

Aircraft

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VOLUME 13 • ISSUE 02 • APRIL/MAY 2024

CABIN

Perfecting the passenger experience

Management



CROSS TALK

The whole 'tooth about connecting
personal devices without interference

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SUMMER FUN

As the weather warms up, the mainstream press takes more interest in stories about airports and flying. You can expect to read tales of woe at the check-in desk and shrinking legroom and luggage space in the cabin as well as a number of articles on tardy flight attendants, obnoxious fellow passengers and the tastiness (or lack thereof) of the onboard catering.

There's often a nostalgia for a time when air travel was perceived as being somehow better by being more relaxed or more luxurious and it's common to see photo montages in the Sunday supplements of glamorous air travel from times gone by.

But was it ever really that glamorous? In the past couple of issues, we have run sections from Jennifer Coutts Clay's excellent *Jetliner Cabins* where she talks about her experience on board Concorde, surely the high point of the 'jet set' era. In her book, she describes the cabin being smaller than you might imagine, with no in-flight entertainment beyond being able to look at the edge of space through the window. Passengers generally didn't mind (after all, they were going to be at their destination in half the time of a regular airliner) but even the best aircraft couldn't provide the amenities that travellers would expect today.

In truth, the average holidaymaker travelling on a trijet would be on a flight that would have been far more expensive and needed to be booked via an



agent months in advance. The aircraft would have been far louder, both outside and in the cabin, and while the seats might have been wider, they would have been less supportive.

All these stories miss the real issues that affect us taking people on their holidays. Things like staff shortages, engine inspection, supply issues and a lack of aircraft are far harder to explain to the public.

The one place where all media will attend is AIX. This is the industry's chance to tell the world the truth of modern aviation, and I'm all for that.

Greg Whitaker

Greg Whitaker

EDITOR

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P.S. As ever, I'm most interested in your views. Please don't be shy in dropping me a note about what you'd like to see more (or less) of in the magazine. You can reach me at: greg.whitaker@realresponsemedia.com

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Business Briefing



Aircraft Interiors

MALAYSIA TO FIT NEW RECARO MODEL ON UPCOMING AIRCRAFT

➤ National flag-carrier Malaysia Airlines has selected Recaro to furnish its brand-new Airbus A330neo aircraft with the CL3810 economy class seat.

Malaysia Airlines will be the first carrier in Southeast Asia to feature this model of seat and more than 5,000 CL3810 pax are set to be delivered for a linefit on Malaysia Airlines' A330neo aircraft, starting in Q3 2024 through to 2028.

The CL3810 is the latest addition to the seat manufacturer's seating portfolio and has garnered recognition as the winner of both the iF Design Award and the Focus Open Gold Award.

The seat shaves 15 per cent off the weight of its predecessor and has been designed to enhance the passenger experience and operational efficiency.

Features include seat-pitch ranging from 31 to 36 inches, 6-inch recline, a 13.3-inch in-flight entertainment system and individual power access at each seat with type USB-C and USB-A ports.

Seat cushions with layered foam and ergonomic technology, a six-way adjustable headrest and a Comfort+ seat bottom with articulation will further enhance the passenger experience on

long-haul flights. In addition, the unique slim backrest design will provide an extra inch of knee space.

"We are thrilled to once again collaborate with Malaysia Airlines, a carrier known for its commitment to providing an exceptional travel experience," said Dr Mark Hiller, CEO of Recaro. "The CL3810 is a testament to our dedication to passenger comfort and aesthetic design, and we are proud to see it become an integral part of Malaysia Airlines' A330neo."

Since September 2015, Malaysia Airlines has been owned and operated by Malaysia Airlines Berhad.

It is part of the Malaysia Aviation Group (MAG), a global aviation organisation comprised of different aviation business and lifestyle travel solution portfolios aimed at serving global air travel needs.

“

The seat shaves 15 per cent off the weight of its predecessor



Connectivity

Croatia Airlines chooses Panasonic Avionics IFE

● IFE provider Panasonic Avionics has signed an agreement with Croatia Airlines to provide wi-fi services for the airline's brand-new Airbus A220 fleet.

The flag carrier of Croatia has committed to outfitting its fleet with wi-fi capabilities through the installation of Panasonic Avionics' Ku-band satellite connectivity on the airline's 15 new A220s by 2027.

The first aircraft is set to enter service in June 2024. Each seat on the new fleet will also feature USB-A and USB-C ports, alongside convenient smartphone and tablet holders.

The decision to choose Panasonic Avionics was based on its Ku-band connectivity.

Hernan Abbes, vice president of Global Sales, Panasonic Avionics Corporation said: "We are honoured that Croatia Airlines has chosen Panasonic Avionics to provide the first ever onboard wi-fi services for its fleet. We are confident that it will enhance the airline's engagement with its passengers and the in-flight experience it offers."



