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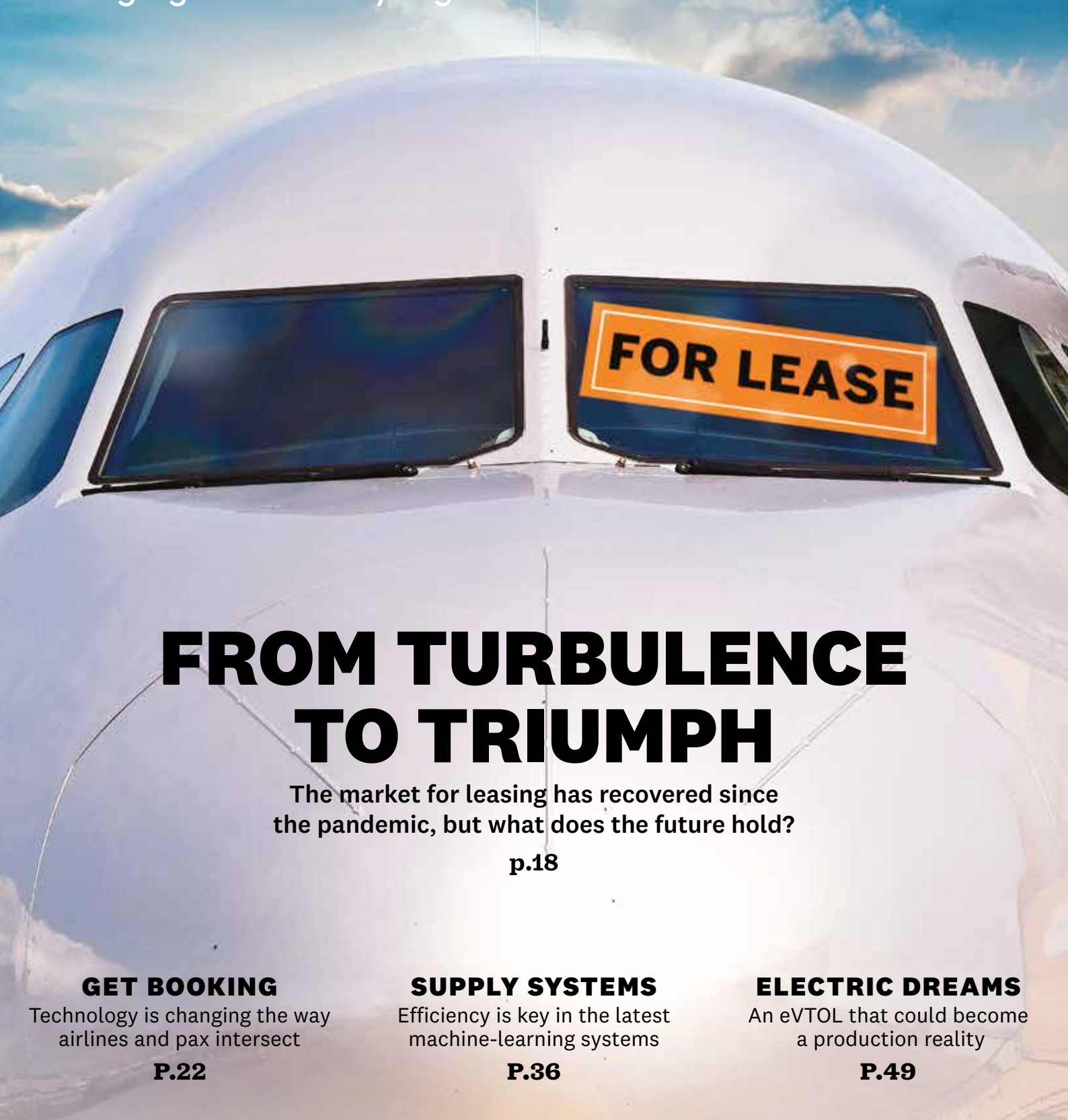
REGIONAL

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VOLUME 27 • ISSUE 01 • JANUARY/FEBRUARY 2025

Airline Business



FROM TURBULENCE TO TRIUMPH

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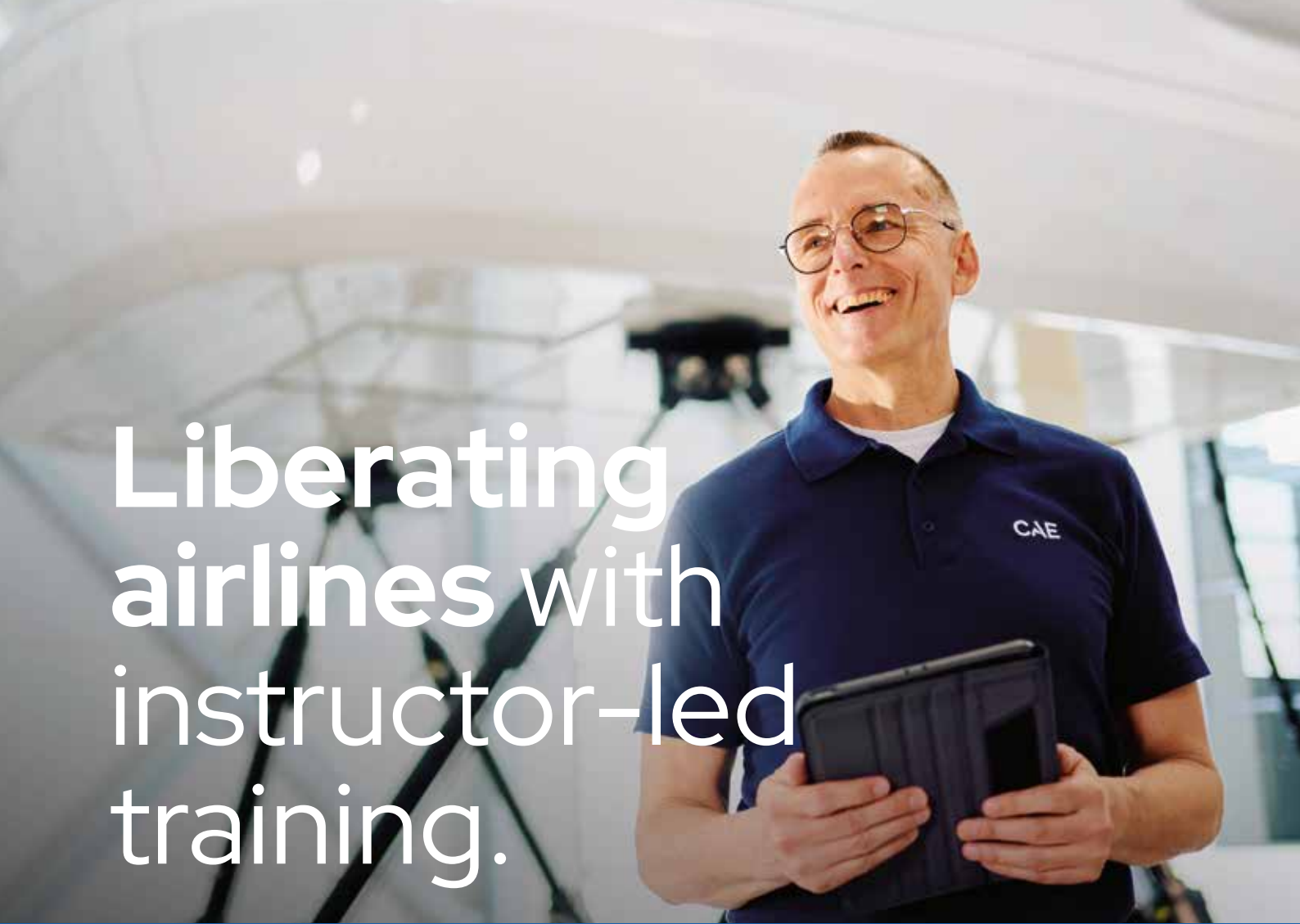
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An eVTOL that could become a production reality

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A man with glasses, wearing a dark blue polo shirt with the CAE logo, is smiling and holding a tablet. He is standing in front of a large aircraft, with the wing and fuselage visible in the background.

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STARING INTO THE VOID

Space has got a lot more interesting recently. Unlike international airlines, regionals have been slow to catch on to offering in-flight connectivity. It simply didn't seem necessary for flights that would typically only last for an hour or two.

Times change, and today's travellers can't bear to put their devices away for longer than is strictly necessary. Offering on-board connectivity provides a real point of difference for airlines, but what platform to choose remains a perplexing and expensive decision.

Technology changes, and hardware becomes out of date, while there have been plenty of examples of providers merging with their competitors or, as was the case with SmartSky recently, going out of business altogether.

As is often the case in tech, the conversation then switches to Elon Musk and Jeff Bezos. Starlink and its upcoming rival Kuiper have outspent the existing competition on satellite launches, and offer a product that is fast, has low latency and is free for passengers to use. Since US regional JSX became the first carrier to adopt Starlink in 2023, many more have signed up including Air Baltic, Hawaiian Airlines and Zipair. International airlines to install the new platform include Air France, Air New Zealand, Qatar Airways and United.

One bonus for the passenger that uses one of these new systems is that they are not forced to sit



WHICH PLATFORM REMAINS A PERPLEXING AND EXPENSIVE DECISION

through interminable adverts in order just to send an email. However, improving the experience for the passenger onboard is of little consequence if they get poor service at the airport. Unfortunately, this is all too common with remote regional airports. Again, both Starlink and Kuiper aim to offer a speedy connection for out-of-the-way locations.

While it might not equal the comfort of high speed rail, technology means that travel on a regional airline is at least set to become a little less of a chore.

Greg Whitaker

Greg Whitaker

Editor

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Business Briefing●

News from across the industry



LCC NEWS

LIGHTER PAINT TRIAL AT EASYJET

Low-cost carrier easyJet is to trial a new state-of-the-art lower-weight paint, which could enable the operator to make further savings on fuel.

The airline and its partner Mankiewicz Aviation Coatings have developed a new system that reduces the amount of paint previously needed for livery colours. The product has already been applied to 38 aircraft and, if the trial is successful, will be rolled out across the fleet by 2030.

While the lower-weight coat generates a relatively modest impact per plane (27kg weight reduction), complemented with other fuel reduction methods and applied to entire fleets, this could provide another important method of reducing carbon emissions for the sector and is one of many initiatives

that easyJet is using to effectively reduce emissions and fuel burn.

Eventually, the lightweight paint is expected to contribute to an overall saving of 1296 tonnes of fuel per year – once the roll out is completed at the end of 2029.

Lahiru Ranasinghe, director of sustainability at easyJet, said: “While this forms a small part of a bigger strategy, formulating a new lightweight paint with our partners at Mankiewicz Aviation Coatings exemplifies how we’re assessing every single part of our operation to find efficiency gains to help us achieve this mission.”

“We’re assessing every part of our operation to find efficiency gains



REGIONAL

Loganair joins Avios

> UK regional Loganair has announced it is adopting Avios as the loyalty currency for its Clan Loganair loyalty programme in 2025.

