

Aircraft

aviationbusinessnews.com

VOLUME 14 • ISSUE 04 • AUG/SEP 2025

CABIN

Management



BATTLE OF THE BULGE

**Some premium seats don't pass the test of the tape.
Can the industry lose some bloat?**

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GET YOUR COAT

Painting airline branding is a high-tech operation

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STRAIGHT UP

Maintaining posture is vital for passenger experience

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RUN THE NUMBERS

Keeping costs under control is essential for any business

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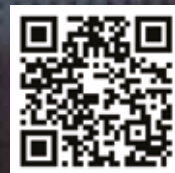
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NON-STOP BRANDING

Back in June a YouTuber named Nonstop Dan took it upon himself to review the first class offering on Kuwait Airways.

Predictably for a carrier based in a part of the world where freedom of speech is not a given, even when talking about a product or service, the airline's purser threw a fit when Dan refused to delete the footage of a suite.

The fallout caused a minor international incident, with the police involved and (eventually) a grovelling letter from the airline's CEO and a further apology from a member of the country's ruling family.

While a diplomatic fallout over a review of what looked (to me) like a standard suite for this class, what interested me was the content of the review.

The reviewer noted that the ticket was very competitively priced, particularly in comparison with premium seats on the same route. The airline, in his opinion, was able to do this by keeping a focus on what is important to travellers, rather than the trinkets some carriers use to make them stand out from each other.

So, the food didn't have the endorsement by a celebrity chef, there was no caviar amuse-bouche and the supplied pyjamas and amenity kit didn't have the branding of a designer label plastered all over them...

This raises an important point about what premium seating is, and what it is for. People are willing to pay extra for more space and comfort, which allows them to work or relax in order to arrive fresh at their destination. I'm not sure people outside of the Skytrax jury are particularly concerned about the brand parade, or even the use



▲ Kuwait Airways has a good level of comfort vs price

“I’m not sure those outside of the Skytrax jury are concerned about the brand parade”

of exotic materials. What matters is product and service (albeit in the case of Kuwait Airways, the purser had the reviewer arrested so I'd say that the service can't have been all that good).

We discuss the issue of simplifying business class and improving seat ergonomics elsewhere in this issue, but I'd be interested in your opinion. Are airlines overcomplicating the front half of the plane? Let me know your views.

Greg Whitaker

Greg Whitaker

Editor

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On the cover: Illustration by Phil Couzens



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Recycling batteries isn't easy, but it is a project that must be achieved



Business Briefing.

NEWS FROM ACROSS THE INDUSTRY



Cabins

SWISS REVEALS NEW SEATS AND CABIN CONCEPT

Previously unseen First and Business Class suites have been put on display at Zurich Airport by Swiss International Airlines.

The new seats will come into service together with the company's brand-new Airbus A350-900s from this autumn onwards. A cabin concept known as 'Swiss Senses' promises guests in all seating classes a more personal and comfortable air travel experience. The airline says that the new concept represents the biggest product investment in the company's history.

The Senses concept features a new colour scheme, with claret, anthracite and beige to convey a sense of cosiness and comfort. The First cabin and parts of Business also feature the airline's first use of suite seating arrangements.

A further key visual feature of the new cabin is the use of human-centric lighting, which will help travellers

better cope with jet lag. A new inflight entertainment system with larger screens and the option of hooking up personal devices will also be provided in all seating classes.

The airline expects to take delivery of the first of its new Airbus A350-900s this October. The first intercontinental services with the brand-new long-haul twinjet will be to Boston, and will begin this winter.

"I am delighted that, with the arrival of our new Airbus A350s, we will be able to offer our customers an even more personal, exclusive and individual air travel experience," said Swiss chief commercial officer Heike Birlenbach.

66
With our new A350s, we will offer a more personal experience



Event Preview

Speakers confirmed for APEX Expo

> Scott Kirby, CEO of United Airlines, will deliver a keynote address at APEX/IFSA Global EXPO, co-located with Future Travel Experience Global, taking place from 9-11 September in Long Beach, California.

Appointed CEO in 2020 during the most challenging period in the airline's history, Kirby has led United through a period of transformation. In an exclusive interview, he will share his views on the future of aviation and the strategies the airline is pursuing.

Kirby will be joined by Breeze Airways CEO David Neeleman, talking on 'Connecting the Unconnected: Breeze's Mission for Market Transformation'. Neeleman will share how the airline's customer-first philosophy and intuitive digital approach are reshaping regional air travel in the US.

The speaker line-up also includes Steven Greenway, CEO of flyadeal; Campbell Wilson, CEO, Air India; Mesfin Tasew Bekele, GCEO of Ethiopian Airlines; Dina Ben Tal Ganancia, CEO, EL AL Israel Airlines; and Julian Jäger, CEO of Vienna International Airport. Find out more at expo.apex.aero.



Industry News

STELIA AEROSPACE SCOOPS RED DOT AWARD

Toulouse-based cabin supplier Stelia Aerospace has won a Red Dot Award in the Sustainable Product Design category for its Opera Essential premium Business Class seat.

Judges were impressed by the comparatively lightweight design of the product achieved by deleting some non-essential parts, such as replacing the electronic reclining mechanism with a mechanical one. In a section of the aircraft where individual seats can weigh more than 120kg, the Opera Essential

slashes weight, reduces part count and increases the simplicity of recycling.

“It is a privilege to be selected from amongst such design-led companies who are at the forefront of innovation and sustainability,” said Thierry Kanengieser, VP Cabin Interior at Stelia Aerospace.

“We continuously work to innovate and shape the future of a sustainable aviation seating industry while offering a premium passenger experience. Such recognition is a great motivation for our teams, fuelling our continued pursuit of excellence.”

Legislation

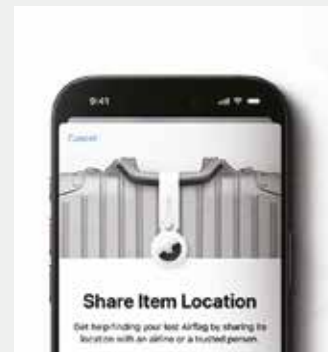
EUROPEAN TRAVEL SECTOR RAISES CONCERN OVER ETIAS FEE HIKE

The European travel and tourism industry has expressed “deep concern” over the European Commission’s proposal to increase the European Travel Information and Authorisation System (ETIAS) fee from €7 to €20 per application, nearly a threefold increase compared to the original amount agreed in 2018.

The ETIAS will require visa-exempt non-EU travellers to obtain an online authorisation before entering the EU and pay a fee prior to travelling to the Schengen Area.

A coalition of travel eight organisations, including Airlines for Europe and the European Regions Airline Association, have complained to the EC over the increases, saying that the proposed fee increase “raises questions about proportionality and fairness” in a time of rising operational costs.

A statement from the coalition read: “While the fee may represent a small fraction of overall travel expenses, the cumulative impact on families is not negligible, not least given the broader context of increasing overnight taxes.”



BRIEFS

- Heads Up Technologies is to acquire Innovative Advantage (IA), a provider of cabin management systems for business aviation, particularly within the VVIP and large-cabin jet segments.

- Saudia will implement Apple’s Share Item Location feature (pictured above) to privately and securely locate lost or delayed bags containing an AirTag or Find My network accessory and reunite them with their owners.

- Alaska Air Group announces Jim Landers, Hawaiian Airlines SVP of technical operations, will assume the role of head of Hawaii operations.

- United flight attendants have voted not to accept a tentative offer from the airline to improve pay and conditions. The vote was 72% in favour or rejection, based on a 92% turnout.

- Spirit Airlines (US) will furlough 270 pilots and downgrade 140 pilots from captain to first officer from 1 November 2025 due to a smaller off-season schedule.

- JetBlue (US) executed definitive agreements to sell its remaining E190 fleet as well as its two upcoming A321XLR deliveries. The carrier also now expects to average fewer than 10 AOG in 2025

[IN NUMBERS]

70%

Air New Zealand's flagship lounge at Auckland International Airport is set to be substantially larger following a rebuild

32

Thai Airways has ordered a large number of shipsets of Recaro's R3 Premium Economy seat for its upcoming A321neo fleet

306

Airbus aircraft delivered in the first half of this year. An improvement YoY, but the firm still has a sizable backlog

**Cabins**

FIRST RECARO SHIPSETS COMPLETED FOR LOT POLISH AIRLINES MAX 8

The first set of seats for LOT Polish Airlines' upcoming Boeing 737 MAX 8 aircraft – part of a 13-plane order arriving around the end of the year – has been completed at the Recaro factory in Świebodzin.

The airline has ordered R2 model reclining economy seats. The same seat model will also be fitted to LOT's new Airbus A220s, which the airline ordered at the Paris Air Show in June.

Besides weight and comfort, the airline says that an added benefit is the fact that the seats are produced in Poland. Manufacturing in Świebodzin directly supports local jobs and serves as a strong example of international collaboration with local impact.

Michał Fijoł, CEO of LOT Polish Airlines said: "The interiors of the Boeing 737 MAX 8 fleet will be

completely redesigned, drawing inspiration from LOT Polish Airlines' Polonez business lounges in Warsaw and Chicago. The goal is to create a unified look across the entire fleet, aligning the new design with the cabin style of the Boeing 787 Dreamliners – which are also set for a refit. This retrofit will take passenger comfort to an even higher level across all classes of service."

Each seat weighs less than 10 kg – helping to reduce fuel consumption and lower CO₂ emissions. Their modular design facilitates easier maintenance and supports sustainable practices.

“
The goal is to create a unified look across the entire fleet

**Connectivity**

Qatar completes Starlink installation programme ahead of schedule

> Qatar Airways has completed the Starlink installation programme on 54 Boeing 777 aircraft, delivering on its promise to offer the fastest Wi-Fi onboard at a record speed.

This makes Qatar Airways the operator of the largest number of widebody aircraft equipped with Starlink technology.

Originally scheduled as a two-year programme, the installation was completed in nine months; nearly 50% faster than planned. By cutting the retrofit time from three days to just 9.5 hours per aircraft, the airline completed the rollout programme without disrupting operations.

The airline is now equipping its Airbus A350 fleet, aiming to complete Starlink installation within the next year.

Qatar Airways Group CEO Engr. Badr Mohammed Al-Meer said: "We promised the fastest, most seamless in-flight connectivity in the industry, and with Starlink we have delivered it faster and at an unmatched scale."

