service in the latter half of the decade, the SJ30x will provide a variety of performance benefits including higher cruise speed at altitude, faster climb, more payload, and better hot and high performance, says SyberJet. The aircraft will also feature autothrottles and single-point refuelling. The San Antonio, Texas-based company says it is taking orders for the \$9 million aircraft but will not disclosed the tally.

#### Textron Aviation Textron Aviation - behind the Cess-

na and Beechcraft brands - remains the biggest player in business aviation in volume terms with a family of six jets and seven turboprops.



gine to deliver as advertised, which also put paid to Dassault's Falcon 5X and led to its replacement with With no Citation business jet

products in development - or publicly declared, at least - Textron's attention is now focused

Textron's ambitions to move into

current business jet line-up and bringing its two clean-sheet turboprop programmes - the Denali and SkyCourier - to market.

The twin-engined SkyCourier secured US certification in March following a 2,100h, three-aircraft flight-test campaign. The SkyCourier can be configured as a cargo or 19-seat passenger aircraft, as well as in a combination passenger/cargo variation. Textron says other configurations are also under evaluation, which could include an executive/VIP model and a special-missions offering

The delayed Denali single-engined

turboprop programme is "proaressing well". Textron says. The irst prototype took to the skies in November 2021 and the remainng two test aircraft will join the

flight-test campaign shortly. When the high-performance aircraft was

unveiled in 2015, it was pegged to

flv in 2019, with type certification

about 18 months later. However,

delays to the development of the

1,300shp (970kW) GE Aviation

FADEC-equipped Catalyst engine

has had a knock-on effect on the

Denali's timeline. Textron is now targeting certification in 2023.

Although it was launched as a

Cessna aircraft, Textron decided in

July 2021 to "realign" its turboprop

offering, bringing the aircraft under

the King Air family. The \$6.3 million

the Beechcraft banner alongside

Two of Cessna's Citation jets - the M2 and XLS+ - are undergo-

ing a cabin makeover as a part of

Cessna's Gen 2 ramp and rebrand

programme, which began last year

with its top-end light jet, the CJ4.

Denali is projected to have a cruise speed of 285kt and a range

of 1,600nm.



#### M2 Citation jets have been delivered since the type was introduced in 2013, according to Textron

Textron says it introduced the Gen 2 programme following demand from its customers for a modern, fresh interior. Improvements in the M2 Gen 2 include extended legroom for the on upgrading and enhancing its co-pilot, side seats that fold down for storage, new cabin accent lighting, redesigned seating and cabin sidewalls, as well as optional woodtype flooring, wireless charging stations and new interior colours. First deliveries of the refreshed jet are imminent. Textron says the M2, introduced in 2013, "has become one of our most popular light jets with more than 300 of the type

delivered to date" The upgraded XLS Gen 2 features a new and improved airstair, new refreshment centre with highpower outlet, new seating, lighting and sound system, along with

wireless chargers.

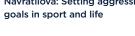
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flightglobal.com/ebace flightglobal.com/ebace Cutaway **Dassault Falcon 6X** 

The first EBACE in three years has a number of new features, reflecting some of the sector's biggest priorities: sustainability, diversity, embracing disruptive technology, and developing a new generation of professionals









# Back with a difference

Murdo Morrisor

or those arriving at the first EBACE in three years, everything might feel quite familiar – there is the extensive indoor exhibit area at the Palexpo and impressive 50-aircraft static display at Geneva's adjacent international airport, with the latest products from Bombardier, Dassault Gulfstream and others on display.

However, the 2022 event has several new features focusing on three of the key themes of the moment: carbon-neutrality, disruptive modes of air transport, and the challenge of enticing the next generation into the sector.

Diversity is another watchword at this year's EBACE, with three, very different female aviators set to address delegates on Monday and Tuesday. Serving the keynote talk at 10:00h tomorrow is Martina Navratilova, winner of 59 tennis grand slams, and a pilot. She will be giving advice on aggressive goal-setting.

The Czech-born American's accolades include nine Wimbledon singles championships, and she won the mixed-doubles at the US Open as recently as 2006. One of the first major sports stars to come

out as gay, she has spent much of her life overcoming prejudices and stereotypes. She secured her private pilot's licence in the USA in 1999.

Following her onto the stage is Zara Rutherford, the youngest person to fly around the world in a microlight at the age of just 19. Rutherford, a Belgian who went to school in England, landed at Kortrijk-Wevelgem earlier this year after a five-month trip that included entire months stuck in both Alaska and Russia due to bad weather. Rutherford wants her achievement to inspire more girls to opt for science, technology, engineering and maths related careers.

Meanwhile, at 15:00h on Wednesday, stand by to be inspired by Maya Ghazal, a Syrian refugee who arrived in the UK as a teenager, unable to speak English and with her studies interrupted, but ended up a private pilot and UNHCR ambassador. Now studying aviation engineering at university in London, she wants to progress to a commercial pilot's licence.

The late 2020s promise to be the industry's most exciting era in decades for disruptive technologies, and an Innovation Pavilion on the exhibit floor will shine the spotlight on many of these, including advanced air mobility (AAM) platforms and electric or hybrid electric aircraft. Those on show with prototype aircraft include eHang, Hydroplane, PAL-V, Samad Aerospace, Eviation, Lilium, Pipistrel and VoltAero.

And if you want to hear ideas from further up the product development stream, there is a chance to watch budding entrepreneurs make the case for their businesses to actual investors in the Pitch, which takes place in the Innovation Pavilion at 14:00h tomorrow. The audience even gets a chance to vote for their favourite bid.

A number of sustainability sessions take place over the first two days of the show, with National Business Aviation Association chief executive Ed Bolen describing the industry's effort to reduce its carbon footprint as "one of the keys to our future".

They include two debates on sustainable aviation fuel: one covering technical aspects, with speakers from Air BP, Neste, and Jet Aviation; and an OEM panel on which Dassault, GE Aviation, Gulfstream, Pratt & Whitney and Rolls-Royce will participate. They take place from 16:00h tomorrow.

Tuesday's schedule includes a session on the operational challenges of AAM, at 10:00h, and a follow-up at 13:30h on safety aspects. Both are critical if AAM is to move from concept to reality in the next few years as its proponents hope.

On Wednesday, the emphasis switches to young professionals and job seekers with a Careers in Business Aviation Day. The day, open to high school and undergraduates across Europe, includes a panel discussion on breaking into the industry and the types of opportunities on offer; a guided tour for high school students of the stands and aircraft display; a university student round-table with recruiters offering practical advice on CV writing, interviewing and networking; and the chance to meet potential employers.

For many, the biggest highlight of this year's EBACE will simply be being here. After the pandemic cancelled shows in 2020 and 2021, the opportunity to meet industry peers and see equipment again close up will be welcomed by thousands from Europe and wider afield.

And Bolen's prediction after a long period during which there have been few opportunities for companies to display their newest products or update the industry on their business plans: "Expect a very newsy show."

For the full range of Flight International cutaway posters and prints available for purchigo to flightglobalimages.com cancelled after issues over its cutaway was published in *Flight* 2020 Safran engine. Powered instead Canada PW812 enter service later this year. Our Falcon 6X was launched in 5,000nm-range 6X is due replacement for the International in November Pratt & Whitney 2018 the

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