Sustainability

Single-use plastics onboard criticised in IATA report

> IATA has published a report on the use of single use plastic items, known as SUPPs.

SUPPs are widely used due to their strength, lightness and ability to meet safety and security regulations. However, there is pressure to replace them with sustainable alternatives.

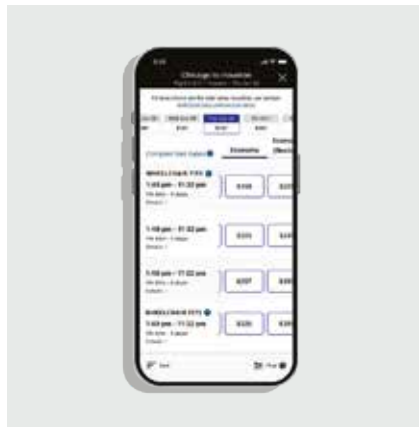
The report notes that airlines face technical and operational obstacles, as well as the lack of harmonised and risk-based regulations that present a 'significant barrier' to improving recycling and circularity of waste management.

"The recommendations of this report will help airlines, regulators and the supply chain to manage the complexities of reducing SUPPs," said Marie Owens Thomsen, IATA SVP sustainability and chief economist.

An IATA passenger survey showed that more than three quarters of passengers would support measures to remove disposable plastics.



Recommendations of this report will help with reducing single-use plastics



Accessibility

United improve booking process for wheelchair users

> United Airlines has launched a tool on its app and website that makes it easier for wheelchair users to find flights that can accommodate their mobility device.

The airline also announced that eligible customers may seek a refund of the fare difference if they need to pay more for a flight to fit their equipment.

Customers can now use the filters on the flight search results page before selecting their flight. After clicking on the wheelchair filter tab near the upper portion of the screen, customers can then enter the specific dimensions of their mobility device.



BRIEFS

- Emirates has won the 'Best Inflight Entertainment Award' in Airline Ratings 2024 Airline Excellence Awards, announced online. Judges were pleased with the airline's mixture of content, which includes audiobooks, learning and wellbeing content as well as the usual mix of Hollywood movies, television and children's content.

- Korean Air has garnered accolades for four of its wines in three categories in *Business Traveller's Cellars in the Sky Awards 2023*.

- Michelle Freyre (pictured) is to join the board of directors at United Airlines. Freyre currently serves as president, Global Brands at Estée Lauder, where she is responsible for guiding overall strategy. Freyre grew up in Puerto Rico and holds a B.A. from Yale University and an MBA from Harvard Business School.

- British start-up Global Airlines is to offer free airport rides to First and Business when operations commence. The airline has signed a deal with chauffeur service Blacklane for the 'to-and-from' airport transfers. Additionally, all Global Traveller passengers will be offered perks such as discounts and special offers to use the Blacklane service. It will be the first European carrier to offer such a service.

IN NUMBERS

4

Korean Air cleaned up with four awards for its wine at the annual Cellars in the Sky Awards

700+

Southwest has a huge order backlog, having upgraded an existing order with another 200 aircraft in 2023

20

Routes to be codeshared by airBaltic with Delta. The Latvian airline codeshares with partners in all three airline alliances



Aircraft Interiors

SOUTHWEST ORDERS CABIN 'BRAND REFRESH'

Southwest has ordered a brand refresh that will see a uniform redesign, new seating, an updated carpet pattern, bigger overhead storage and other cabin enhancements.

Design agency Tangerine was chosen to give the cabins a new look, and it has chosen deep blue tones and sky blue accents, with a nod to the Southwest heart logo woven throughout the carpet.

The airline is working with current apparel vendor Design Collective by Cintas and stylist Bonnie Markel to develop the new look for Southwest employees who work in and around airports, including Inflight Operations, Ground Operations, Cargo and Technical Operations.

"This design project brings together unique points of view in a dynamic and

engaging co-creation process," said Caroline Bartek, creative director with Design Collective by Cintas.

"It's a true collaboration between Southwest Airlines and the Uniform Inspiration Team, Design Collective and Bonnie Markel," said Abby Groshek from Design Collective by Cintas.

The chosen seats are BL3710, a common choice among regional and low-cost airlines.

The shipsets will feature adjustable headrests for neck and shoulder support as well as at-seat power and a holder for the passenger's device, but not a built-in IFE screen.

"Since Recaro was founded in Fort Worth, it's been a long-term goal to work with our neighbour, Southwest Airlines," said Sunitha Vegerla, general manager of Recaro Aircraft Seating Americas.