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ECONOMY COMFORT

Yves Hendrickx, creator of the LSEAT, has come up with an improvement for passengers in coach class

Flying long-haul in economy is convenient and cost-effective, but rarely can it be described as comfortable.

Airlines are keen to make the best use of space and specify high-density configurations for the coach section. As passengers are unlikely to rebook with an airline that leaves them feeling cramped and jetlagged, something must be done.

A further issue is the risk of deep vein thrombosis, which can occur particularly when the passenger is folded into a seat and forced to be still for hours.

Enter industry veteran Yves Hendrickx with an invention that he hopes can help. He has developed a product known as the LSEAT, which effectively puts a lie-flat bed over the existing seat. It has

▼ The mechanism can be fitted to existing seats



“We had to find a solution that would work with any type of aircraft flying long or medium range and that could adapt to any supplier of seats”

YVES HENDRICKX
creator of the LSEAT

a simple mechanism powered by the passenger's own body weight to swap between seat and sleep mode which doesn't require any power to operate.

The passenger can then 'lie' flat forwards and downwards in a sort of diagonal pose, without inconveniencing anyone in front or behind them.

Successful show

Following a successful showing at AIX, where Hendrickx says that he counted 211 airline representatives trying the invention, it has been announced that the LSEAT will be available on a rental

per installed seat basis with a three-year contract covering maintenance and warranty.

“We had to find a solution that would work with any type of aircraft flying long or medium range and that could adapt to any supplier of seats,” Hendrickx explains, adding that no-one had deep enough pockets to pay for recertification on every type of seat.

Fortunately, a way forward was found. “The regulations are that if a cushion is raised by half an inch or less it does not need recertification, but any more than that and it will do,” says Hendrickx. “That means our system – where we insert the mechanism to slide forwards and downwards – has to be less than half an inch high, as well as meeting all of the other requirements, such as it must be made from traceable materials and aviation grade metals.”

The product can be retrofitted on existing seats in a short amount of time (said to be under ten minutes by the manufacturer) and has been designed as a ‘minor modification’ under the FAA/EASA procedures.

The LSEAT has been designed to be able to fit as many makes and variations of seats as possible without need for design modification.

It also had to be designed to quickly retract in the event of an evacuation. As such, it has been designed with a spring to retract it that can withstand 19G.

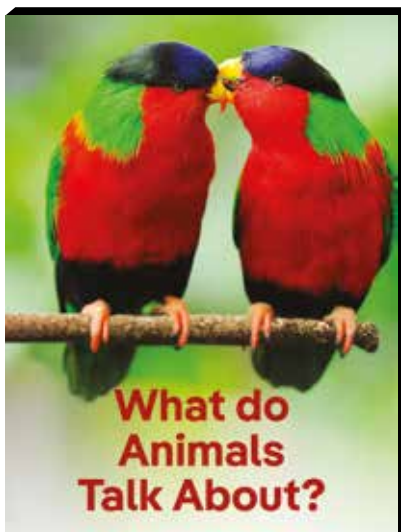
“Besides this, there was about 20 other points to work through, which is why development has taken three and a half years,” explains Hendrickx.

Once installed, the LSEAT should offer an important point of difference for any airline. We'll be interested to see it taking to the sky sometime soon. ●

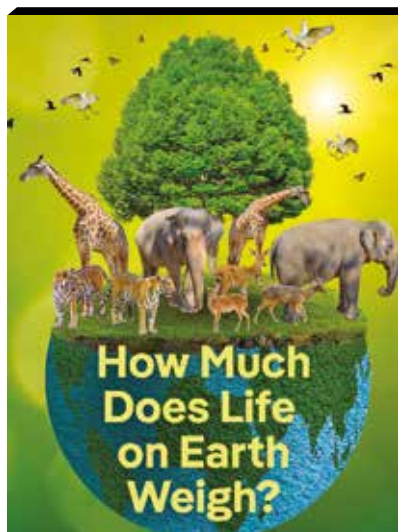


RIDING THE WAVE

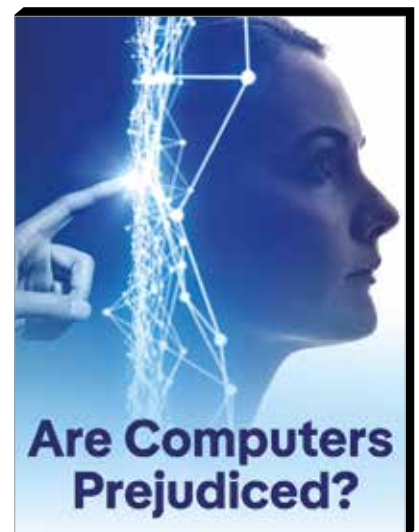
DW at APEX/IFSA Global Expo:
premium content for a global audience



1



2



3

With a global reach of 320 million weekly users, DW – Germany's international broadcaster – is showcasing its diverse licensing portfolio at the APEX / IFSA Global Expo, designed specifically for the needs of international airlines. As an independent media outlet with a worldwide footprint, DW offers a wide range of high-quality, fact-based content.

From compelling documentaries and short-form reports to podcasts and live TV channels, DW delivers trusted journalism in multiple languages. All programs are available in various formats and dubbed languages and subtitles on request, making them ideal for IFE integration.

Highlights from the latest catalogue include:

The Great Outdoors

Stunning portraits of national parks from Canada to Mozambique.

Tricks of the Trade

A revealing look at how marketing influences our everyday choices.

Reaching for the Stars

Exploring how the James Webb Space Telescope is reshaping our view of the cosmos.

Unlocking the Past

Discovering ancient wonders like the Carnac stones and Sardinia's Nuraghes.

Life, the Universe and Almost Everything

Easy science for your dinner table talk.

Farming for the Planet

Exploring the future of sustainable agriculture.

Euromaxx

A lifestyle magazine covering European travel, food, design, and architecture – available in short or long formats and customizable to airline needs.

DW offers a huge video catalogue and releases nearly 40 new documentaries and factual episodes launching this autumn, plus a wide selection of short reports and audio content, DW offers a rich



“
From compelling documentaries and short-form reports to podcasts and live TV channels, DW delivers trusted journalism in multiple languages
 ”

and ever-evolving content library for airlines seeking to elevate their onboard entertainment.

Audio that travels well: DW Podcasts

DW also offers a growing library of 34 podcast series in over a dozen languages, many of them multi-part and designed to keep listeners engaged. The topics are as diverse as the audiences they reach:

Don't Drink the Milk

Uncovering the surprising global journeys of everyday items.

Cannabis Cowboys

A gripping true crime saga about a crowdfunding scam built around cannabis.

Living Planet

Exploring the week's most pressing environmental stories and debates.

Science Unscripted

A light, conversational take on the latest developments in science.

Berlin Briefing & the Daily News Brief

Delivering international news in a concise, accessible format.

1-3 Episodes from DW's 'Life, the Universe and Almost Everything' series

Below: Covers from DW's series of 34 podcasts



VISIT DW AT THE APEX/IFSA GLOBAL EXPO

DW's Head of Digital Partnerships and New Business Christian Kühne is looking forward to the upcoming show in Long Beach. "We had excellent meetings at the show last year, which led to new business and valuable opportunities," he said, adding that the calibre of attendees had been particularly impressive. At this year's event, to be held from 9-11 September, DW will return with a booth (number 1543) where visitors can sample the content and talk to the team about licensing arrangements.

Visit DW at the APEX/IFSA Global Expo and discover content that connects cultures, sparks curiosity and enhances the passenger experience – worldwide, multilingual and multi-platform.



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MAKE WAY FOR JETWAY

Maryann Simson discusses the establishment of one of the major PR agencies in aviation

We spoke to Maryann Simson, director of PR firm Jetway Communications on the subject of making the transition from writing magazines to producing advertising copy.

► How did Jetway Communications start?

I had been working on an aviation magazine and following that I started the PR agency in 2015. This is what I did alongside some freelance journalism for a couple of years.

Then I got offered the role of Apex media director, based out of Spafax's head office, and that was heading up the whole Apex media platform. At this point, I made the agency dormant so that I could focus on that project.



“
The challenge is changing your writing style
”

MARYANN SIMSON

Director, Jetway Communications

Unfortunately, Covid-19 came, and we all got laid off, so I decided to dust off the agency business and make a more serious attempt at it.

► What attracted you to this sector in the first place?

It's not very sexy for an article, but I just kind of stumbled into it. I graduated from a journalism programme at Humber College in Canada. A lot of people told me I'd be good at sales, so I thought I'd get a job in advertising sales. With that in mind, I responded to an ad for a job at a magazine, an advertising sales position that involved a small amount of write ups and material like that to lock in the sales.

The magazine at the time was just about travel catering on airlines and cruise ships. I had no idea that this was a world that even existed, or that it called for its own magazine.

► What challenges are there in PR compared with writing editorial?

I felt like I was doing the work already as a journalist and editor. I was working with companies that had interesting stories to tell, and interesting people behind the products. It was my job to get that story and show that company in a different light or help them find a new customer through an amazing article. I just loved seeing the smile on their face and I still do that now.

As a journalist I noticed that some companies had terrible messaging and that they supplied bad photos and awful press releases. After years as a journalist, I knew that there was a way of helping these companies to talk to the press in a way that is much better.

I know what editors want for their publications, and I know what the companies want as well because I've been involved in their ad campaigns and writing over the years. The challenge is changing your writing style, so not writing with beautiful prose and a flowing article, but presenting information in a very succinct way, giving context and understanding why this is relevant. A lot of my staff are ex-journalists as well, although I need to teach them how to write PR copy – that's a bit of a process!