The partnership makes Loganair the seventh airline to join the network, alongside British Airways, Iberia, Aer Lingus, Vueling, Qatar Airways and Finnair.

Members from both Clan Loganair and the British Airways Executive Club will now be able to combine their balances and redeem Avios on their respective networks.

Luke Lovegrove, chief commercial officer at Loganair, said: “We’re excited to bring these changes and look forward to welcoming both Clan and Avios members onboard.”

Avios was originally known as Air Miles (UK) and had been created by British Caledonian Airways in 1988.

British Airways bought the controlling share in the 1990s and eventually rolled it in with its own loyalty scheme, rebranding the entire operation as Avios in 2011.

Today, the scheme is operated by BA’s parent company, International Airlines Group (IAG).



AIRCRAFT

LUXAIR ORDERS FURTHER E-JETS

Flag carrier of Luxembourg, Luxair has signed a firm order with Embraer for two E195-E2. The small narrowbody aircraft will complement the larger aircraft the airline has on order.

In exercising the two options secured in their 2023 firm order for four E195-E2 aircraft, Luxair now has a total of six E195-E2s on order. Three purchase rights remain, with conversion rights to E190-E2.

Luxair's first aircraft delivery, from the 2023 order, is scheduled to fly early 2026. Luxair's new order secures additional delivery slots in 2027.

Gilles Feith, CEO of Luxair commented: "The E195-E2 is a

critical investment in Luxair's future, enabling us to balance growth with our commitment to a greener and quieter future. Starting in 2026, these aircraft will mark the beginning of a new era for Luxair.

"With a focus on a remarkably quiet interior cabin and low noise emissions, the E195-E2 aligns perfectly with our vision for a more sustainable, efficient, and customer-focused regional airline."

Luxair's E195-E2 will be configured in a single class layout with 136 seats in Embraer's two by two seating. The airline selected the popular Recaro seating, now available as supplier furnished equipment.

AIRCRAFT

Embraer increases quarterly deliveries

➤ Embraer delivered 75 aircraft in the last quarter of 2024, some 27% higher than in the previous quarter when 59 aircraft were delivered.

The delivery figure equals to the volume of the same period of 2023. For the full year, 206 aircraft were delivered in 2024 – a number 14% higher than the 181 recorded in 2023.

With 31 deliveries in the last three months of the year, Commercial

Aviation reached 73 new aircraft in 2024. Meanwhile, Executive Aviation was responsible for another 44 jets in the quarter, and for the total of 130 deliveries in the year. In comparison with 2023, growth in these business units was +14% and +13%, respectively.

Finally, Defence & Security also surpassed the previous year's result with the delivery of three new C-390 Millennium in 2024 versus two in 2023.



BRIEFS

➤ Bombardier has announced the redemption of \$300 million of its 7.875% Senior Notes bonds due 2027, funded by cash from its balance sheet. This move is part of the airframe makers' ongoing efforts to reduce debt and improve credit metrics.

➤ Boeing has donated \$1m to the inauguration of Donald Trump. The embattled airframer had donated a similar amount to the last two swearing-in ceremonies.

➤ Iceland-based LCC Play Airlines has made substantial cuts on transatlantic routes. These include seasonal routes such as Keflavik to John C. Munro Hamilton International Airport and Washington-Dulles.

➤ Riyadh Air has acquired a Boeing B787 but, curiously, it is not one of the aircraft from its main order with Boeing, nor is it planned to be put into regular service. Rather it is a 'technical spare' for training and infrequent use and has likely been leased from another Gulf carrier.

➤ The European Union Aviation Safety Agency has updated its guidelines in the aftermath of the Azerbaijan Airlines shootdown. Moscow and Saint Petersburg have been added to the list of places operators are urged not to fly, as civil aircraft can be unintentionally targeted above Russia.



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IN NUMBERS

+2

Qatar Executive has expanded its fleet of Gulfstream charter jets

+40

Eurowings is set for a fleet update with 40 737-8 MAX replacing existing aircraft

2%

EU mandated SAF availability target comes into effect this year



EVTOL

VOLOCOPTER FILES FOR INSOLVENCY

EVTOL start-up Volocopter GmbH has filed for the opening of insolvency proceedings. The filing was made at the Karlsruhe Local Court on 26 December 2024.

The court appointed Tobias Wahl, partner and attorney at Anchor Rechtsanwältsgesellschaft mbH, as its administrator.

Founded in 2011, the start-up company has said that it is 'near' to gaining obtain aircraft type certification for its electric copter, the VoloCity, and aims to enter the market in 2025 following VoloCity's successful certification by the European Union Aviation Safety Agency (EASA).

Dirk Hoke, CEO of Volocopter, said: "We are ahead of our industry peers in our technological, flight test and certification progress. That makes us an attractive company to invest in while we organise ourselves with internal restructuring."

Numerous successful financing rounds have driven the company's development and operations in the past. However, despite recent intensive fundraising efforts, finding a viable solution to maintain regular operations outside of insolvency proceedings has not been possible.

Business operations will continue as usual during the provisional insolvency proceedings. The provisional insolvency administrator has now held a staff meeting to inform employees about the current situation and answer initial questions about the proceedings.

“We are ahead of our industry peers in our technological, flight test and certification progress”



AIR ACCIDENT

Police raid Jeju Air offices in crash investigation

Local police have conducted a raid of the offices of Jeju Air as well as Muan Airport and the Busan regional aviation body as part of its investigations into the crash that killed 179 people on 29 December.

The raids have been conducted on a charge of 'professional negligence resulting in death'. However, while senior airline staff have been prevented from leaving the country, no arrests have yet been reported.

The accident, which saw a Boeing 737-800 crash down with no landing gear the wrong way on the runway, before hitting a concrete retaining wall, is the deadliest in South Korean aviation since 1997.

"We are in contact with Jeju Air regarding flight 2216 and stand ready to support them. We extend our deepest condolences to the families who lost loved ones, and our thoughts remain with the passengers and crew," Boeing said.

Authorities have said that data has been extracted from one of the aircraft's black boxes, with the other sent away for further investigation.

2025 TRENDS TO WATCH IN BUSINESS AVIATION

Kevin Singh describes the market and how it is likely to develop over the months to come



“
I sincerely believe that AI integration will be possible soon
”

KEVIN SINGH

CEO of Icarus Jet

Of all the exciting developments in business aviation in 2025, trip support holds the top slot. Artificial intelligence (AI) is already being tested to understand its potential role in flight planning, promising a whole new way forward in terms of safety, efficiency and decision-making. I sincerely believe that integration will be possible soon.

Here at Icarus Jet, we're already actively leveraging AI-driven platforms to not only simplify trip support but also enhance the overall experience for pilots and operators alike. Without losing the human touch, private jet providers worldwide are finding ways to incorporate AI into their various processes.

Then, there is enhanced connectivity introduced by service providers like Gogo and Starlink. The pilots enjoy quicker, more reliable internet access that will keep them using cloud-based tools seamlessly on iPads in the cockpit. Real-time updates on weather, stand numbers and runway statuses mean there is no longer any need for intermediary dispatchers.

Operations are streamlined, with response times reduced. Unlimited data packages offered by Starlink will further enhance radar imagery for better decision-making and much safer flights. These are not just conveniences but mark a fundamental shift in how we operate.

Market evolution: Resilience and environment

Despite global challenges ranging from a pandemic to geopolitical instability, the business aviation market has been resilient. Demand is still driven by high-net-worth individuals, with private jet operators pushing through with innovative models of fractional ownership and on-demand charters. In response, OEMs have unleashed a steady pipeline of long-range aircraft to suit the market's needs, and this does not show any signs of slowing down.

Interestingly, the used aircraft market has cooled off somewhat, but demand for new deliveries remains strong, and the prices reflect the high value placed on cutting-edge performance and technology. This robust demand underlines the industry's strength, while other sectors face uncertainty. We at Icarus Jet see this as an opportunity to expand into emerging markets where private aviation becomes increasingly accessible and appealing.

On the green debate, the incoming US administration's posture on environmental regulation has the potential to significantly influence our industry. While rollbacks in stringent EPA requirements may foster renewed interest in Fortune 500 company flight departments, long-term considerations are worth noting.

Reduced political attention to engine efficiency and environmental sustainability might lead to short-



1

term gains, but with significant challenges due to increasing public and regulatory pressures.

At Icarus Jet, we understand the need to balance growth and sustainability. As we grow, we are committed to finding innovative ways to reduce our environmental footprint while providing unmatched service to our customers.

In 2025, stringent policies regarding the parking and slotting of private aircraft by the European Union should continue creating logistical headaches but have not slowed travel demand. Similarly, worldwide conflicts and shifts in economies have yet to stop the tide of the industry's continued growth. At Icarus Jet, these only reinforced our thinking that adaptability and innovation are a means to ensure long-term success.

As we are entering our 14th year in business aviation, I am optimistic about the future. The trends we see emerging in 2025, from AI-driven tools and enhanced connectivity to resilient markets and evolving policies are shaping the entire industry, from the savvy, experienced actors to the new, ambitious entrants alike. ●

▲ One of Amazon's rockets being prepared to launch as the tech giant rolls out its satellite broadband network

“ Emerging trends, from AI and enhanced connectivity to resilient markets and evolving policies, are shaping the industry ”

MORE TRENDS FOR 2025

➤ While the US might take a laxer approach to emissions in 2025, the EU has implemented the second part of its ReFuelEU plan in which it plans to reduce the bloc's emissions by at least 55% by 2030, relative to 1990 levels. SAF at airports must be at least 2% by volume this year, rising to 20% by 2035.

With that said, individual US states may increase environmental penalties, driven in part by pressure from the public in light of recent weather events, attributed to the climate emergency.

The expansion of long-range single-aisle aircraft will enable new routes, particularly in regions like the North Atlantic, South and Central Asia. Wizz Air, for example, will operate routes from Europe to the Middle East using



the new A321XLR, while Icelandair and Iberia have transatlantic schedules with the same aircraft.

While AI is a bit of a buzzword, there's no doubt that ever more airports and airlines will adopt machine learning in various forms to enhance efficiency and reduce costs.

Airlines will continue to face capacity challenges due to ongoing issues with parts availability and production delays from major aircraft manufacturers.

CHINA CALLING

Aerospace companies should embrace Comac despite trade war fears, says Alderman and Company's **Bruce Andrews**

The arrival of the Comac-designed C919 is potentially disruptive to the current duopoly of Boeing and Airbus in the commercial aerospace market.

Let us first give you a brief history and some design details and then we will discuss how we see the evolution potentially accelerating.

Fifteen years after its initial development, the C919 from China's state-owned Commercial Aviation Corporation of China (Comac) completed its maiden commercial flight on 28 May 2023, from Beijing to Shanghai, marking a significant milestone.

It had been a long road for the C919. In 2009, Chinese state media reported that the aircraft's maiden flight could be expected as soon as 2014, but various delays due to production issues kept it grounded until 2017.

The C919 faced further issues after the first Trump administration added Comac to a military blacklist, barring all US investment in the company.