Other than that, I wouldn't say it has been difficult at all. All my clients have come to me through word of mouth or from previous business relationships. I've been very fortunate, and all of our clients are great. ●

◀ Maryann presenting the Crystal Cabin Awards



For more information on Jetway Communications, visit: **jetwaycomms.com** or contact +44 800 246 1540



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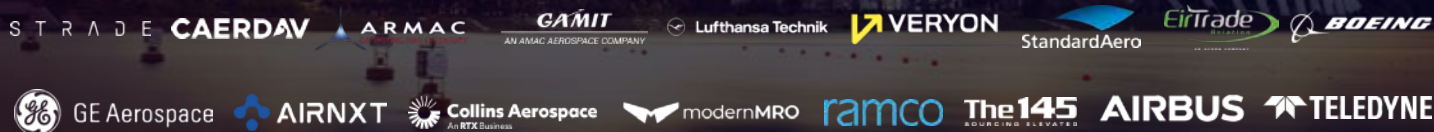
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PREDICTIVE AIRCRAFT MAINTENANCE 2025

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



BRAND IMAGE

Passengers often form an impression of an airline based on its livery. **Michael Doran** explores some of the latest methods of painting in aviation

Airlines spend a fortune on their branding and a big chunk of that is for aircraft liveries designed to portray the carrier's image and market position. As the following insights reveal, decorating aircraft is a process where sustainability is high on the agenda and customer expectations are even higher.

MAAS Aviation

MAAS Aviation provides aircraft painting services to all sectors of the aviation industry, including airlines, OEMs, lessors, MROs and VIP operators. It has 13 paint shops and its work is seen on aircraft operated by easyJet, Ryanair, JetBlue, SAS, WIZZ, airBaltic, Aegean and many others. It has been painting aircraft exteriors for more than 40 years, building and maintaining long-term partnerships globally with customers and suppliers to deliver the highest quality workmanship.

When asked about the key to its success, chief commercial officer Richard Marston says that MAAS strives to deliver the most cost-effective and longest-lasting solutions in "best-in-class" turnaround times that minimise out-of-service downtime.

"Customer service is very important to us and the feedback we receive from our customers is that we are really easy to deal with and very quick to resolve any issues that do arise," Marston explains. "Our ultra-modern facilities are custom-built to our own designs to provide the best possible painting environment where we use the very latest products and techniques."

Longevity is a major focus as operators are looking for painting that lasts between heavy maintenance checks, which could be more than six years. MAAS uses basecoat clearcoat systems which give the best chance of a long-lasting coating system.

"The next big jump is likely to be the introduction of water-based and dual-cure technologies that enhance processes and improve material drying times. Basecoat clearcoat systems already give much faster dry to tape times on the colours, but still have long drying times, so this would benefit from faster acting products."

MAAS takes environmental responsibility seriously and its paint shops incorporate the latest climate controls and waste management systems. All paint bays have sump systems to ensure no waste chemicals or contaminated water end up on the apron area.



2

Mankiewicz

Mankiewicz is a leading manufacturer of high technology coating systems for multiple industries, including aviation, automotive, yachting, wind power and more. It was the first to introduce basecoat clearcoat systems. Renè Lang, executive managing director aviation, says the latest innovation involves the paint used on wings, where different coatings are used on the top and bottom surfaces.

Mankiewicz has developed Alexit WingFlex which can be used as a two-in-one solution to coat the upper and lower wing boxes consistently to meet all the requirements wings are exposed to. The upper side requires high flexibility and UV resistance to withstand high compression and sunlight whereas the lower side must resist harsh chemicals such as hydraulic fluids.

“Combining the need for durability, highest flexibility and chemical resistance is a key USP

of Alexit WingFlex,” explains Lang. “The new system also allows for touch-up and repair, which was not possible with state-of-the-art systems. This saves time, money and unscheduled maintenance or early refurbishment.”

He adds that product performance is the most obvious way Mankiewicz stands out from the crowd, as well as meeting the highest safety requirements, such as corrosion protection for structural parts, FST (fire, smoke and toxicity) properties in the cabin and UV resistance on the aircraft exterior. Design and visual appeal are key to brand appearance and the cabin itself can be enhanced with special effects coatings.

“Process performance must perfectly complement product performance; after all products that look high quality and unique should still be applied efficiently and cost-effectively,” Lang says. “Mankiewicz doesn’t just start with the final layer because primer and filler product solutions simplify the path to the perfect surface right from the underlying layers.”

The company has 18 locations in Asia, Europe and the Americas with a customer-oriented network of application experts who can quickly be on site at customer’s paint hangars. As Lang explains, “This exchange of know-how and on site support is the final touch for a perfect surface.”



▲ Renè Lang Mankiewicz

18

Mankiewicz has 18 locations in Asia, Europe and the Americas with a customer-oriented network of application experts who can quickly be on site at customer’s paint hangars

1. Brussels Airlines’ Red Devils and Red Flames livery features Mankiewicz paints and coatings
2. MAAS has 13 high-tech modern paint shops in Europe and the US

“PROCESS PERFORMANCE MUST PERFECTLY COMPLEMENT PRODUCT PERFORMANCE”



▲ Richard Marston MAAS

30%

The CA9008 and CA9007 coatings provide superior appearance and coverage, with some colours achieving up to a 30% improvement over competitors, which reduces the amount of paint required

▼ Lufthansa used foils from its Graphic Solutions product for this World Cup livery

“LUFTHANSA TECHNIK’S THIN, LIGHTWEIGHT FOILS ENSURE THEY CAN BE EASILY APPLIED FOR A QUICK CHANGE OF AN AIRCRAFT’S APPEARANCE”

PPG Aerospace

PPG Aerospace (PPG) is a global leader in the development and supply of aerospace coatings. It offers comprehensive support to the aviation MRO sector through a combination of advanced products, colour matching capabilities and a global technical service and support team.

PPG Aerospace global platform director, coatings and sealants, Lirong Bao says: “Our colour experts match broad ranges of solid and effects colours to support airline branding needs and custom liveries. Our technical service representatives are strategically located worldwide to provide on-site assistance tailored to the specific needs of MRO providers and airlines.”

PPG is developing and improving its chrome-free corrosion protection primers, including Desoprime 7521 epoxy primer, which is a high solid, low VOC (volatile organic compound), chromate-free primer designed for both exterior applications and the protection of interior and structural parts of the aircraft.

PPG’s Aerocron is the first electrocoat primer qualified to aerospace specifications and is a water-based, chromate-free primer with very low VOC that can be applied in a way with near zero waste. “Through our technologies of novel corrosion inhibitors and polymer resins we continue to develop new generations of chrome-free primers with ever improving corrosion protection performance,” Bao adds.

PPG manufactures all its paint schemes in-house to maintain strict quality control and consistency and believes this integrated approach enables it to offer the best technology solutions aligned with each customer’s profile, thereby ensuring operational efficiency and regulatory compliance.

“The CA9008 and CA9007 coatings provide superior appearance and coverage, with some colours achieving up to a 30% improvement over competitors, which reduces the amount of paint required. This efficiency contributes to weight savings leading to lower fuel consumption and reduced CO₂ emissions.”

Lufthansa Technik

Painting an aircraft’s exterior is time consuming and expensive, so for certain circumstances Lufthansa Technik offers an alternative paint-free solution using aircraft foils. These thin, lightweight foils have a special perforation that ensures they can be easily applied for a quick change of an aircraft’s appearance, with all colours and shapes possible.

Lufthansa Technik’s head of graphic solutions Stefan Thesing says there is a growing demand in the use of exterior foil applications, particularly in the aftermarket segment. Painting is still the standard for an aircraft’s base livery but airlines and MROs are increasingly looking for graphic solutions in cases where flexibility, speed of application and cost efficiency are priorities.

Use cases range from special liveries, temporary branding, aircraft changes between airlines or leasing transitions. Thesing outlines how Lufthansa Technik’s graphic solutions products are viewed not just as aesthetic add-ons but as practical tools for operational efficiency.

“One trend is that airlines are increasingly using aircraft as marketing platforms and graphic solutions offers a cost-effective and reversible way to realise temporary or seasonal designs. Moreover a decal application can usually take place in a regular aircraft hangar and does not require a specially equipped paint facility. In some cases, graphic decals are also considered more environmentally sustainable than traditional paint.”

The average lifespan of exterior graphics on aircraft is usually five to seven years, depending on the aircraft’s operational profile and environment. However as decals are mainly used for a limited period, they are unlikely to ever actually reach their lifetime limit. ●





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ECONOMY COMFORTS

The rise of long-haul low-cost travel presents new challenges for seat designers

In this magazine we pontificate endlessly on premium seats with every design change, no matter how minor, examined in minute detail.

So it is easy to forget that the vast majority, some say 86% of passengers, fly in economy. On long-haul routes, airlines try to make the experience more bearable for passengers with seat-back screens, charging and a supply of drinks and snacks.

None of this can make up for a lack of personal space for passengers, particularly as operators look at ways to fill the back section of the plane. For example, long-haul LCC French Bee operates transatlantic flights on an Airbus A350-1000 with a 10-abreast 3-4-3 configuration and we doubt that it will be the last operator to do so. It isn't just Airbus either. It looks like the upcoming Boeing 777X will be similarly laid out.

The issue of flying on longer journeys in a cramped space goes beyond simply making passengers a little uncomfortable. Immobility when flying can develop different pathologies, such as deep vein thrombosis and pulmonary embolism, dubbed by

Professor Donald Cruickshank as 'Economy Class Syndrome'. Obviously, airlines are keen to avoid inflicting this on their passengers, and that is where good seat design comes in.

Seat designs

Despite the space constraints, seat manufacturers take ergonomics seriously. Mirus, known for its lightweight ranges of economy class seats, has invested a significant amount of resources in making them as pleasant as possible.

"Our commitment to passenger comfort is at the heart of every seat we design," says Adam Challenor, technical director at Mirus Aircraft Seating.

"From cushion height to armrest shore hardness, we carefully consider each element of our seats, maximising passenger comfort and living space at every opportunity."

Challenor shares the process the company follows as it puts together new models. "Each seat we design begins with a basic mock-up which we upgrade and



modify at numerous points throughout the project to ensure every design decision adds ergonomic value. Further to this, we run extensive comfort trials and pressure mapping activities on new and existing seats with a wide range of potential users, considering the passengers' varying weights, heights and sex.

"These trials ensure an awareness of how our seats perform on longer journeys, given the growing demand from airlines for high density space-saving economy class seats for long-range flights."

The design of the seat depends on the average length of the flight, as Alastair Hamilton, vice president of sales and marketing for interiors at Collins Aerospace, explains. "The purpose of a widebody, long haul aircraft with an average flight time of six to eight hours brings forward a specific set of criteria and features for considerations that are different when compared to a single-aisle, low cost carrier with an average flight time of two to three hours."

Collins is best known for the Pinnacle economy seat, said to be flying in a third of the world's narrowbody jet fleet. The seat features the patented Crystalflex cushion system. However, this design could be superseded by a prototype known as 'Helix' which we first spied at AIX in 2024. The new design is visually similar, but incorporates an updated frame which improves the seatback angle which the company believes will be more comfortable for passengers.

Hamilton continues: "We identify those needs with our customers and meet their requirements. From our customers we see demand for passenger comfort, cabin optimisation and

increased passenger experience. We work very closely with our customers to continuously develop and install new features and elements into a cabin."

Recaro is one of the best-known names in economy class seating and has for many years provided products that keep passengers comfortable. The latest of these seats is the R3 long-range economy class model, seen at this year's AIX. Design tweaks offer an improved living space for passengers, providing enhanced legroom and ergonomic support, while being about two kilograms lighter than its predecessor.

The seat has been ordered by airlines that have the new A321XLR on order. Thai Airways, Aer Lingus, China Southern and Iberia are known customers of the R3.

Commenting on the seating, Yongchao Zeng, executive vice president of China Southern says: "For China Southern Airlines, comfort in our passenger's travel experience is a top priority. We are proud to partner with Recaro, which is renowned for its heritage of delivering highly ergonomic and comfortable seats." China Southern was already a client of Recaro, having



▲ Adam Challenor, Mirus

86%

The vast majority, approximately 86% of passengers, fly in economy

▲ Collins' 'Pinnacle' seat, one of the most popular economy seats worldwide

"MIRUS, KNOWN FOR ITS LIGHTWEIGHT ECONOMY SEATS, HAS INVESTED A SIGNIFICANT AMOUNT IN MAKING THEM AS PLEASANT AS POSSIBLE"

40

DEGREES

LSEAT offers a device that fits over the existing seat frame and extends out to give a type of diagonal lie-flat bed with a 40-degree seat extension

“OUR PASSION FOR FLYING IS WHAT DRIVES US TO PURSUE ONGOING DEVELOPMENT OF SEATS FOR THE ECONOMY CLASS CABIN”

previously equipped its fleet with 8,270 pax of the CL3710 seats, a seat similar to the R3.

“Our passion for flying is what drives us to pursue ongoing development of seats for the economy class cabin,” says Dr Mark Hiller, chief executive officer of Recaro Aircraft Seating.

Future developments

One aspect about economy seats that has always been an issue is the inability to fully recline. However, one innovation that might make economy travel a little easier is the LSEAT. It offers a device that fits over the existing seat frame and extends out to give a type of diagonal lie-flat bed with a 40-degree seat extension.

Yves Hendrickx, the inventor of the concept says: “The regulations are that is a cushion is raised by half an inch or less it does not need recertification, but any more than that and it will do. Our system where we insert the mechanism to slide forwards and downwards had to be less than half an inch high, as well as meeting all of the other requirements, such as it must be made from traceable materials and aviation grade metals.”

A list of around 20 other design points required to meet specification were worked through in a process that took around three and a half years. Hendrickx proposes leasing the product to



2

airlines in a deal that includes maintenance and installation. If successful, it will change the way passengers view economy travel.

Another interesting development is a product that we spotted in the shortlist for this year's Crystal Cabin Awards. CMG (Comfort Motion Global) has developed a technology originally designed for the automotive sector that deals with fatigue and diminished blood flow by means of small, automated seat adjustments that redistribute body weight and promote better circulation, minimising the risk of stiffness, swelling and deep vein thrombosis.

This technology provides a seamless, therapeutic experience, described by on the company's marketing materials as “moving from one comfortable position to another like melting butter”.

Dr. Paul Phipps, CMG's chief medical officer and director of research and development, comments: “Our technology is a game-changer in addressing the physical and psychological challenges of prolonged air travel. Healthy Motion Seating improves passenger well-being by enhancing comfort, boosting circulation and reducing the discomfort that often accompanies hours of sitting.”

The product is a software solution rather than a standalone seat. As such, it can be deployed to aircraft seating that already has stepper motors installed. This might mean it reaches the premium seats first, but if successful it could be rolled out in time to the largest part of the cabin. ●



1

1. Recaro R3 in Iberia A321XLR
2. LSEAT installation



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BATTLE OF THE BULGE

Is it time for business class to go on a diet? **Alex Preston** reports

Estimates surrounding the value of the global weight loss industry differ wildly but, whatever figures are accepted, it is clear there continues to be a notable uptick in the use of weight loss and weight management products.

Being as lightweight as possible is also a fixation for aviation, where weight is a decisive factor in the economic and environmental efficiency of aircraft, whether it's take-off and landing, fuel consumption or payload and range. There is also the correct distribution of weight (balance) which is essential to maintaining the aircraft's centre of gravity within safe limits, thus ensuring stability and control.

Whilst today's economy class seats are lighter than their predecessors, enabling more airlines to upgauge, at the front of the cabin first and business class seats have been flexing their muscles.

A typical baseline business class seat weighs over 100kg, although seat manufacturers are addressing these heavyweight numbers, releasing seats that have shredded weight. Unum Aircraft Seating's Unum One, for example, is available from 84kg ready-to-fly, while Recaro claims its R7 seat is 10 to 20 kg below market average, depending on whether it features a privacy door.

But the process of developing lighter-weight business class seats that are also comfortable can often be an exercise in contradictions.



▲ Unum's One suite aims to cater to passenger expectations around luxury and personal space

Designing out excess

"Rising passenger expectations around luxury and personal space have introduced a new layer of complexity to premium seating design," says Alan McInnes, VP business development at Unum Aircraft Seating.

In addition to influencing factors such as the seat actuators, seat base frame and other structural parts, McInnes says that privacy doors, more generous surfaces, integrated power and passenger-controlled features such as massage and infinite recline functions all contribute to added weight.

Unum's driving belief, he says, is not to simply add features for the sake of it, but to consider whether those features deliver real value as part of a carefully curated cabin experience. "For example, we've reimagined the traditional business class privacy door through our 'Door 2.0' concept – a lightweight, origami-inspired structure that delivers privacy without burdening the aircraft with unnecessary weight or complexity."

It's a philosophy shared with Recaro Aircraft Seating. According to CEO Mark Hiller, Recaro aims to "design seats in a strictly weight-efficient way, permanently looking for innovative solutions to integrate features and amenities while maintaining the low weight of our seats."

As with other seat manufacturers, the challenge is achieving this without compromising operational performance and passenger comfort.

Individual approach

For airlines and seat suppliers, customisation is a growth market that offers great potential for differentiation. It is also an area where weight and complexity can quickly spiral if not managed carefully.

Hiller notes that airlines are highly dedicated to mitigating weight in every possible way. "When starting developing a seating programme with an airline, the airline shares their weight limit expectations to be met during the co-development process," he states.

Failure to communicate properly can have embarrassing consequences. Just ask SWISS, who in 2024 found their new SWISS Senses first class seats installed on their fleet of A330s were too heavy, causing the aircraft's centre of gravity to shift too far forward. The remedy was the installation of lead plates to recentre the balance of the aircraft.

McInnes agrees, adding it is important to work closely with airline partners to offer a modular design framework that enables customisation while maintaining a tightly controlled set of components.

"THE AIRLINE SHARES THEIR WEIGHT LIMIT EXPECTATIONS TO BE MET DURING THE CO-DEVELOPMENT PROCESS"



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▲ Recaro uses advanced materials to reduce seat weight while still providing comfort

“WE FOCUS ON SIMPLIFIED, EFFICIENT DESIGNS AND REDUCE PART COUNT BY INTEGRATING MULTIFUNCTIONAL COMPONENTS”

As he explains, this approach not only simplifies cabin integration during retrofit programmes but also reduces certification and maintenance burdens.

Working with design agency Acumen, Safran Seats’ ‘The Room FX’, designed on behalf of All Nippon Airways (ANA) epitomises this attitude.

In ‘The Room FX’, the FX stands for Future Experience – an insight into ANA’s vision of its Business class offering going forward. It builds upon the development experience of ‘The Room,’ a private business class seat introduced to ANA’s 777 aircraft in 2019 after a three-year development process.

Rethought for the smaller fuselage of the 787, the materials used in the new suite remain largely consistent with ‘The Room’; however due to engineering and maintenance concerns, some have been improved with more durable alternatives.

The space has been reconfigured with a combination of design elements, according to Acumen. The new simplified seat mechanism (where the leg rest deploys to create the bed surface) was created to optimise space in the cabin, allowing the curved backrest

shapes of forward and aft facing seats to interlock with each other. At 41.5 inches, the new seat is significantly wider than that found currently on ANA’s 787-9 serving long-haul international routes.

According to the parties involved, despite the spaciousness of the private cabin seat, thanks to its thinner privacy cabin doors and other design elements, there has significant reduction in seat weight, which is comparable to the current 787-9 business class seat.

Light touches

So, how do you further advance weight reduction in premium class seating?

“Maintaining strict weight limits while delivering on comfort, luxury and sustainability is at the core of our design approach,” asserts Hiller, who says the company continuously invests in advanced materials and cutting-edge engineering technologies to develop lighter structures without compromising strength or safety.

“We reduce the weight of premium seating by combining several strategies in our ‘ingenious design’ approach. This includes optimising part geometry and using advanced materials, such as composites and lightweight alloys, all of which help maintain strength while lowering mass.

“We also focus on simplified, efficient designs and reduce part count by integrating multifunctional components wherever possible,” Hiller adds. “These measures allow us to deliver the expected comfort and luxury, while keeping seat weight to a minimum.”



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1. Safran's private business class suite, 'The Room FX' 2. 'The Room FX' was designed with Acumen

It's a similar picture at Unum, where McInnes says that meeting weight targets without sacrificing comfort or sustainability is at the heart of the company's design process. "Comfort, for us, is experiential and rooted in enabling the passenger to find their own most comfortable position. This is why we developed features like infinite adjustability and our zero-gravity recline, which distributes body weight evenly to reduce pressure points and encourage natural relaxation.

"At the same time, we use tools within Solidworks (a CAD package) to estimate and guide decisions on embedded carbon during the design phase. By working with local suppliers and prioritising sustainable materials, we are able to reduce both the seat's weight and its environmental impact, without impacting comfort," says McInnes.

However, overall, there is no single fix to reducing the weight of business class seats.