However, in November 2021, the Biden Administration removed Comac from the blacklist, paving the way for the C919 to receive its type certificate from the CAAC.



“
We believe the C919 may have an opportunity to gain market share from boeing and airbus
”

BRUCE ANDREWS

partner at middle market aerospace
mergers and acquisition banking firm,
Alderman and Company

What followed was a period of accelerated progress for the aircraft after many years of issues and delays. In November 2022, Comac received 300 orders of the aircraft from seven different Chinese state-owned leasing firms.

Conservative design

The design of the current C919 is a conservative one, more similar to the 30-year-old Airbus A320 than the more efficient A320neo and 737 max.

The structure consists of 8.8% third-generation aluminium-lithium alloy and 12% composites.

Currently, the base model of the C919 can fly up to 2,200nm, compared to around 3,500nm for both the A320neo and 737 max.

The centre wing box, outer wing box, wing panels, flaps and ailerons are built in Xi'an, while the centre fuselage sections are built-in and aircraft and assembly are done in Shanghai.

Though Pratt & Whitney offered its PW1000G engine, Comac ultimately chose to use CFM International's LEAP-1C engine for the C919.

Comac would like to integrate the Aero Engine Corporation of China's CJ-1000 engine, which is expected to be certified by 2025.

The C919's catalogue price is \$99 million per aircraft, which is lower than the Airbus A320neo (\$111 million) and Boeing 737 MAX 8 (\$121 million).

These prices are often heavily discounted in actual sales and the C919's competitive pricing is intended to attract budget-conscious airlines, especially in China's domestic market.

The lower production costs are partly attributed to government subsidies and the use of established, less advanced materials and technologies.

We believe the C919 is unlikely to disrupt the dominance of Boeing and Airbus in the immediate near term.

Government Support

However, with its government support and substantial orders from Chinese airlines, and the production delay problems at both Airbus and Boeing, we believe the C919 may have an opportunity to gain market share from the two powerhouses – Boeing and Airbus.

As for breaking into Western markets, the C919 first needs certification from the FAA and EASA. Comac is steadily





▲ The C919 could become a serious competitor if regulatory hurdles are cleared

advancing toward EASA certification for its C919 aircraft.

In mid-2024, EASA conducted on-site evaluations, including tests of the C919's Level D flight simulator, as part of the third phase of its certification process.

With positive feedback from these assessments, flight testing under EASA's supervision is expected to begin in early 2025. Securing FAA certification, however, has proven more challenging.

Comac began aligning the C919 with US Federal Aviation Regulations in 2018, but progress has been hindered by delays, including those caused by the pandemic and geopolitical tensions, not the least of which includes the potential for a Trump administration trade war with China.

These are significant hurdles, not to mention geopolitical challenges, but if and when Comac can clear them, it could then potentially position itself as a serious competitor in the global market.

As middle market A&D experts, we have already seen the impact of

“ Our view and recommendation is to take the Comac C919 seriously ”

companies in this sector in the US and Europe, because of Comac's ability to rapidly grow the C919's production rate.

Backlog

The C919 backlog is increasing, demand for US and European components has been increasing, Comac has begun setting up sales offices in other countries, and they have landed their first non-China based customer with Indonesia's carrier TransNusa.

With Chinese resources and their well-demonstrated military aircraft advanced designs and production rates, there is no

doubt that the C919 and its derivatives will rapidly evolve to be fully competitive with Boeing and Airbus aircraft.

Although a potential Trump administration trade war with China is of concern, our view and recommendation is for the US and European middle market commercial aircraft supply base to take the Comac C919 seriously.

Both Boeing and Airbus are having difficulties delivering sufficient numbers of aircraft to their customers and Comac will likely represent a viable alternative (especially for airlines in developing nations) and enable them to receive aircraft long before Boeing and Airbus can deliver.

The time for American and European middle market aerospace companies to strengthen their business long-term is now by embracing Comac as a customer, despite the potential trade war uncertainties.

We believe that having Comac as a customer may enhance the value of middle market A&D suppliers. ●

CHANGING UNIFORMS

Uniforms have to be tough, but they can
also be comfortable and sustainable



“The feedback I’ve
received from our
employees has been
overwhelmingly
positive

JONG SEOK YOO

Executive vice president,
chief safety and operating officer,
Korean Air

Last year, we, Korean Air, unveiled new eco-friendly uniforms for our maintenance, aerospace, cargo and ground handling teams.

Prioritising safety and functionality, the new uniforms have been designed to cater to the diverse needs of our staff. They incorporate special fabrics that mitigate risks of electrostatic accidents, and the new design allows extra protection.

The uniforms range from t-shirts, vests and windbreakers to heavy jackets, and have been developed considering many different tasks and weather conditions, allowing our employees to choose an attire suitable for the specific environments they might be working in.

The new eco-friendly uniforms are also a testament to our commitment to sustainability. The winter jacket is made from material that has received two of Europe’s leading environmental certification labels for textiles.

Not only is this material recognised for its thermal insulation, waterproof and



windproof properties but it can either be recycled or naturally decomposed without emitting any toxic substances into the ground.

Satisfied employees

The feedback I’ve received from our employees has been overwhelmingly positive. They appreciate the designs that enhance work efficiency and their

SUPPLIER BENEFITS

Airlines often choose to simplify operations by opting for one supplier for workwear. The decision to use a single provider of aviation workwear and PPE rather than multiple companies saves precious time and eradicates common pain points experienced by health and safety staff.

One option for managers is the Contego Aviation Solutions’ Online Management Portal. This provides them with a ‘dashboard’ of their accounts. They can precisely see what is being spent on aviation safety equipment and workwear, drilling down further into more detail when required. It is also possible to track PPE and workwear usage and understand spending patterns or anomalies.



1. Korean Air's new uniforms are designed to cater to the diverse needs of their staff
2. Special fabrics provide extra protection against workplace risks such as electrostatic accidents

“The new eco-friendly uniforms are also a testament to our commitment to sustainability”

safety. Last year we also rolled out an array of seven types of safety shoes based on employee feedback, along with a system allowing individuals to select their preferred style. The satisfaction of our employees is incredibly important to us and is crucial for enhancing efficiency, embracing innovation and expanding our operational footprint.

With the largest commercial aircraft maintenance facility in Korea, Korean Air offers a comprehensive suite of MRO services that span the entire spectrum of aircraft upkeep. From routine aircraft operations to intricate heavy maintenance tasks, our MRO services cover a wide array of essential functions including full aircraft paintings, as well as engine and component repair.

We currently conduct heavy maintenance and modifications on over 200 aircraft annually. By streamlining processes and adopting new technologies

we continue to optimise our MRO operations for swift turnaround times and maintain exceptional service quality.

Korean Air is currently undertaking the construction of a new aircraft engine maintenance cluster near Incheon Airport. With a substantial investment of around KRW 578 billion (£336 billion), the facility will span over 140,000 sqm across seven floors and become the largest engine maintenance complex in all of Asia.

As we prepare to complete our acquisition of the South Korean airline Asiana, we are also taking proactive steps to ensure the smooth transition and integration of our MRO operations.

While integration of regulatory and technical aspects will be straightforward, establishing open communication channels will be vital in harmonising the human and organisational cultures of the two airlines. ●



WORKWEAR EVOLUTION

Uniforms have always been designed to work hard, but the past year has seen multiple airlines update their kit. This is in part due to modern materials that are lighter and more durable than older fabrics, but there is also an element of social change at play.

For example, China Airlines has just announced that it will allow female frontline staff to wear a “more practical” trouser suit uniform if desired, and it is not an outlier in this change. In October, UK regional Blue Islands went a step further and made white sneakers part of the uniform, along with a trouser suit. Brussels Airlines also followed a ‘pantsuit and sneakers’ uniform redesign earlier in the year, with Japan Airlines, Aer Lingus, Etihad, KLM, Bangkok Airways, Virgin Atlantic, SAS and Air New Zealand among the other airlines that now allow trousers as an option for all onboard staff.

▲ Blue Islands has opted for trousers and trainers for all cabin crew





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Ivan Graydon
Chief Technical Officer

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MARKET BOUNCE-BACK

Michael Doran
presents an overview
of the leasing market
post-Covid

In an almost counter-intuitive outcome, the aircraft financing sector has emerged from the pandemic stronger, more in demand and more affluent than before Covid-19. The sector worked patiently with airlines to see them through the global groundings while preferring to renegotiate deals rather than repossess aircraft.

While commercial aviation is back at capacity with full planes and profits, the balance sheets of many airlines are still clawing their way back to health. New and pre-owned aircraft are hard to find and, with demand high and supply short, the market for aircraft lessors is buoyant.

Pre-pandemic, around 55% of the global fleet was financed by lessors and that increased into the low-60s during Covid-19 but has now stabilised at around 52%. According to the International Air Transport Association (IATA), leasing

is most used in Latin America (75%) followed by Asia-Pacific (70%), Europe (68%) and North America (40%).

Growth has been boosted by an increasing volume of sale-leaseback transactions (SLB) between airlines and lessors following the pandemic, freeing up cash for the airline and adding aircraft to a lessor's portfolio when availability is tight. While lessors own more than half of the global fleet they only account for around 20% of the orderbook with OEMs, meaning SLBs will remain a major funding option for airlines.

To keep airlines going through the pandemic, many lessors restructured contracts at lower rates to provide short-term relief which, in some cases, lingered into the recovery period. With aircraft in short supply, values are on the rise as are lease rates, boosted by rising global interest rates and the cost of capital.



1

1. ATR72s leased to Maldivian by Abelo
2. Truenoord specialises in the 50-150 seat regional market for jets and turboprops

That combination has seen lease rates increasing in double-digit percentages, while airlines who finance their own aircraft are dealing with same issue as financing costs rise. As capital has become more expensive, an airline will be faced with higher interest rates and higher capital costs to finance their fleet.

This is one reason why SLB transactions are proving popular because lessors, with their diversified aircraft and customer portfolio, can often access funds at a lower cost than an individual airline, given their lower risk profile.

Market structure

The global leasing market is dominated by big players looking to finance the most in-demand aircraft, such as the Airbus A320 and Boeing 737 narrowbody jets.

“WITH AIRCRAFT IN SHORT SUPPLY, VALUES ARE ON THE RISE AS ARE LEASE RATES, BOOSTED BY RISING GLOBAL INTEREST RATES”

LESSOR PROFILE: **TRUENOORD**

Based in the Netherlands, Truenoord specialises in the 50-150 seat regional market covering both jet and turboprop aircraft. It is a full service leasing company that provides clients with leasing and lease management services from its Amsterdam headquarters and offices in Dublin and Singapore.

While the business is focused on a specific market segment its portfolio contains a diverse fleet of more than 100 aircraft comprising ten different aircraft types. These include aircraft from OEMs including Airbus, ATR, Embraer, MHIRJ and De Havilland.



2

52%

Over half of the global fleet is financed by lessors

76

The US Scope Clause caps the maximum number of seats that define a 'regional' aircraft at 76

Truenoord has aircraft valued at \$1.4 billion (£1.12b) with an average age of just over nine years of operating with around 30 customers globally. Customers include Breeze Airways, Aeromexico, Porter Airlines, Ethiopian Airlines, KLM Cityhopper, Philippine Airlines, IndiGo, Azul Airlines, BA CityFlyer and LOT Polish Airlines.

The portfolio includes Embraer E170/190s in the USA, ATR 72-600s in India, De Havilland Dash 8-400s in Africa, Embraer E195-E2s in Canada and Dash 8-400s in Australia.

Anne-Bart Tieleman, founder and CEO of Truenoord says the company is focused on building and sustaining a fleet of latest technology aircraft that enhance lessees' operations, deliver fuel economy and increase despatch reliability, adding "the bigger you get, the bigger the deals you can do".

He continues: "Of course you need the infrastructure to manage this effectively, and right-minded people who understand the business ethos and want to develop with you. Our team is expanding – we now have 37 people across our office locations in Amsterdam, Dublin and Singapore and that number is set to rise."



1

1 & 2. Alliance Air opts for ATR 42-600 aircraft



2

“IN THE US REGIONAL JET MARKET THERE IS A NOTABLE SHIFT TO 70-SEAT AIRCRAFT”

The regional market attracts a smaller group of specialist niche operators who understand the needs of the airlines and have the technical expertise to manage the agreement and re-market the aircraft.

While the product lines can be blurred, this generally refers to aircraft in the 50-150 seat market with a focus on jets from Airbus, Bombardier and Embraer and turboprops produced by ATR and De Havilland. Popular types include the Airbus A220, Bombardier CRJ, Embraer E175/E-2, ATR 72 and De Havilland Dash 8-Q400.

According to Cirium Ascend Consultancy, single-aisle jets are leading the global recovery and while regional jets and turboprops experienced a faster recovery in terms of utilisation that has significantly slowed in recent years. Ongoing pilot shortages at regional airlines and an ageing fleet of smaller commercial jets, such as the Bombardier CRJ 100/200, have seen those types operating at 60% below 2019 levels.

In the US regional jet market there is a notable shift to 70-seat aircraft, such as the Embraer E175, which falls within the US Scope Clause that limits regional aircraft to a maximum of 76 seats. The E175 is in demand with a recent order from American Airlines for 90 aircraft and a backlog of 175 E175s at the end of September 2024, with 165 of those ordered by four US carriers. ●



LESSOR PROFILE: **ABELO**

Abelo is an Irish-based regional aircraft leasing platform that was established in 2022 by the merger of Elix Aviation and Adare Capital, combining the substantial turboprop portfolio of Elix and the management expertise of Adare. The company's vision is to deliver sustainable aviation through turboprop aircraft that deliver significantly fewer emissions than comparable jet aircraft.

CEO Stephen Gorman has guided Abelo through its early years and today it has a portfolio of around 60 aircraft operated by 21 lessees in 15 countries. It offers a full-service leasing suite with in-house capabilities in all areas, from deal origination, acquisition, leasing and asset management through to end-of-life solutions.

In January Abelo expanded its fleet with an order for three ATR 72-600s from options agreed upon during the 2023 Dubai Airshow. Gorman says: “Abelo is dedicated to enabling sustainable regional connectivity by championing turboprops as a low-emission solution.

“By diversifying our fleet with ATR 42-600 and 72-600 aircraft and adding three new 72-600, we continue to provide our customers with exceptional performance, reduced emissions and enhanced passenger comfort.

“This investment strengthens our ability to meet the evolving needs of regional aviation.”

Abelo has a strong presence in the 50-seat turboprop segment where it sees significant replacement opportunities, including from among its current customer portfolio.

▲ Abelo is a large ATR customer



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Software optimism

Airlines are set to make strides
on the path towards 'retailing
nirvana', says Lee Hayhurst

One of the favourite stats often trotted out by IATA boss Willie Walsh when talking about the parlous state of airline finances is \$6.40.

That's the average net profit per passenger airline operators were calculated to have made in 2023, according to the global aviation body.

Walsh, former chief of BA parent IAG and now IATA director general, likes to point out that this is less than high street coffee shops make on some of their premium products.

The point he is trying to make is that while airlines do generate huge revenues, the high cost of operations make them significantly less profitable than, say, OTAs (online travel agents).

Last year's World Aviation Festival was a perfect opportunity to highlight this as it took place in Amsterdam, home to one of the world's most profitable OTA groups, Booking Holdings.

Walsh underscored his point about the disparity in profits by noting that Booking's market capitalisation is double that of all US-based airlines put together.

"No one has ever bought a hotel room and then said, 'Now I'd better book my flight'," Walsh told delegates, adding airlines could benefit more from demand they generate. This is what many airlines have had their sights on for well over a decade and there's a feeling 2025 could finally be a seminal year as they adopt the technologies to support this vision.

Why the optimism? Well, a protracted, and at times fraught, battle to modernise the fundamentals of IATA data standards that underpin airline retailing appears to be over. The principles of

\$6.40

Average profit per passenger in 2023

Illustration: Alan Bingle



▲ Decius Valmorbida from Amadeus discusses emulating 'frictionless' e-commerce

"THE QUESTION WE ASK, AS WE PROJECT INTO THE FUTURE, IS WHAT WOULD ONE-CLICK TRAVEL LOOK LIKE?"

New Distribution Capability (NDC) now appear to be broadly accepted even if the system continues to struggle to eat into the dominance of the traditional, and limited, EDIFACT system.

However, the path to 'retailing nirvana' – what IATA terms ONE Order or Order, Offer, Settle, Deliver (OOSD) – is set, and both legacy tech providers and new entrants are now navigating it.

Decius Valmorbida, president of travel IT group at European tech giant Amadeus, told a travel trends event in London in December that the vision is to emulate the 'frictionless' of e-commerce.

"The question we ask ourselves, as we project into the future, is what would one-click travel look like? That's what we would like to deliver by the means of technology," he explained.

"In order to do it in e-commerce, you needed a large ecosystem; you needed players willing to collaborate; you needed a digital transformation. There's a whole number of items that had to fall into place in order for it to work. That's what we wish for the travel industry."

'One-click travel' speaks to something every online consumer in the modern digital age who has used the likes of Amazon, or Uber, or eBay is familiar with.

But a combination of the airline industry's complexity, caution when it comes to change and reliance on legacy technology means it remains a slow-moving revolution.

ENHANCED PLATFORM

IBS Software has set out a 'roadmap to success' in its The Future of Retail paper, outlining how it sees its platform supporting airlines to embrace modern retailing. It says airlines can "boost revenue by providing more value, increasing customer satisfaction and establishing greater loyalty", but adds the transformation will be "a marathon, not a sprint".

However, David Friderici, senior vice president at the company, believes there are clear signs airlines are now starting to implement genuine change.

He explains: "What we have seen in the last couple of years is that people were in observation mode. They saw that something was happening, but they did not really trust in it.

"Now, they realise they must deal with it. They have to understand what this is about... who is offering what, and what they can achieve. We are all building the business cases. We are talking about facilitating airlines to really become digital.

"Running on systems with legacy principles prevents a lot of things that other industries have been doing for years. When you look at the banking industry or big retailers, they are much more flexible in terms of introducing new products and pricing. That's something where we need to get the airlines to."



1

1. IBS Software's The Future of Retail report helping airlines to embrace modern retailing
2. IBS Software senior VP David Friderici
3. Gianni Cataldo, chief product officer, Accelya



2

“AI WILL ENABLE ADVANCEMENTS LIKE AUTOMATED SEAT UPGRADES AND DYNAMIC PRICING”



3

ALL IN ORDER

This sense that 2025 will see a step change in the pace of change is shared by Gianni Cataldo, chief product officer at Accelya, another IT vendor targeting the airline sector. He says as the “foundation” for the transformation to ONE Order, or OOSD, NDC is “undoubtedly here and seeing significant growth and adoption”.

Accelya reported 19% year-on-year growth in NDC transactions during last November's Black Friday period and clients reaching up to 80% adoption in indirect sales channels.

“This is good news for passengers and airlines, leading to more positive traveller experiences, distribution savings, and more significant ancillary revenues,” says Cataldo.

Further improvements to the NDC standards and growing adoption is expected to see accelerated scaling in 2025 as airlines look to embrace the benefits.

Cataldo continues: “The journey to modern retailing is a gradual transition rather than an overnight change, with airlines and passengers realising value incrementally.

“Consumers won't see dramatic changes in how they book flights but will notice steady improvements in the experience as airlines advance through their OOSD journeys. Passengers may notice enhancements early in the year as airlines adopt strategies including the increased use of NDC.

“Improved data integration will enable airlines to tailor offers based on preferences, loyalty status and willingness to pay, creating a more engaging booking experience. While this shift won't happen overnight, it marks a significant change in how airlines interact with passengers while moving to OOSD in the background.”

In terms of those critical airline economics, operators can expect improved yields, load factors and profits as they adopt dynamic pricing and revenue optimisation tech.

“These tools deliver actionable insights, such as identifying interline

passengers with high loyalty transiting hubs or flagging delayed travellers with specific needs, like those travelling with infants and checked bags,” says Cataldo.

“Artificial intelligence (AI) will enable advancements like automated seat upgrades and dynamic pricing, while some companies are driving airport efficiency with that technology too, and also biometrics. These innovations are shaping a more efficient, passenger-focused future for air travel.”

Last year, Accelya launched the FLX ONE platform which provides a modular approach to upgrading.

Also pushing a more modular AI-driven approach is US-based GDS Sabre, which has announced Virgin Australia as the launch customer of its next-generation Mosaic OOSD platform.

Mike Reyes, vice president for product, says modern systems like Mosaic are designed to be open platforms that don't restrict how airlines market and sell to their customers.

“There's been a groundswell over the last five or ten years whereby the airlines want to get into selling not just airline tickets, but third-party content, even delving into what you would traditionally consider OTAs,” he explains.

“The point that industry bodies like IATA and travel research organisations like T2RL have reached is that existing passenger service systems, while really optimised and highly scalable for selling airline tickets, are not ready made for this retailing problem that the airlines want to take on,” Reyes concludes. ●



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TAKING TO THE SKIES

Michael Doran discusses the options for training new pilots in Australia



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In its 2024 Commercial Market Outlook, Boeing forecasts a need for 43,975 new airplanes in the next 20 years, with 1,525 of those being regional jets. In the same period regional specialist ATR predicts 2,450 new turboprops will be needed, so the regional sector will be adding nearly 4,000 new aircraft in the next two decades.

Boeing forecasts that between 2022-2041 the commercial aviation sector will need 602,000 new pilots to be recruited and trained. Pre-pandemic, the industry was already heading toward a global pilot shortage which was exacerbated by early retirements and cutting airline cadet pilot programmes.

A market picture

Qualified pilots are in short supply and it will take years to refill the pipeline decimated by the pandemic, particularly in the regional sector. What is not as well-known is the global shortage of qualified flight instructors, with many instructors transitioning into flying with airlines.