"Creating a truly lightweight premium seat is the result of systemic thinking and marginal gains across every stage of design and production," McInnes explains. "In the early stages of product development, we rapidly iterate to refine and simplify wherever possible, not by removing features but by removing complexity. That could mean exploiting the properties of the materials we choose or replacing heavier composite technologies with reinforced thermoplastics that are easier to process, certify and recycle.

"CREATING A LIGHTWEIGHT SEAT IS THE RESULT OF SYSTEMIC THINKING AND MARGINAL GAINS ACROSS EVERY STAGE OF DESIGN AND PRODUCTION"

We also use additive manufacturing selectively, where it improves precision, reduces waste and ultimately lightens the seat. Our goal is to make every design choice count, ensuring that comfort, certification and sustainability are all delivered without excess."

Responsible approach

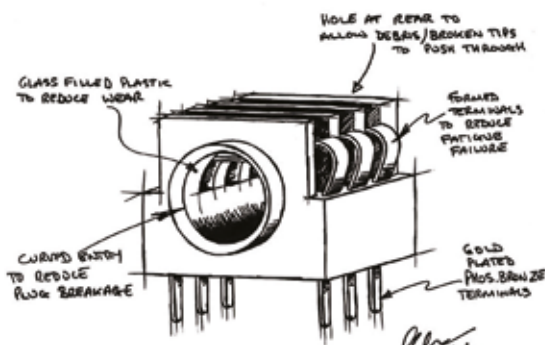
While Safran's 'The Room FX' points to the direction of ANA's focus on premium seating, it also embodies the wider trends being adopted by seating manufacturers for reducing the weight of such seats.

For Hiller, current trends in reducing the weight of premium seats include using advanced lightweight materials like composites, adopting 3D-printed and modular components and optimising seat structures through digital design and simulation. Manufacturers, he says, are also leveraging slimmer yet comparably comfortable cushioning technologies and integrating multifunctional parts to minimise weight without sacrificing comfort or luxury.

Sustainability is another focus, with increased use of recycled and bio-based materials.

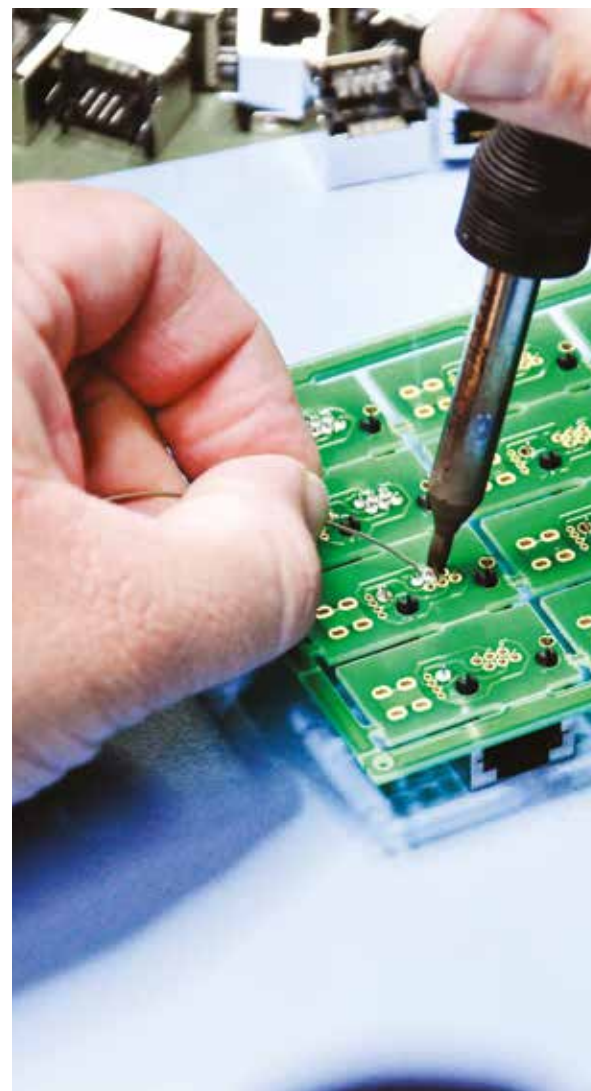
"We're seeing a shift towards 'responsible design', which includes weight reduction as part of a wider commitment to sustainability," says McInnes. "The industry is embracing new materials that offer the strength and formability needed for premium seating, while embedding less carbon and allowing for recyclability at end of life. To support this, we've introduced a Sustainability Index Variance (SIV) system that allows us to track the embedded carbon in each component alongside its cost, helping us and our supply chain make better-informed, lower-impact decisions," he imparts.

"Ultimately, what defines the future of premium seating is not just innovation for its own sake, but innovation that balances experience, sustainability and operational performance." ●



TECH THE WIGHT WAY

IFPL Group started out with a new design for a headphone jack and has gone on to become a major UK-based electronics manufacturer



When you think of electronics manufacturing hubs, which places come to mind? Perhaps Taiwan, Japan or Shenzhen in China. But one of aviation's most widely respected manufacturers operates from the Isle of Wight, off the south coast of England.

That's where IFPL Group, a supplier of in-seat power, audio and lighting solutions for commercial aircraft is based and where most of the design and manufacture of hundreds of power products for the aircraft cabin happens.

The main 1,800m² headquarters buildings are situated on the west of the island. On our visit, there is a flock of sheep loose on the road toward the entrance and such pastoral events are apparently not uncommon.

"As we're in a protected landscape, we have to work within tight planning restrictions," explains the company's chief operating officer Neil McGregor, "but it's made us incredibly efficient in our use of space – and, when needed, we've expanded off-site."

The company also has a unit in Barry Way, Newport, where much of the manufacturing takes place. In addition to its two island sites, IFPL also operates a design office out of Hethel in Norfolk, which had previously been the headquarters of Cobalt Aerospace.

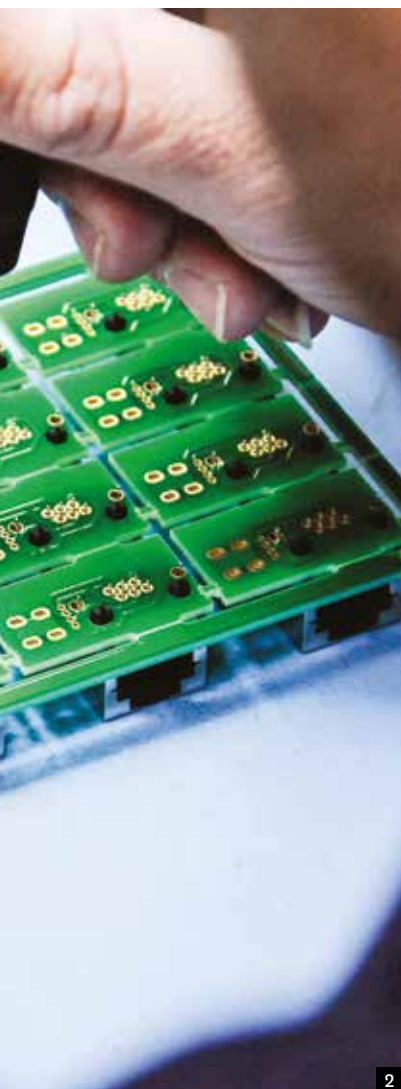
IFPL has been a Wight-based company since its inception by local entrepreneur Geoff Underwood in 1996. Founded as Inflight Peripherals Limited, the company started out with a plan to redesign the headphone jack used in aircraft, addressing a common problem raised by airlines at the time.

The company grew and increased its portfolio of products to more than 100 lines and over 300 individual part numbers – delivering more than four million units into service worldwide. Along the way, it has collected three Queen's Awards.

In 2016 it achieved AS9100 quality management certification. Later that year, it celebrated shipping its two millionth unit, which was surpassed by its three millionth in 2019. That figure has recently been outdone again, as the company announced in late 2024 that it had shipped its four millionth unit (a triple pin noise cancelling audio jack) to longstanding OEM business partner Thales.

Cobalt acquisition

In 2021, IFPL acquired aerospace lighting design and manufacturing company Cobalt Aerospace.



**“PLANNING
RESTRICTIONS HAVE
MADE US INCREDIBLY
EFFICIENT IN OUR USE
OF SPACE”**



The acquisition unlocked a new phase of capability integrating Dan Rust, founder of Cobalt and head of design, into the mix, together with several strategic and operational benefits that significantly enhanced IFPL's capabilities and market offering. The UK CAA Part 21J Design Organisation status enabled the expanded company to support aircraft modifications across avionics, cabin interiors and electrical systems.

“Having the in-house design organisation status was one of the reasons for acquiring Cobalt,” explains

- 1: Original sketch for improved headphone jack
- 2: Components being hand-soldered
- 3: USB socket head
- 4: Quality control inspection process
- 5: Bluetooth audio jack
- 6: The tranquil HQ exterior





1: Power Supply
2: IFPL HQ is an 1,800m² building

“WE DO RAPID PROTOTYPING HERE, WITH 3D PRINTERS ON SITE PRODUCING MECHANICAL PARTS”

McGregor: “We needed to diversify the business and get into new markets, but to have our own DOA was a real game changer for a business like ours.”

It also gave the group a research and development base in Norfolk as well as a wider range of products, notably the Cobalt Spectrum cabin lighting system. This lighting system has already made an impact. It replaces legacy fluorescent lighting with fully configurable, drop-in LED mood lighting – which the firm says has been designed to support circadian rhythm patterns and airline brand identity, with seamless integration.

Beyond cabin lighting, Cobalt also designs and produces a range of ‘next generation’ cabin upgrades, including wireless charging solutions as well as emergency floor path marking.

The company can cater for batch sizes ranging from a minimum order quantity of just one part all the way up to order sizes in the thousands.

Facility tour

We were keen to tour the Isle of Wight sites, and if there is one word to sum up what we saw it would be ‘busy’. As mentioned, planning restrictions mean every square metre needs to count.

A walk through the facilities reveals areas that focus on engineering, quality control and production. From EMI testing booths to 3D printing labs, IFPL manages product development from concept to certification, with surface-mount technology lines enabling rapid prototype and production of circuit boards.

There’s a product testing lab on site, which on our visit was running tests of electromagnetic interference, crucial for aviation use. The tests were performed in an EMI booth and were checking components (which on our visit was a pair of USB port cartridges) to ensure emissions are within acceptable limits to prevent interference with other onboard systems.