Regional aviation is a starting point for commercial pilots as they log the minimum flying hours needed to be considered by larger airlines. When pilot demand surged post-Covid, that changed as mainline airlines raided their smaller cousins for pilots to take the place of retired and retrenched pilots.

The lure of flying big jets for larger salaries was enough to encourage that shift and was certainly the case in North America and Australia, where regional services were reduced or suspended due to crew shortages.

When Australia's largest regional carrier, Rex, decided to enter the domestic jet market in 2021 it had a large pool of ex-Qantas and Virgin Australia 737 pilots to choose from. However when domestic flying restarted, its stocks of Saab 340 pilots were decimated by the major airlines hiring to replace those lost.

Being a commercial pilot in Australia has long been a rollercoaster ride of shortages followed by a glut, often sending local pilots offshore. That is not the case today as the major airlines, including Qantas, Virgin Australia, Jetstar and Rex, are actively hiring pilots to operate jets and turboprops on regional and mainline routes.

Pilot pathway

The pathway to an airline cockpit has changed and in Australia it is now usually via a full-time training campus and flight school, rather than the weekend lessons and flight instructing roles of yesteryear. Tertiary institutions have teamed up with flight schools to offer aviation degrees and a commercial pilot licence as a package, although that route comes with quite a hefty price tag.



2



3

“QANTAS HAS DEVELOPED A SCHOLARSHIP PROGRAMME THAT AIMS TO REMOVE BARRIERS AND ENHANCE DIVERSITY IN THE PILOT POPULATION”

1. Regional aviation is still the usual starting point for commercial pilots
2. Qantas Group's new flight training centre in Sydney
3. The Pilot Academy houses five full-flight CAE simulators
4. The Queensland-based academy will train up to 250 pilots each year

The Qantas Group (which includes Jetstar) and Rex both offer cadet pilot programs from *ab initio* to a commercial pilot licence (CPL) with an Instrument Rating, Multi-Engine Class Rating, Multi-Crew Cooperation and ATPL Theory subjects depending on the syllabus.

To gain those qualifications in Australia will cost a pilot around £75,000, plus another £15,000 for accommodation costs. There are government programs that fund a significant part of the cost where the pilot repays the money over time, just as any other tertiary student in Australia, but the high cost is a deterrent to many.

Qantas Academy

In 2020 the Qantas Group Pilot Academy, a partnership with Flight Training Adelaide (FTA), opened to build a long-term pipeline of pilots for Qantas, Jetstar and QantasLink, the Group's regional airline.

The Queensland-based academy will train up to 250 pilots each year using Diamond DA40 single engine and DA42 multi-engine aircraft and flight training devices. Cadets will graduate with a Commercial Pilot Licence, Airline Transport Pilot Licence (theory), Multi-Engine Command Instrument Rating and Multi-Crew Cooperation ratings.

The course runs for 55 weeks and graduating students who complete all requirements by their graduation date will be invited to attend a Qantas Group Accelerate Assessment Centre. There are no employment guarantees but successful graduates may be eligible for employment as a pilot with QantasLink, Jetstar or Network Aviation Australia.

Qantas has developed a scholarship programme that aims to remove barriers to entry and enhance

diversity in the pilot population. These are open to First Nations Peoples and female applicants to cover on-site accommodation and meals while at the Academy, with course fees paid by the cadet.

In November last year, Qantas and global training provider CAE opened a new purpose-built flight training centre near Sydney airport. The Sydney Flight Training Centre houses five full-flight simulators, three fixed training devices and ten classrooms that will be used to train thousands of new and existing Qantas and Jetstar pilots annually.

Low Cost and Regional Airline Business attended the opening and tested out the new Airbus A320 simulator being used to train Qantas pilots for the Airbus A321XLRs due to arrive this year. Qantas International CEO Cam Wallace was also there and he said the new facility is key to the Qantas Group's long history of training pilots in Sydney.



4



“BEING A COMMERCIAL PILOT IN AUSTRALIA HAS LONG BEEN A ROLLERCOASTER RIDE OF SHORTAGES FOLLOWED BY A GLUT”

“Qantas is proud of its strong safety culture and the skill and expertise of our pilots has long been recognised globally,” said Wallace. “This new facility is a key part of ensuring these high standards continue across our next generation of aircraft and aviators.”

Sydney is the anchor city for the Project Sunrise nonstop flights to London and New York and pilots will commence training for their ultra-long haul flights once the A350 simulator arrives. The existing full-flight simulators are for A380, A330, A320, 737 and 787 aircraft.

Rex AAPA

The Rex Group financially imploded in 2024 when its domestic Boeing 737 services were grounded and the airline placed into administration. With support from the Australian Government, the Saab 340 turboprop services continued operating to ensure regional connectivity.

Within the group is the Australian Airline Pilot Academy (AAPA) which has flight training campuses in New South Wales and Victoria. The Academy trains pilots to commercial airline standards and has been approved by regulators in Australia, China, Singapore, Vietnam and the United Arab Emirates.

Rex operates an intensive cadet programme that qualifies successful graduates with an Australian Commercial Pilot Licence (CPL), Instrument Rating (IR) and Multi Engine Class Rating (MECR). Rex has devised a unique financing package for cadets with a minimal upfront payment and a provided loan to cover

course fees, although that offering may have changed since Rex entered administration.

While nothing is guaranteed, Rex generally offers employment to all successful graduates, with training provided for them to acquire a type rating on the Saab 340 used on regional routes. Once the type rating has been secured the cadet will complete the necessary line training in order to be checked to line as a First Officer.

AAPA has trained pilots for Rex, Air China, Hainan Airlines, Xiamen Airlines, Okay Airlines, Scoot, Qatar Airways, China Airlines, Juneyao Airlines, Shenzhen Airlines, Tigerair, Vietnam Airlines and Air Arabia.

Job prospects?

Given the current shortage of pilots, the prospects of securing a pilot job in Australia are unusually high. A scan of airlines careers pages shows existing vacancies at seven airlines, including roles for both jet and turboprop aircraft.

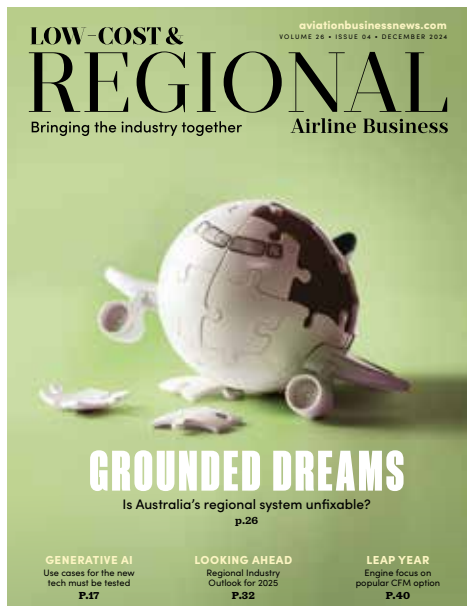
While Qantas itself is not currently hiring, its subsidiary airlines have opportunities across the country and in Asia and New Zealand. These include Jetstar (A320/321), QantasLink (DHC Dash 8), Qantas Freight (A321/A330), Jetconnect (737) and Network Aviation (A320/Fokker 100).

Rex has called for Expressions of Interest to join the airline for First Officer positions on Saab A340 regional turboprops, while Virgin Australia Regional Airlines is seeking First Officers for its fleet of new-generation Embraer E190-E2 regional jets. ●

602k

*Boeing forecasts
602,000 pilots will
need to be recruited
and trained between
2022 and 2041*

1. Rex relies on the Saab 340 for regional connectivity
2. Pilot cadets with Rex enjoy a unique financing package and a loan for course fees




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INSIGHTS FROM THE EXPERTS

Held in Dublin for the first time, the Predictive Aircraft Maintenance conference discussed all matters MRO

The agenda of the latest Predictive Aircraft Maintenance conference packed in 22 sessions with 39 speakers taking to the stage for keynote addresses, sponsor presentations and in-depth panel discussions. There was no shortage of topics to discuss, ranging from how some of the world's largest airlines are adopting new predictive maintenance technologies to case studies in engine MRO activity, understanding big data and data ownership, the strategies being deployed to optimise aircraft end-of-life activity, and the challenges and opportunities around regulations and legislation.

Crucial Collaboration

In the opening keynote address on day one, Javier Jimenez, chief technology officer of Aer Lingus, emphasised that "industry success relies on a commitment towards a shared vision for the future."

Lars Kindler, head of digital solutions, Aviatar at Lufthansa Technik said during his presentation: "We can have all the data in the world and the best engineers to work with that data, but without collaboration in the industry to keep pushing our understanding forward, what do we have?"

And during his presentation, David Harper, fleet support director at GE Aerospace, said: "Predictive aircraft maintenance will only be successful if collaboration happens."

When Fabrice Villaum , head of digital business at Airbus Customer Services, took to the stage he not only explained the history and core principles that define the Digital Alliance – a partnership formed in 2019 between Airbus, Delta TechOps and GE Aerospace that uses artificial intelligence (AI) to develop predictive maintenance models for aircraft – but also highlighted that the alliance now serves 40 customers, including major carriers like Delta Air Lines, easyJet, Jetstar, Qantas and SAS, through its Skywise Fleet Performance+ platform.

"Over the next two decades, we will see more than 48,000 aircraft in service. This growth demands not only new technologies but also innovative approaches to scalability, efficiency, and resilience," Villaum  said. "I truly believe that the industry recognises the need for collaboration and for putting the right frameworks in place. Only then can we address the challenges of unlocking the full potential of the data generated by aircraft. With collaboration and support,

the Digital Alliance is poised to shape the future of aviation maintenance."

Equipment manufacturer Liebherr-Aerospace is the latest industry partner to join the Digital Alliance. After Villaum 's presentation, he invited Pierre Escudier-Donnadieu from Liebherr-Aerospace on stage for a panel discussion alongside Alice Belcher from Delta Air Lines and Alex Haines from GE Aerospace to engage with the audience.

The panellists agreed on the exciting prospects for the Digital Alliance's future. Haines emphasised, "Collaboration is key. By working together, we can achieve more. We're committed to meeting regularly to advance our efforts, and our ultimate goal is to bring more organisations onto the Digital Alliance's journey."

Key Data

Utilising big data was the foundation of several presentations and discussions, with many speakers stressing its centrality to effective predictive maintenance.

Rob Stolk, project manager for predictive maintenance at Air France Industries KLM Engineering & Maintenance (AFI KLM E&M) took to the stage to explain that by leveraging



1. PAM 2024 chairman, Naveo Consultancy's Richard Brown
2. Airline predictive technology specialists share details about their progress during a panel discussion
3. Javier Jimenez, chief technology officer, Aer Lingus
4. Networking during one of the breaks
5. A panel discussion on global market trends
6. Guillaume Limouzy, regional sales and service manager, StandardAero



the firm's end-to-end expertise as an airline and MRO organisation, many predictive maintenance models have been successfully adopted.

"Aircraft maintenance has evolved significantly with the integration of big data analytics," said Stolk. "By examining billions of data points, engineers can uncover previously hidden trends and make informed decisions to enhance system reliability."

Stolk's presentation highlighted Prognos for Aircraft, the predictive maintenance suite developed in-house by AFI KLM E&M which is possible to predict a future breakdown or to schedule a maintenance operation beforehand.

Stolk's presentation offered a compelling example of data-driven problem-solving through the case of an air cycle machine (ACM) that was underperforming due to water ingestion.

"Detailed fleet analysis supported this theory, revealing recurring patterns of ACM speed drops upon the environmental control valve's activation," explained Stolk. "By sharing the big data from these findings, collaborative investigations then pinpointed the issue and a solution was proposed and implemented, yielding remarkable results."

The case study highlighted the importance of teamwork between data analysts, maintenance experts, and

48,000

Aircraft in service by 2043

manufacturers. “The mantra ‘Data+ people together’ encapsulates the spirit of this initiative, emphasising that human collaboration is as critical as the big data behind the technology itself,” concluded Stolk.

Critical AI

Artificial intelligence (AI) and machine learning (ML) are no longer just buzzwords in the industry – they are integral to the development of predictive maintenance systems. With their presentations, Revima and StandardAero both demonstrated how advanced analytics, powered by AI, are helping airlines not only predict maintenance needs but also optimise the entire lifecycle of aircraft components.

Revima’s digital platform, for example, uses ML to enhance algorithms for monitoring APU conditions and recommending maintenance actions.

Representing StandardAero, Guillaume Limouzy, regional sales and service manager for airlines and fleets, told the PAM 2024 audience how a shift in new technologies is helping to navigate data-driven solutions that maximise engine performance and

1. PAM chairman Richard Brown talks to Christopher Dixon and Kak Wong from Delta TechOps 2. Fabrice Villaumé, head of digital business, Airbus Customer Services



“COLLABORATION IS KEY. BY WORKING TOGETHER, WE CAN ACHIEVE MORE”

lifespan. He said: “AI may offer operators a logic-based approach to prioritising the induction of their engines. Through ML and predictive analysis, AI can anticipate in detail the worksopes required by engines which have been taken off-wing, and assess the availability of the required material. Supported by data analysis, operators and StandardAero experts are validating worksopes during the repair process, which is enabling operators to minimise time off-wing.”

Several speakers highlighted that in this rapidly changing environment of aircraft maintenance, AI and ML can process vast amounts of data to detect patterns, predict failures and help technicians prioritise repairs. This technology is transforming maintenance strategies, allowing for more proactive interventions and a shift from reactive to predictive approaches.

Empowering engineers

As airlines move toward predictive maintenance, the need for decision-support tools to aid maintenance crews becomes more apparent. Several speakers highlighted how predictive maintenance tools can empower technicians with actionable insights.

Mike Roemer, senior manager of digital fleet management at United Airlines, outlined how the airline’s TechOps division leverages advanced digital tools and analytics to ensure the reliability of its 970 mainline aircraft which fly over three million hours annually.

“Operating one of the world’s largest networks creates unique opportunities,

and challenges,” Roemer said.

“Predictive maintenance has become a proven and trusted tool for our engineers for addressing fleet reliability at United Airlines.”

This empowerment not only enhances the efficiency of maintenance activities but also reduces the risk of human error by ensuring that personnel have access to the right information at the right time. By equipping technicians with predictive insights, airlines can improve both the effectiveness of their maintenance operations and aircraft availability.

More money

Several speakers said that predictive aircraft maintenance offers significant financial advantages for airlines and MROs. By utilising data analytics and advanced sensors, these systems can detect potential issues before they escalate into critical failures. This proactive approach helps prevent costly unscheduled repairs, minimises the need for emergency parts and labour and reduces the occurrence of aircraft on ground (AOG) situations. Given that AOG events can cost airlines up to six-figure sums per hour in lost revenue and passenger compensation, avoiding these scenarios is a major financial win.

“Unscheduled removals cause disruption, increased costs and passenger dissatisfaction,” said Boris Wolstenholme, CEO of Sentry Aerospares during his presentation.

Overall, the attendees agreed that the event had been a success, and that they are looking forward to the next edition. ●



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PREDICTIVE AIRCRAFT MAINTENANCE 2025

PAM conference focuses on the latest advancements and strategies in the field of predictive maintenance for the aviation industry. It brings together experts, industry leaders, and innovators to discuss how predictive maintenance technologies — such as data analytics, machine learning, and artificial intelligence — can improve aircraft reliability, reduce operational costs, and enhance safety. The conference includes presentations, discussions, and networking events for professionals in aviation maintenance, technology, and engineering sectors.



Scan for info

"PAM is the leading event for staying at the forefront of predictive maintenance in aviation. It delivers real-world case studies, first-hand insights from seasoned practitioners, and valuable opportunities to connect with top experts in the field."

Rob Stolk, Project Manager, AFI KLM E&M



"It was a pleasure to be able to speak at PAM. My team and I were super impressed with the production of the conference and the associated events and it proved to be very worth our time."

Mike Roemer, Senior Manager, United Airlines



"PAM Dublin was an exceptional event, and I was honoured to present about aircraft health monitoring at SAS. Sharing insights on predictive maintenance alongside industry pioneers was inspiring. The focus on innovation and collaboration reinforced my belief in shaping the future of aviation safety and efficiency."

Matias Bjerregaard, PAM Specialist, Scandinavian Airlines





WAY OF THE FUTURE

Aviation supply chains face a range of challenges. Could AI and other forms of smart technology help smooth the process? **Gerrard Cowan** investigates

Supply chain pressure, razor-thin margins and a lack of trained personnel are a headache for the MRO business now. Fortunately, Adnan Mansur, head of digital and innovation services at Asia Digital Engineering (ADE), believes that up-to-date computer systems can provide an effective pill to relieve many of these problems.

“As aircraft come preinstalled with smart sensors, monitoring the real-time performance could enable us to predict maintenance and component needs, hence improving predictability and reducing unplanned downtime,” he explains.

Additionally, Mansur points to challenges around limited resources, complex logistics, ageing aircraft and regulatory compliance. Digitalisation and smart technology can help address these challenges, he notes.

For example, he outlines the scope for resource optimisation – in other words, better planning.

This includes predictive maintenance. His company has developed the ‘Elevade’ fleet and resource management application, which utilises real-time aircraft data to monitor and manage aircraft defects. This enables real-time visibility of aircraft defects and trends, as well as streamlining real-time, inter-department communication to remove potential silos, “which could result in duplicate orders and tasks”.

Data forecasting

Mansur also details the benefits of data-driven demand forecasting, with AI and machine learning (ML) tools analysing historical consumption data to predict parts demand, cutting excess inventory while avoiding shortages.

“Advanced analytics help simulate various ‘what-if’ supply chain disruption scenarios allowing users to be one step ahead preparing a strategy mitigation plan,” he says.



1

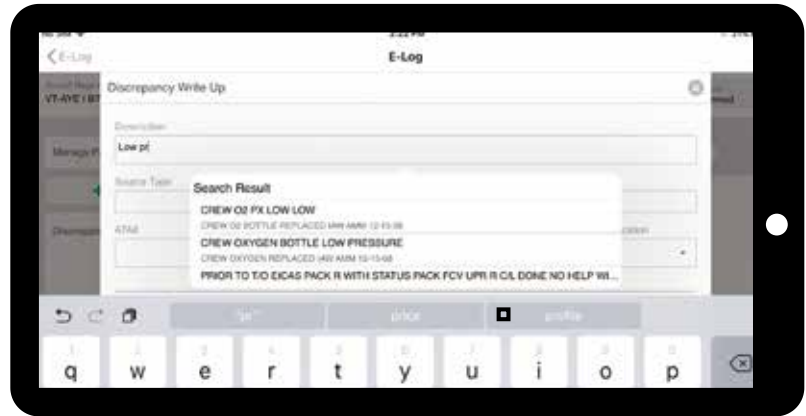
Additionally, the technology has potential uses in waste reduction. As Mansur explains, “AI optimises resource allocation, minimising unnecessary material wastage in operations and maintenance.”

Compatibility

Sander de Bree from Schiphol-based EXSYN Aviation Solutions stresses the need for compatibility with existing aircraft systems. “These industry software systems (such as AMOS, TRAX and RAMCO) are aircraft type independent,” he says, adding that his firm’s platform has been designed to integrate with maintenance information tracking systems.

“This is a real-time connection over IPSEC VPN. In addition, when it comes to aircraft onboard data we typically make use of the data stored on the flight data recorder. This is not via Wi-Fi/5G connections but uses offline downloads of the flight data recorder via QAR disk readouts that need to happen every 14 days or 7 days, dependant on the type.”

De Bree notes that the platform offers apps for maintenance & engineering analytics and automation. Using these apps, airlines can automate data heavy M&E back-office processes (such as



2

“AI OPTIMISES RESOURCE ALLOCATION, MINIMISING UNNECESSARY WASTAGE IN OPERATIONS AND MAINTENANCE”

aircraft entry-into-service) and use that data for advanced maintenance analytics on aircraft reliability and maintenance processes.

Interfaces like the app make EXSYN easy to use. “The platform is built on the philosophy that users do not require advanced IT or data science skills to work with the applications,” de Bree clarifies. “The key is to present actionable insights and recommendations without a primary need to deep dive into the way those insights and recommendations are arrived at. Users can still do that if and when needed, but it’s not the primary purpose.”

A spokesperson for MTU Maintenance says the digitalisation of certain MRO processes and the use of smart technology means the company “can make better decisions and offer more beneficial services, usually with the central aim of lower maintenance costs for the customer”.

MTU also warns about the possible need for new infrastructure inside an organisation planning to implement major new systems, alongside cultural change. “However,” the spokesperson says, “as long as you can show that they are to the benefit of the staff and the company – by ways of use cases, for example – then any potential resistance to change can be overcome quite effectively.”

Saravanan Rajarajan, associate vice president – aviation solution consulting at Ramco Systems, says AI has gained significant traction, particularly in predictive maintenance. He also highlights the benefits of analysing historical and real-time data from the aircraft to predict component failure.

1. The digitalisation of certain processes and the use of smart technology is transforming the MRO industry
2. Ramco’s ‘Mechanic Anywhere’ mobile app gives access to a wealth of documentation instantly



1



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“AI can accurately enable parts forecasting to optimise inventory levels and line-replaceable unit (LRU) positioning at stations and even recommend alternative solutions,” he explains.

Rajarajan says shop and hangar-level work has seen increased digital adoption. For example, Ramco’s ‘Mechanic Anywhere’ mobile app “enables one to access technical documentation, book time, report findings, record measurements, and request parts and tools from the place of work. With the required regulatory approvals, task cards can be closed and signed off digitally”.

Ramco’s Aviation Suite leverages data and advanced insights to deliver insights using AI, according to Rajarajan. The Aviation Suite has brought a 30% reduction in turnaround time for Ramco customers, he notes, with benefits in line maintenance functions.