“We do a lot of work in terms of concept design and mechanical detail design, and we do rapid prototyping here, with 3D printers on site producing mechanical parts,” says McGregor. “We also have our own in-house surface mount equipment, which means we can get prototype PCBs very quickly as well.”

The Newport facility hosts Cobalt Spectrum production and PCB assembly, with expansion potential already being explored.

Investment

The company has invested in several machines to make this possible and our interest was piqued by the surface mount technology equipment, including pick-and-place machines that use a robotic plotter to put components onto the correct locations on circuit boards at inhuman speed. There’s also a reflow oven where boards pass through on a conveyor belt to solder surface mount



2



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▲ Cobalt Spectrum lighting in use

“THE REAL GROWTH AREA OF THE BUSINESS IS RETROFIT, BOTH FOR LIGHTING AND FOR IN-SEAT POWER”

components using a controlled heat profile for the correct amount of time.

Dan Rust, head of design, is quite clear where the potential for business expansion lies: “The real growth area of the business is retrofit, both for lighting and for in-seat power,” he explains.

“The lighting side of the business is well established, so steady growth is projected, but consumers hungry for ever-faster rapid charging on board represent the biggest change.”

Rust outlines how the industry-wide shift to USB-C power is something that passengers now expect on an aircraft, and may influence their decision when booking tickets.

“In-seat power is something we’ve been in since the beginning of IFPL, but providing full-scale systems retrofit is what we are doing now, and it is where we see full growth potential, with a lot of investment going into those product lines,” he adds.

When upgrading the cabin systems on the aircraft, Rust is clear that expectations with the airline need to be

managed. “If an airline contracts with us to provide a solution, it has to be real, it has to work and it’s got to go on the aircraft,” he says.

Saving power and weight, both of which equate to saving fuel, are subjects that the airlines are keen to talk about, but Rust adds that airlines often make other requests, some of which are possible, while others are less so.

“Airlines can hear all sorts of things from the commercial world. Some of it is vapourware, and some of it would be nice, but they don’t always understand the implications, so we must do some education with them to make it work.

“Once you’ve dialled it back, you can start getting into sensible aspects such as the ROI – things like reducing through-life cost, such as replaceable cartridges for the USB sockets. That also provides upgrade options, so we do provide them with options that provide upgrade paths, so they’re not stuck with today’s technology for the rest of time,” Rust concludes. ●

IFPL TIMELINE

1996

▼ Founded by Geoff Underwood as Inflight Peripherals Limited (IFPL), the company began as a home-based design consultancy. Its first innovation was a more durable headphone jack for aircraft, addressing a common reliability issue.

1997–2000

▼ Developed and launched the patented Long Life Audio Jack, which became a cornerstone product.

2008 & 2014

▼ Received the prestigious Queen’s Award for Enterprise in International Trade.

2015

▼ Geoff Underwood founded The WightAID Foundation, supporting charities based in the Isle of Wight.

2016

▼ Achieved AS9100 certification and reached a total of 2 million units shipped.

2019

▼ Surpassed 3 million units shipped globally.

2020–2021

▼ Launched innovative products like AdPower and a Bluetooth Audio Jack; acquired Cobalt Aerospace, forming the IFPL Group.

2021

▼ Won a third Queen’s Award, this time for Innovation, recognising their NFC payment unit – the smallest PCI-approved contactless card reader in aviation.

2024

▼ Surpassed 4 million units shipped globally.



Who: Red Dot Award
What: Stelia Aerospace
Web: red-dot.org

Toulouse-based cabin supplier Stelia Aerospace has won a Red Dot Award in the Sustainable Product Design category for its Opera Essential premium Business Class seat. Judges were impressed by the comparatively lightweight design of the product which has been achieved by deleting some non-essential parts, such as replacing the electronic reclining mechanism with a mechanical one. In a section of the aircraft where individual seats can weigh more than 120kg, the seat slashes total weight and reduces part count.

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JUDGES WERE IMPRESSED BY THE LIGHTWEIGHT DESIGN OF THE OPERA ESSENTIAL PREMIUM SEAT



Who: United Airlines
What: Revised phone app
Web: united.mediaroom.com

United has updated its passenger app with features that make catching connecting flights easier. Customers with connecting flights at United's US hub airports can now access a special section of the app that includes a countdown to connecting flights, customised turn-by-turn directions to their connecting gate with estimated walk times, real-time flight status updates and tips for longer layovers.



Who: JPA Design
What: 'The View' lounge at Brussels Airport
Web: jpadesign.com

UK-based JPA Design has gone bold with its design for 'The View' lounge at Brussels Airport. Anchored by an Art Nouveau-inspired stained glass skylight, created in collaboration with Atelier Mestdagh, renowned for restoring Belgium's cathedrals, this bespoke installation blends four textures of stained glass with refined metalwork, transforming the central bar.





Who: JEKTA

What: Flying boat prototype

Web: jekta.swiss

Switzerland-based Hydro Aircraft startup JEKTA has begun flight trials with a 1:9 scaled prototype of the PHA-ZE 100 amphibious flying boat. Using a distributed electric powerplant to draw energy from onboard batteries, testing will verify the aerodynamic and hydrodynamic configurations of the production aircraft. Meanwhile, renders of the interior of the combination craft have been released.



Who: Longbottom & Co.

What: Bloody Mary

Web: drinklongbottom.co.uk

Singapore Airlines is now carrying Longbottom's high-quality Bloody Mary mixer. The product features fresh-pressed Canary and Pear tomatoes from Southern Spain, squeezed within two hours of harvest and properly seasoned for altitude conditions. This is in stark contrast to the tomato juice from reconstituted UHT paste that airlines generally serve.



Who: Riyadh Air

What: 'Mocha Gold' cabin

Web: riyaadhair.com

Set to start operations late in 2025, Saudi Arabia's newest carrier has opted for an interior that is anything but vanilla.

A colour the airline calls 'Mocha Gold' is used in the cabin, offering a contrast to the rich purple seat covers. Other colours include dark indigo, 'skyline blue' and 'sunset peach'. The effect is reinforced by alternating LED cabin lighting.

Additionally, Business Elite features a double bed in the centre front seats.



A COLOUR RIYADH AIR CALLS 'MOCHA GOLD' IS USED IN THE CABIN, OFFERING A CONTRAST TO THE RICH PURPLE SEAT COVERS

PRECISION, PERFORMANCE AND PARTNERSHIP

MRO engineering company PT21 Solutions talks about an A320 galley reconfiguration project



▲ One of PT21's installations in an A320

When a leading airline sought to enhance its inflight service capability, France-based engineering company PT21 Solutions stepped up with a comprehensive galley modification for the Airbus A320. The mission: installing ovens for two customers. The first customer wanted four ovens in the aft galley and two in the front. The second wanted one oven in front and two at the back.

PT21 Solutions used its turnkey approach to deliver the mods in time to

“We’re not just a design engineering house. We see the job through to the aircraft”

meet the aircraft transition schedule. A complete EASA-certified design change, detailed electrical and structural integration and seamless coordination with the customer’s operational timelines was the goal.

Leveraging its EASA Part 21J Design Organisation Approval (EASA.21J.783), PT21 Solutions delivered a turnkey solution which included engineering documentation, installation drawings, material specifications and compliance packages. The galley units were upgraded to integrate high-performance ovens with precision-engineered brackets, wiring, CB panels and safety placards.

Project agility

What set this project apart was not only the technical accuracy but the agile project execution. A preliminary bill of materials was issued just two weeks into the project, allowing procurement of long-lead items. PT21’s proactive material management and certified documentation ensured compliance with EASA regulations and the airline’s internal standards – on time and without compromise.

“We’re not just a design engineering house. We see the job through – right to the aircraft,” says Randolph Odi, head of design at the company.

All electrical and mechanical modifications were carefully scoped to avoid unnecessary rework, with no impact to water systems and minimal aircraft downtime. Every detail – from circuit breaker integration to feeder reactivation and grounding solutions – was addressed with the professionalism and enthusiasm that define the PT21 team.

This project reaffirmed PT21 Solutions’ commitment to delivering efficient, tailored modifications that balance regulatory compliance with operational needs. It also highlighted its collaborative approach, working hand in hand with the customer to ensure clarity, safety and reliability throughout the aircraft’s lifecycle. ●

THE PT21 SOLUTIONS DIFFERENCE

A design and certification firm with deep aviation roots, PT21 provides turnkey aircraft interior modifications, covering everything from engineering design to material management to onsite support.

“Our clients trust us to make the transition process smoother. We’re often working in parallel with MROs, OEMs and leasing teams – and we thrive in that environment,” explains Oladi Olukolu, president at the company.

What sets PT21 apart is its ability to integrate technical expertise with hands-on delivery. Clients receive not just drawings and paperwork – but a full solution, including material procurement, STC documentation and qualified personnel onsite to support embodiment of the design directly on the aircraft.



Visit: pt21solutions.com for more information

REGIONAL

ONBOARD CONNECTIVITY

PARITY

Alex Preston takes a look at the landscape of inflight connectivity as next-gen ATG and ESAs compete to be the pipe of choice

It could be argued that regional aircraft have been the overlooked sibling when it comes to the availability of onboard connectivity. However, changing market economics, lower data costs and advances in satellite technology have rendered this no longer the case.

According to Valour Consultancy's *The Future of In-Flight Connectivity 2023* report, more than a third of all regional jets are equipped with inflight Wi-Fi, with the bulk of this connected fleet being in North America.

Legacy technology

Traditionally, regional aircraft have relied upon air-to-ground (ATG) hardware and cell tower infrastructure to provide the most efficient pipe for delivering inflight connectivity on short- to medium-haul flights.

For example, Gogo continues to build-out its next-gen 5G ATG network across both the contiguous

US and Canada, with the promise of mean speeds of ~25 Mbps, with peak speeds of 75-80 Mbps for business aviation aircraft.

However, the attractiveness of ATG is waning. In August 2024, long-time Gogo rival SmartSky Networks ceased operations. A statement said, "While our products were groundbreaking and we were growing our market share, we ultimately could not secure the necessary financing to continue our mission." Two months later, the company was rescued as Apcela, a provider of specialised, high-performance networks, announced it had signed a definitive agreement to acquire the SmartSky ATG Network, subject to customary closing conditions and regulatory approvals.

Mark Casey, CEO of Apcela, stated: "The acquisition of the SmartSky ATG Network is a game changer. With SmartSky's innovative air-to-ground technology, we can now extend advanced networking and application

▲ Passengers are oblivious to the tech battle for connectivity supremacy

acceleration capabilities to the skies, ensuring passengers, crew and operations teams benefit from the same level of performance they experience on the ground. Together, and with our partners, we'll redefine in-flight connectivity and set a new standard for the aviation industry."

To do so, it will need to compete with the emergence and introduction of electronically steered antennas (ESAs), which offer a smaller and lighter footprint and are quick, easy and relatively inexpensive to install.

As Dave Whelan, Senior Research Analyst at Valour Consultancy observes, "The trend we are seeing is the shift from ATG to satcom. Delta and American have already made announcements to that effect."

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2

THE MIDDLE EAST AS A WHOLE IS SET TO BENEFIT FROM SKYFIVE'S UPCOMING NETWORKS IN THE REGION

all, Delta is rolling out free Wi-Fi and Delta Sync in conjunction with Hughes Network Systems. Some 330 regional jets, such as its CRJ200 aircraft, will be kitted out with the Hughes IFC solution which combines a multi-orbit antenna and Hughes Jupiter Ka-band satellite capacity.

"Delta is committed to delivering a reliable Wi-Fi experience to all our passengers, including those flying on our regional carriers," said Glenn Latta, managing director, In-flight entertainment and connectivity, Delta. Initial installations began in mid-2024.

American Airlines is converting the current ATG system on its CRJ700, CRJ900, E-170 and E-175 aircraft – a total of nearly 500 regional jet aircraft – operated on its behalf to Intelsat's new ESA solution. The process of installing the technology to bring these regional aircraft to match fast Wi-Fi speeds that are currently available on American's mainline aircraft is expected to take two years.

1

40%

According to Gogo, upgrading to Avance L3 will provide an immediate performance improvement over the Classic ATG system today, with customers gaining a 40% performance boost in 2026 with the new LTE network

Next generation

Intelsat's ESA antenna is less than three inches tall and operates on both Intelsat's family of geo-stationary satellites and on Low-Earth Orbit (LEO) satellites. The Intelsat product consortium includes Ball Aerospace, Stellar Blu Systems and OneWeb.

As part of a \$25 million investment in the travel experience, Alaska Airlines is replacing its ATG solution with Intelsat's ESA solution, to bring high-speed connectivity to the airline's regional fleet of E-175 aircraft.

The new system has already debuted on Alaska's sister airline Horizon Air, and will be rolled out across the regional jet fleet, including on partner SkyWest, over a two-year period, providing consistent streaming-fast Wi-Fi across the entire fleet by 2026.

With Intelsat making inroads into the regional aviation market, significant

ONBOARD CONNECTIVITY

1. Alaska Airlines is using Intelsat's ESA to bring onboard Wi-Fi to even the remotest regions
2. Gogo is transitioning to a new 5G LTE network and will shut down its ATG network in 2026
3. The Hughes HL1120W ESA Terminal has received Eutelsat OneWeb approval for operation in its low Earth orbit (LEO) satellite network

momentum is also being enjoyed by Starlink, the LEO IFC solution engineered and operated by SpaceX.

Starlink has been selected by United Airlines for deployment on all its aircraft, including regional – more than 1,000 planes in total – over the next several years. Qatar and Virgin Atlantic are also equipping their fleets with the technology.

For Whelan, despite all the hyperbole around ESAs and satcoms, ATG still has a home. "I think there is still a use case for ATG. SkyFive are building a strong service in the Middle East at the moment, but in North America we'd certainly be expecting the number of ATG-equipped aircraft to be declining pretty quickly as these aircraft are transitioned over," he says.

The countdown is on towards Gogo's shutdown of its classic ATG network in 2026, in favour of its new 5G LTE network.

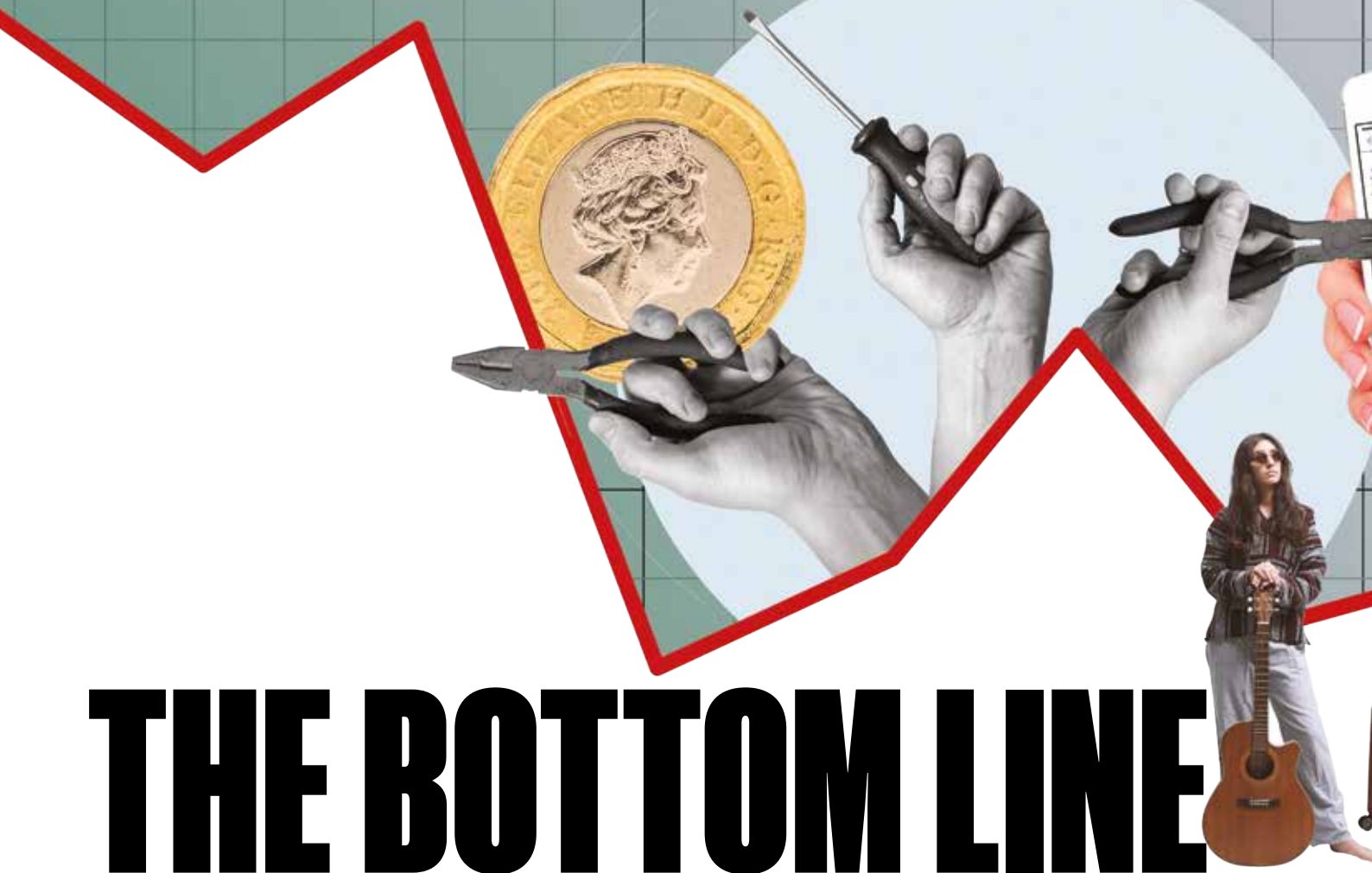
In the case of SkyFive, its Middle Eastern subsidiary SkyFive Arabia has been contracted by low-cost carrier flynas to provide ATG internet on its current fleet of 64 aircraft, and a further 56 aircraft on order.

According to Sheikh Saad Al Otaibi, Chairman of SkyFive Arabia and SCIT Group, "As we embark on this journey with Saudi Telekom, we are confident that ATG will redefine the in-flight connectivity landscape in Saudi Arabia."

Whether it's ATG or satcoms, a subpar inflight connectivity experience is set to be consigned to the past, as high-speed Wi-Fi comes to all. ●

3





THE BOTTOM LINE

Improving cost efficiency for regionals is more relevant than ever, writes **Gerrard Cowan**

In a turbulent economic environment, costs are an even higher priority for low-cost and regional airlines. Many are embracing technological innovation to adapt to the challenge, while rethinking their approach to finance, including through leasing.

CommuteAir, a US regional airline that operates on behalf of United Express from bases in Washington, D.C. and Houston, Texas is seeking to minimise costs in several ways. For example, the airline is “improving efficiencies by reviewing what functions to perform in-house versus contracting out”, according to Lon Ziegler, vice president (VP) of maintenance and technical services.

For instance, Ziegler explains, the airline previously used outside vendors for wheel and brake servicing. However, in 2023, it built its own in-house MRO facility and began removing and mounting tyres in-house, as well as servicing brakes at the workshop. This

resulted in a reduction in the cost per landing of 12%, while the reductions paid for the facility construction and fitout within the first year, says Ziegler, adding, “We also significantly reduced our out-of-service aircraft by improving spares availability across our network.”

Digital workflow

Additionally, the airline has turned to technological innovation to derive additional efficiencies. For example, CommuteAir utilises reliability monitoring software to categorise and classify very large sets of data to support component reliability monitoring and enhanced reliability reporting.

This has enabled the company to escalate its A-check maintenance programme, says Ziegler, which will result in “20% lower maintenance events and cost while increasing aircraft availability, leading to additional revenue”.

CommuteAir is also converting its paper logbooks to digital, providing additional efficiencies. For instance, the

digital logbooks enable real-time aircraft monitoring while reducing the volume of email and phone traffic by maintenance control centre personnel. Additionally, they improve compliance by reducing documentation errors.

“This transition opens a pathway for us to go full electronic across our maintenance organisation in the future,” concludes Ziegler.

Web Manuals specialises in replacing paper-based processes with digital documentation management solutions, with customers including Norway-based Widerøe and Air Corsica.

The platform is now AI-enabled: Amelia AI document search is a search function that enables operators to quickly deliver answers from their manuals, speeding up decision-making, either in the cockpit or in flight. Web Manuals also recently introduced Amelia Co-Author, an AI-powered editor for documentation teams.