“For example, when a mechanic reports a defect, the system leverages the historical records pertaining to the type of aircraft and ATA code to suggest a list of similar defects that were resolved in the past,” he says. “Based on the mechanic’s decision, the system prompts the resolution options, reference manuals and parts and tools required to fix the defect,” he notes, adding that the final determination on accepting the recommendations still lies with the mechanics involved.

Rajarajan believes AI could also empower the workforce through chat assistants, with Ramco working with customers on the technology. “They allow users to interact with the software through plain text inputs and generate insights for decision-making. For example, for an engine in the shop, a kitting supervisor can interact with the software to identify potential items that may cross the due date and request alternate recommendations.”

It is important to adopt the technology in the correct way. AI-based technologies force MROs and operators to revisit data platforms and data quality, notes Rajarajan. Additionally, he says operators must train the AI systems in different data types, and relationships between structured

and unstructured data sets.

ADE’s Mansur points to a range of challenges in implementing such technologies, including high investment. “Implementing technology such as IoT sensors, AI systems and blockchain solutions requires significant upfront and maintenance costs,” he explains. Sometimes the return on investment can be difficult to determine “as some benefits are intangible”.

There can also be resistance to change, alongside challenges around data security and privacy and integration complexities. Organisations must also decide whether to procure off-the-shelf solutions or build their own. Mansur is aware that both options present their own advantages and challenges.

Still, he expects to see wider adoption of predictive maintenance, with AI further integrated into real-time monitoring systems, enabling more accurate material forecasting. AI could expand to include end-to-end automation, he says. “From procurement to repairs, AI could automate entire MRO processes, improving efficiency and cost control.”

Finally, Mansur highlights the potential for blockchain in the coming years: “This could finally be brought up into mainstream and, coupled with AI (and/or GenAI), could create decentralised platforms for transparent and efficient MRO operations.”

Rajarajan posits that the industry is still scratching the surface of AI, with potential deployment set to grow as more use cases are adopted and start delivering ROI.

“Due to the industry’s highly regulated nature, improvements will be made in reducing false positives and proving that the results are accurate. Apart from ROI, the adoption will depend on approvals and cybersecurity risks,” he concludes. ●

30%

Ramco’s Aviation Suite has brought a 30% reduction in turnaround time for customers with benefits in line maintenance functions

1. AI systems can leverage data from mechanics to recommend the right parts and tools to fix problems
2. The EXSYN platform offers apps for maintenance and engineering analytics and automation

“FROM PROCUREMENT TO REPAIRS, AI COULD AUTOMATE ENTIRE MRO PROCESSES, IMPROVING EFFICIENCY”

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MORE THAN A BOX OF TRICKS

Cabin management systems are increasingly offering greater levels of control and personalisation over the inflight environment. **Alex Preston** swipes right on the innovation at hand

A Cabin Management System (CMS) is a user-friendly interface that provides passengers with convenient access to cabin controls while providing the cabin crew with set-up and maintenance functionality.

Traditionally, these terminals were restricted to safety-related activities, such as a cabin illumination system, or displays pertaining to functions such as a door lock, an emergency signal, the no smoking sign or a seatbelt fastening warning. However, in recent years CMS units have evolved to be more personal with a plurality of functions and options, providing passengers with convenient, direct access to cabin controls including cabin lighting and climate settings, and window shade controls. Moreover, there has been an increased integration with in-flight

entertainment systems (IFE) which includes audio, video, interfaces to personal electronic devices (PEDs) access to media content storage (audio & video files), satellite internet, satellite TV and moving map platforms.

Designed to serve the holistic passenger experience, a key element of the CMS is the graphical user interface (GUI), a feature which continues to occupy the efforts of designers to improve the usability and simplicity for operators and passengers, alike.

The GUI can be displayed on any computing device including a touchscreen (i.e. a touch-sensitive display surface) whereby the user makes contact with a particular location relative to the display surface, such as by tapping, pressing for an extended length of time or directing a finger or stylus along the surface of the screen in a predetermined path.



“IN SOME CMS VERSIONS, THE DEVICE CAN CONNECT WIRELESSLY TO AIRCRAFT-BASED NETWORKS”

Similarly, the GUI may be displayed on a portable electronic device such as a tablet or smartphone, and by logging in to the GUI the user can view and control cabin functions. In some CMS versions, the personal device can connect wirelessly to aircraft-based networks (e.g. via Wi-Fi or Bluetooth) allowing connectivity and remote control of environmental aspects and the IFE. In other examples, the electronic device may be physically connected to aircraft networks and cabin features via Ethernet connection.

Dynamic design

The GUI can be based upon flight data parameters already known to a cabin management control device or use cabin features and graphics that may need to be manually adjusted by the user.

One manufacturer to have paid close attention to the GUI is Collins Aerospace, which has upgraded its popular Venue CMS, claimed by company to be the most fielded system of its kind with over 1,700 installations on over 50 aircraft models.

The company says the new GUI was developed using “consistent human factors concepts to achieve the perfect balance of modern elegance and intuitive, convenient navigation to optimise the user experience.” The upgraded GUI features a modernised menu structure and consistent iconography (both pictures and icons) across device interfaces, simplifying cabin controls with intuitive

▲ Adapt’s intelligent features provide highly responsive accessibility suited to each passenger’s needs, controlling their seating environment, including seatback recline, lighting and in-flight entertainment from their mobile phone



DPI Labs

◀ DPI Labs' SmartLink CMS allows passengers to control cabin amenities such as lighting and entertainment from their own devices

features that require fewer touchpoints, regardless of language spoken, to achieve desired results for both passengers and crew.

The enhanced Venue also includes a new smart monitor capable of integrating Collins' suite of IFE products, including Airshow moving maps and Stage on demand entertainment.

The smart monitor enables installation flexibility, giving customers options to upgrade their CMS and IFE solutions in a cost-effective, phased approach.

The smart monitor enables installation flexibility, meaning customers can upgrade and grow their CMS capabilities with simple software updates, and third-party add-ons in a cost-effective, phased approach. Shipments of the enhanced Venue began in October 2024.

Greater integration and personalisation are at the heart of Lufthansa Technik's cooperation with Pilatus for a special adaptation of its nice (networked integrated cabin equipment) cabin management system for the Pilatus PC-24 Super Versatile Jet.

The new system, called 'Integrated Cabin Management System 4.0' (iCMS 4.0), is an Ethernet-based nice which is entirely housed as a line-replaceable unit in a compact enclosure.

The fully digital platform allows the crew to

personalise the PC-24's cabin for the passengers in advance of each flight.

The touch-sensitive surface, a familiar feature of existing nice systems, allows the passenger to navigate through, and seamlessly manage, comfort functions such as mood lighting, as well as audio and video content including a 3D moving map, four high fidelity cabin speakers with a sub-woofer option and a media storage server. Interaction is offered either via the built-in 10-inch touch screen or from a PED.

Close at hand

DPI Labs is banking on cabin control via PEDs becoming the norm, especially within business jets. The company has recently become the first to leverage near-field communication (NFC) as an app-less passenger cabin control with successful installations across several jet platforms including Bombardier, Dassault and Gulfstream.

The app-less solution eliminates the need for additional hardware or software updates. Passengers with any iOS or Android device can immediately control their surroundings by interacting with the NFC-enabled system.

With a quick tap on an embedded NFC chip, a user-friendly intranet site opens, providing access to all cabin controls directly through their device's browser, giving passengers the freedom to make adjustments from anywhere in the cabin. NFC control can be deployed throughout the cabin, from individual seating areas to entertainment systems and beyond.

**“WITH A QUICK TAP ON
AN EMBEDDED NFC CHIP, A
USER-FRIENDLY INTRANET
SITE OPENS”**



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Ahead of its demonstration at last year's National Business Aviation Association (NBAA) conference in Las Vegas, Martin Hamilton, VP business development, DPI Labs said that the technology "allows passengers wireless control over their cabin environment, bringing new levels of convenience and elegance to the flying experience."

In the world of commercial aviation, innovations in CMS are providing greater levels of comfort and personalisation in premier cabins, with new first and business class suites creating the feel of luxury hotels.

For example, Lufthansa's Allegris first class and business class suites feature tablet-sized control units which provide access to all micro-environment and entertainment functions. According to their personal needs, passengers can adjust their seating position, including bespoke recline positions and control seat heating and cooling, as well as adjusting lighting and suite temperature (heating/cooling).

British Airways' new First suite features a wireless control tablet through which passengers can adjust mood lighting, including scenes such as 'relax', 'dine' and 'cinema', the seat and window blinds for all three windows per seat. Passengers can also use the seat's brand-new 'do not disturb' functionality on its wireless control tablet. The new cabin forms part of the airline's A380 retrofit plans, expected to enter service in mid-2026.

Hands-free future

Some manufactures have experimented with controlling cabin management functions through a wearable device such as smart glasses but have seemingly abandoned their future development. However, innovation is pushing the boundaries of CMS design and functionality, and we'll see this if the next-generation business class seat, known as 'Maya' from Panasonic and Collins, moves from concept to commercialisation.

1. British Airways' new First suites will have wireless tablets allowing passengers greater control over their immediate environment

2. Collins has enhanced the GUI of its market-leading Venue CMS with a modernised and sleek iconography



2

According to the partners, Maya is designed to set new standards for inclusivity and accessibility. The cornerstone of this ambition is Adapt, a digital flight experience controller that supports passengers with disabilities.

As Collins Aerospace explains, passengers can use their mobile device as a primary interface to control their seating environment, including seatback recline, lighting and in-flight entertainment. This extends automatically any accessibility preferences defined in their device settings to the seat.

Passengers can enjoy a range of mobility, sensory, cognitive and language accommodations through this platform. This includes American Sign Language (ASL) gesture recognition, whereby Adapt translates hand gestures to communicate with the cabin environment and crew. Passengers can receive alternative sensory feedback, audio and haptic, from control inputs. For example, passengers with hearing impairment can set an alarm and receive haptic vibrations from the seat when it's time to wake. Adapt also responds in real-time to passengers' needs using AI-powered IntelliSense technology.

Advances in CMS, like those embodied by Adapt, are promoting unprecedented levels of customisation and choice. As the parties behind Maya and Adapt observe, such innovation is creating a sense of independence for passengers within an environment that is traditionally out of their control. ●

“INNOVATION IS CREATING A SENSE OF INDEPENDENCE FOR PASSENGERS IN AN ENVIRONMENT THAT IS USUALLY OUT OF THEIR CONTROL”

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SUSTAINABLE PROPULSION

How Pratt & Whitney is working on the big challenges and finding innovative solutions for more sustainable aviation





In 2021, the aviation industry was at a crossroads: it was producing about 2.5% of global CO₂ emissions, with the expectation of generating a far higher percentage as global air travel increased. Recognising the impact on the climate, the industry committed to an ambitious goal of net zero carbon emissions for civil aviation by 2050.