Reducing burden

Julia Larsson, director of operations – EMEA at Web Manuals, says the technology helps airlines to reduce their administrative workload, improve

\$0



COST CONTROL

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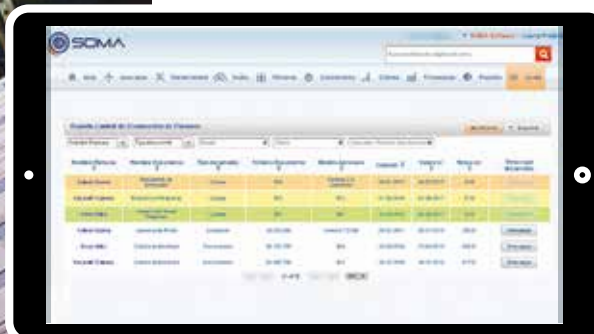


1

1. Computer vision for optimised ground services
2. SOMA provides a cloud-based platform that brings operational areas together such as maintenance, flight ops, inventory, procurement, compliance and training 3. The SOMA system dashboard



2



3

compliance oversight and remove unnecessary overheads. There has been significant growth in demand for such services, she explains, outlining how the company has grown its airline customer base by 23% from June 2024 to June 2025.

There are benefits from such technology for low-cost carriers and regional airlines, Larsson adds. "Regional and LCCs are incredibly agile, typically operating with fewer aircraft, smaller teams and tighter budgets than larger carriers," she says. "Digital tools that are intuitive, scalable and easy to integrate can be particularly beneficial, enhancing efficiency and reducing administrative burdens without additional complexity."

Such technologies are particularly valuable for airlines working with compact teams, she notes. "The ability to quickly update manuals, respond to regulatory changes and share critical information across departments means greater control over operations and lower risk of compliance issues. Demand for digital tools is growing as regional airlines and LCCs seek out smarter, more sustainable ways to manage complexity without adding cost or headcount."



1. Azorra leases narrowbody aircraft
2. CommuteAir technicians work on an ERJ145 at the company's Albany maintenance hangar

“OUR USERS VALUE TOOLS THAT HELP THEM TO ANTICIPATE INSTEAD OF JUST REACTING”

SOMA is a provider of aircraft maintenance software. The solution is based on a cloud-based platform that brings together all operational areas – such as maintenance, flight ops, inventory, procurement, compliance and training – into a single system, eliminating data silos and automating repetitive tasks.

Omar Maldonado, SOMA's aviation director, says that this type of centralisation can “provide the kind of traceability and control that directly translates into cost savings”.

Maldonado believes that data intelligence is set to power the next leap in aviation efficiency. Consequently, the company is now developing AI-powered tools for areas such as predictive maintenance, pattern-based alerts and intelligent decision-making for inventory and operations.

“Our users – many of whom run high-utilisation fleets – value tools that help them to anticipate instead of just reacting. That's exactly where we're heading toward: features that turn operational data into smarter, faster and safer decisions. It's not just about new tech; it's about building tools that actually work in the hangar, not just in the cloud.”

Management by exception

There has also been a growing focus on automating the turnaround process. Assaia provides an AI solution that aims to deliver real-time visibility into turnarounds, with a range of customers,

including LCCs and regional airlines. The company's solution – ApronAI – uses computer vision technology to ingest video streams from a range of activities related to the turnaround: for example, the plane's arrival time, the opening of the first cargo door, or the time that the jet bridge connects. ApronAI can deliver a range of insights, alerting if catering has not arrived at the scheduled time, for instance, or if the fuelling process is taking too long.

CEO Christiaan Hen says this technology enables “management by exception”. Instead of relying on people to oversee the entire operation, the system can do it for you, only alerting the user when there is an actual issue that demands their attention.

This, says Hen, has appeal for LCCs and regional carriers. It clearly reduces the number of people needed at every aspect of the turnaround, meaning employees can be deployed more efficiently. It also reduces the chances of delay and any associated costs.

The turnaround times for LCCs are significantly shorter than for larger carriers, as their business models depend on maximising aircraft utilisation rates, notes Hen.

“Low-cost carriers specifically are on much tighter margins, not only financially but also time-wise, so it can be more of a challenge to get it right. That's why aircraft utilisation is increasingly important and that's how this technology contributes on the revenue side.”

Long-standing approaches to financial flexibility are also seeing renewed interest. For many airlines, leasing brings various financial advantages, reducing the upfront cost and offering balance sheet benefits.

Azorra specialises in small, narrowbody aircraft and has a significant focus on the regional and crossover spaces, with platforms such as the Airbus A220 or Embraer E-Jet aircraft. Ron Baur, president of Azorra, previously spent 27 years at Continental Airlines and then United Airlines after the merger. He says he has seen a significant growth in demand for leasing since the Covid-19 pandemic.

Today, costs are increasing across the board, he says, impacted by everything from pilot shortages to supply chain shortages. Leasing is proving popular because it offers a range of ways to cut costs. However, he notes, leasing is not just about reducing costs; it also offers flexibility, meaning airlines can quickly expand or contract the size of their fleet or change its geographic balance more easily. In uncertain times, this can be just as important as financial efficiencies.

“Flexibility is my favourite word,” Baur concludes. “It's a dynamic industry – you never know what you're going to encounter. With leasing, we can provide airlines with a lower-cost solution than owning it outright, while also offering the benefits of flexibility.” ●



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ABNCAST

Finding the way for wiring

Human design and engineering of the aircraft cabin will increasingly be augmented by artificial intelligence. **Lee Hayhurst** spoke to one French start-up pioneering the technology

Navigating yourself around the world today has never been easier thanks to modern technologies like satellite navigation and mobile apps like Waze and Google Maps.

But how does this concept help to explain how some of the latest and most advanced technologies are being applied to the field of aircraft design and manufacturing?

At this year's Paris Air Show, Aviation Business News spoke to Dessia, an innovative French start-up that is developing artificial intelligence solutions for aerospace engineering.

Among the numerous ways it is using AI to bring digital transformation to aircraft design is automating harness and duct routing within the cabin.

Chief executive Jean-Pierre Roux explained: "We designed an algorithm that works a bit like Waze when you're driving, giving you the shortest path from A to B when the route is constrained by traffic.

"Our 'Waze' is a bit different because you are constrained by the rules. You don't just design a harness route on the basis you want to go straight from A to B; you have got to respect lots of complex rules.

"You input all that into our algorithm and it shows you different solutions in a shorter time frame than you can do by hand. It gives more options in less time, making it an easier job for the product team to make the right selections."

Paris-based Dessia is also applying its technological know-how to embedding sustainability at the heart of the design



▲ Jean-Pierre Roux (R) with Lee Hayhurst

process and to drawing verification, aiming for 'first time right design', making product development cycles quicker and more efficient.

The firm has secured two seed funding rounds with French and German capital investors and this year the corporate venture fund of French nuclear engineering company Orano invested.

In Paris, Dessia was on the GIFAS stand, the French Aerospace Industries Association, which has over 400 members including other early-stage specialists alongside industry giants like Airbus.

Paradigm lost

Roux said established aerospace firms are looking to start-ups to drive innovation and "change the paradigm" so they can ensure they are up to date with the latest technologies.

"They are looking for more agility, more productivity and more robustness. Engineering is conservative. When you design an aircraft, a car or a train, you must be conservative.

"We believe with our technology, which is about AI for engineering, we can meet their requirements, which means we can accelerate and bring robustness to verification.

"They spend 10% to 20% of their time verifying what has been designed by hand. We can automate that and bring the results to designers, improving their life and the processes.

"In the end it's all about removing the burden and giving the innovation back to the engineers and the designers." ●



This interview originally featured on a special Paris Air Show episode of ABNcast, the podcast from Aviation Business News. To subscribe go to ABN's YouTube channel youtube.com/@aviationbusinessnews



"You don't just design a harness route on the basis you want to go straight from A to B; you have got to respect lots of complex rules"

RECYCLING BATTERIES

Derk-Jan van Heerden, founder of the Aethos Foundation, explores the opportunities and hurdles of end-of-life battery recycling

As a rule, batteries used in aircraft are highly customised to ensure maximum safety and reliability, while also delivering a high energy output at a low weight. Hence, no battery is the same. Because of this, recycling them is never straightforward. There are many kinds of battery cells, modules and packs, using different materials and cell chemistries, requiring different recycling methods.

Handle with caution

It is no surprise, then, that recycling batteries is a task for specialised companies, in the form of acknowledged, Part 145-certified MRO shops. In addition, the US, China and the EU have introduced laws and regulations that increasingly make battery manufacturers in any industry responsible for collecting used batteries and ensuring sustainable processing, as well as reporting on their results.

In general, these facilities have two main recycling processes to choose from, both with their own advantages and drawbacks. The traditional approach is the pyrometallurgical process, using high temperatures to recover metals. However, it requires high energy use, its product recovery is limited and materials need further refining.

For newer types of batteries (NiMh and Li-ion), the alternative is a hydrometallurgical process, using aqueous solutions to dissolve and separate metals. Although still maturing, this process offers a lot more product recovery, producing higher purity materials. The downsides are the need for pre-treatment and the high use of chemicals, which requires extensive liquid waste management.

Due to the high cost and complexity of developing and certifying new technology, the aviation industry tends to continue using older battery types (Pb-acid and NiCd). Vested interests of the manufacturers of this technology also present a barrier to the wider adoption of newer, cleaner alternatives.

Black box

Many batteries used in aircraft can be recycled. Notable exceptions are the batteries used for emergency applications, such as FDRs and CVRs. To ensure their functioning under extreme conditions they run on non-rechargeable Li-metal batteries, for which there are no recycling options



▲ End-of-life batteries need a specialist touch

available. Sadly, this means that end-of-life batteries are piling up in expensive containers specifically designed to mitigate the risks associated with storage of these batteries.

Raising awareness is always a valuable first step. Do you know what your MRO organisation does with batteries that are beyond economical repair (BER) when repairing them costs more than sourcing a new battery or battery section? The more industry professionals understand the available options, the better positioned they are to drive change.

Ideally, recycling where possible will become a standard requirement. Considering the budding ascent of electric aircraft, now is the time to make sure there are solutions in place for the current batteries before large volumes reach their end of life. ●

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