Pratt & Whitney supports this goal, and how the industry achieves it – greater fuel efficiency being one of the most important ways to get there – has been one of Pratt & Whitney's core values since the early days of aviation. "For almost 100 years, we've been driving technological innovation for the aviation industry," says Graham Webb, the chief sustainability officer at Pratt & Whitney. "We continue that leadership role today, with a strong focus on enabling more sustainable performance, while maintaining our industry's exceptionally high safety and reliability standards."

To that end, RTX, the parent company of Pratt & Whitney and one of the world's largest aerospace and defence companies, invested more than \$7 billion last year in company and customer-funded research and development. Many of these investments supported sustainability-related projects, including those aimed at more fuel-efficient engines, hybrid-electric propulsion and ensuring engine compatibility with sustainable aviation fuels (SAF).

"Over the next 20 to 25 years, we expect 35,000 single-aisle and widebody aircraft to come into service, and the expectation is that those aircraft will be powered by engines that minimise carbon dioxide emissions, and other emissions, throughout their life cycle," Webb explains. "We are working to meet that expectation."

Hybrid-electric propulsion

Hybrid-electric propulsion is a core part of Pratt & Whitney's technology roadmap and is also an area of particular collaboration with fellow RTX business Collins Aerospace, a world leader in aircraft electrical systems and power controls. By combining fuel burning engines with electric motors and batteries, new hybrid-electric architectures provide opportunities for greater fuel efficiency and reduced emissions across a range of future aircraft, from smaller air mobility vehicles and helicopters up to regional turboprops and single-aisle aircraft.



3

"FOR ALMOST 100 YEARS, WE'VE BEEN DRIVING TECHNOLOGICAL INNOVATION FOR THE AVIATION INDUSTRY"

Several demonstrator programs are already underway at RTX and have made significant strides. Engineers at Pratt & Whitney Canada, for example, are overseeing a hybrid-electric propulsion system that combines a highly efficient Pratt & Whitney fuel-burning engine with a Collins 1-megawatt electric motor, in a parallel configuration driving the same propeller – a 50:50 power split between the thermal engine and the electric motor. This concept optimises engine performance, potentially reducing fuel burn and emissions by up to 30% compared to today's most advanced regional turboprops. The propulsion system was recently tested on the ground to full rated power, about 1,800 shaft horsepower, which is a significant milestone towards future flight demonstration on a De Havilland Canada Dash 8-100 aircraft.

Pratt & Whitney and Collins are also developing hybrid-electric propulsion technology for large commercial engines, through their participation in the Switch programme, which involves a consortium of European aerospace companies and research institutions, supported by the EU's Clean Aviation Joint Undertaking. The project will develop a ground demonstrator of a hybrid-electric Pratt & Whitney GTF engine incorporating megawatt-class generators,

1. Innovations such as the Pratt & Whitney GTF Advantage engine and SAF fuel are helping to reduce emissions **2.** A GTF engine installed for testing at the company's West Palm Beach Engine Centre **3.** Graham Webb, Pratt & Whitney chief sustainability officer





◀ The hybrid electric
Dash 8-100

50%

Pratt & Whitney has already ensured that all its modern engines are capable of operating per today's SAF specifications, blended up to 50% with conventional Jet A and A-1 fuel

enabling improved efficiency across the full flight envelope.

These motors are derived from the megawatt electric motor used on the regional turboprop hybrid-electric demonstrator. RTX recently completed a successful preliminary design review for this demonstrator engine, and more testing is underway.

"These multiple demonstrator programmes and collaborations are accelerating the testing and maturation of key hybrid-electric systems, with opportunities to share learnings across different programmes," says Webb.

Pratt & Whitney is also leading efforts to reduce aviation's dependence on fossil-based fuels by enabling the use of cleaner alternative fuels, such as SAF and hydrogen.

"Blended sustainable aviation fuels have been tested and certified as safe for use and serve as the most crucial lever for us in reaching the industry's goals of reducing net carbon emissions, for aircraft flying today and in the coming decades," Webb adds.

SAFs are produced from feedstocks that have absorbed CO₂ emissions from the atmosphere and thereby enable a net reduction of emissions compared to fossil fuels on a lifecycle basis.

However, SAFs are expensive to produce, and feedstock supplies are limited, so RTX is supporting various public and private initiatives to increase their demand and availability.

Pratt & Whitney has already ensured that all its modern engines are capable of operating per

today's SAF specifications, blended up to 50% with conventional Jet A and A-1 fuel, and it is also preparing its engines to be compatible with future fuel specifications for 100% SAF.

Pratt & Whitney is also exploring alternative zero-carbon fuels, such as hydrogen. The HySIITE project (Hydrogen Steam Injected, Inter-Cooled Turbine Engine), a collaboration with the US Department of Energy, seeks to exploit the cryogenic properties of liquid hydrogen fuel to maximise the potential efficiency benefits. By recovering water from the engine's exhaust stream and re-injecting it into the combustor as steam, HySIITE could be up to 35% more efficient and produce 80% less nitric oxide than today's most efficient single-aisle aircraft.

"While increasing the use of SAF is our immediate focus for supporting the industry's goal of reducing emissions by 2050, our development of hydrogen-based technologies will help prepare for a longer-term future when hydrogen is available at the scale required by aviation," explains Webb.

Fuel efficiencies in the GTF engine

The Pratt & Whitney GTF engine is foundational to the company's sustainability efforts. Unlike conventional turbine engines, the GTF uses a gearbox to allow the engine's low-pressure turbine and fan to spin at different speeds to optimise aerodynamic efficiency, resulting in a more fuel-efficient machine that reduces CO₂ emissions by up to 20% compared to previous-generation aircraft. Since its entry into service in 2016, GTF engines have helped airlines worldwide save more than 1.8 billion gallons of fuel and avoid 18 million metric tons of CO₂ emissions. According to Webb, the engines have also been the catalyst for a wave of fleet replacements that will play out for the next 20-30 years, helping to enable continuous industry improvement in fuel efficiency.

Defining the future

Sustainable propulsion represents a generational challenge, as increasing demands in air travel – combined with the net-zero goals of 2050 – will force every player in the aviation sector to invest and innovate. Pratt & Whitney, as a world leader in aircraft propulsion technology, is developing the solutions that will meet these challenges and, in the process, define the future of the industry ●

**"OUR DEVELOPMENT OF
HYDROGEN-BASED TECHNOLOGIES
WILL HELP PREPARE FOR A
LONGER-TERM FUTURE WHEN
HYDROGEN IS AVAILABLE AT SCALE"**

THE 'LOW-ALTITUDE ECONOMY'

In the first of a series of articles on future aircraft designs, we examine the first pilotless aircraft to have obtained an Airworthiness Certificate, and the first to get an experimental aircraft to fly regular routes

China isn't going to allow the rest of the world to keep the market for small vertical take-off aircraft to itself, and there are multiple projects underway in there that are nearing production reality.

One of the most interesting is the EHang which recently completed its inaugural demonstration flight in downtown Shanghai with the EH216-S copter. Flying out of Longhua, the city's regional airport, the aircraft has started flying pilotless trial operations on routes along the Huangpu River.

The aircraft physically resembles a large commercial drone, which in essence it is. Six double-headed rotors allow the aircraft to fly, and it has been designed from the outset to be completely autonomous. Described as a 'low altitude economy' eVTOL, it has been designed for sightseeing and taxi work rather than being an ultra-luxury toy of the wealthy.

Where the EHang project differs from similar craft is that it has been designed for one customer, Shanghai-based Hynfar Aviation. This customer, with the backing of capital from New Margin Eastwood Fund, plans to develop services in the entire area of Shanghai and further covering cities and regions along the Yangtze River Delta G60 Science and Innovation Corridor (including nine cities

across Shanghai, Jiangsu, Zhejiang and Anhui provinces).

The project is part of a wider plan to develop Shanghai's 'low-altitude' economy. This plan aims to position Shanghai as a hub for innovation, commercial applications and operational services, with the core industry scale expected to exceed RMB50 billion by 2027, creating an internationally influential 'City in the Sky'. The Plan specifically mentions the goal

of achieving more than 100 'low-altitude flight service applications' in commercial scenarios such as logistics transportation, emergency rescue, cultural tourism, smart cities and passenger transportation by 2027. It also promotes pilot projects for commercial passenger transport across and between major transportation hubs, such as Hongqiao International Airport, Pudong International Airport and Longhua Airport, in addition to five new intra-city stops within Shanghai.

"Together, we will explore the diversified application scenarios within the low-altitude economy and jointly build a smarter and more efficient urban air mobility ecosystem, making air taxi rides a part of consumers' daily travel routines," said CEO Zhao Wang. ●



1



2

"THE PROJECT IS PART OF A WIDER PLAN TO DEVELOP SHANGHAI'S 'LOW-ALTITUDE' ECONOMY"

1. The EH216-S is the first of its type to receive certification
2. The unmanned drone's test flight draws the crowds

Report estimates IT improvements can make 'significant' CO₂ savings

A new study suggests that improvements to aviation's IT systems can reduce CO₂ emissions

New and improved IT systems throughout the aviation industry could play a major role in reducing carbon emissions.

That's according to research published by Amadeus and Accenture in a report titled *The Power of Digital: IT solutions and their role in aviation's path to net zero*. The report evaluates the impact potential of IT solutions currently available to support airlines and airports as they navigate their path to reducing their carbon emissions. It estimates that modern IT solutions reduced CO₂ emissions by 50,000 metric tons in 2023.

The financial benefits of IT solutions are commonly tracked and managed, whereas the environmental impact is often overlooked. This study seeks to address this by taking a data-driven approach to assess how an airline and an airport can reduce their environmental impact through the use of two Amadeus solutions. The study also extrapolates the findings to suggest the potential for further savings from additional rollouts.

Technology solutions such as data dashboards, forecasting models and management tools can help improve insights and decision-making across organisations, from front-line staff to senior leaders. These tools help airlines, airports and service providers make significant operational and profitability improvements.

The report breaks down topics including fleet renewal, sustainable aviation fuel and new aircraft technologies. It also talks about non-CO₂ effects, such as the combination of nitrous oxides, sulphur dioxides and water at altitude resulting



in the potential formation of high, contrail cirrus clouds. These clouds can trap heat, resulting in net warming approximately two times greater than that of CO₂ emissions.

When extrapolating these findings to all airports and airlines, these IT solutions could save 5.7 million metric tons per year, or 0.6% of global aviation emissions in 2023. The report also identifies other ways the sector can decarbonise, including fleet renewal, sustainable aviation fuel, new aircraft technologies and operational efficiency improvements.

"While IT solutions alone cannot fully decarbonise aviation, they offer a near-term opportunity to improve operational efficiency and reduce carbon emissions," says Olivier Girault, head of solutions, sustainability office, Amadeus.

Jesko Neuenburg, global aviation sustainability lead, Accenture concludes: "IT solutions that help optimise airline operations can deliver a substantial decarbonisation contribution. It was revealing to see that the solutions we reviewed – if deployed worldwide – could reduce as much CO₂ emissions as all the SAF expected to be produced in a year." ●

5.7
MILLION

IT solutions could save significant tonnage of carbon, if implemented worldwide

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