Connectivity

SpaceX Starlink trialed on Air Baltic

Latvian airline airBaltic has conducted an initial test of SpaceX's Starlink internet connectivity system onboard its Airbus A220-300 aircraft.

The ground test was conducted at the airline's home base in Riga, and the inflight connectivity system was tested with a full cabin comprising airBaltic and Starlink employees.

Martin Gauss, president and CEO of airBaltic said: "This first test brings good insights and moves us closer to enhancing our service for passengers travelling within the airBaltic network in Europe and beyond."

If tests continue to be successful, the airline plans to equip its entire A220-300 fleet with the connectivity system.

AirBaltic is the flag carrier of Latvia, having been formed in the mid-1990s as a joint venture between the government of Latvia and SAS.



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Security

UK AIRPORTS GIVEN MORE TIME TO UPGRADE SCANNERS

Some UK airports are to be given more time to install security technology that could spell an end to tiny toiletries, with serious financial penalties planned for those who fail to meet the new deadlines.

Due to issues such as the global supply chain's continued recovery from the pandemic, some airports have been unable to upgrade their security checkpoints before the deadline of 1 June 2024 which was announced at the end of 2022. Extensions have been given on a case-by-case basis.

First announced in 2018, the new scanners detect prohibited items with greater accuracy, meaning security staff can work more efficiently and passengers no longer need to take items out of their hand luggage – making the process simpler and saving time during security screening. Once in place, travellers will also be able to take greater quantities of liquids through security, meaning an end to 100ml limits.

The extensions to the June 2024 deadline are being granted to those airports required to install the new kit, meaning passengers should still check

the security requirements for liquids and large electronic items at their departure airport before travelling this summer. Extensions have been granted for up to a year and it is the responsibility of airports to install the new technology.

Transport Secretary Mark Harper said: "The UK is leading the world with its roll-out of this technology, but it's important we give those airports yet to meet the deadline a second chance to get the job done. Until they do, passengers should continue to check before travelling."

The government is also looking to introduce financial penalties for those airports that miss any further deadlines. Powers to achieve this under the Aviation Security Act will be explored and taken forward in the coming months.

“It's important we give airports yet to meet the deadline a chance to get the job done



Loyalty

SAS to switch alliance

Flag-carrier Scandinavian Airlines, better known as SAS, is to leave Star Alliance later this year to join rival SkyTeam. SAS will remain in Star Alliance until 31 August 2024, with membership of SkyTeam commencing the following day.

The airline has said that it is in negotiations with SkyTeam and its member carriers to develop and grow extensive commercial relationships.

"We are thrilled to progress on our alliance transition journey and pave the way for new destinations and loyalty programme benefits across the world. Our focus now is to guide customers and our EuroBonus members on each step during this transition," said chief commercial officer at SAS Paul Verhagen (pictured).

SAS was one of the founding members of Star Alliance at its inauguration in 1997, along with Thai Airways, United Airlines, Air Canada and Lufthansa. The quintet formed the original 'five points' of the star logo.

The airline has also announced that it will defer the interest payments that are due on 23 and 26 April on its perpetual capital securities as part of its voluntary chapter 11 process in the US and the company reorganisation proceeding in Sweden.



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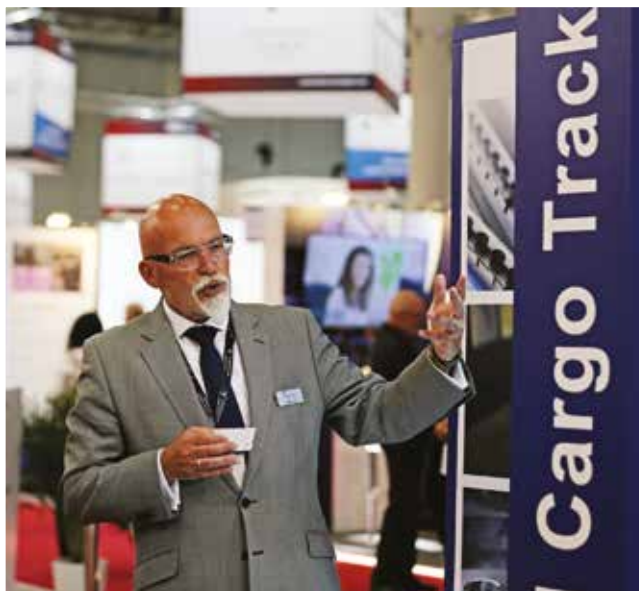
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BACK TO HAMBURG

The largest show dedicated to the aircraft cabin is back. We take a look ahead at what to expect from this year's extravaganza



Always a bellwether event, Aircraft Interiors Expo (AIX), returning to the Hamburg Messe, Germany from 28-30 May, is set to take the pulse of the industry. Airlines and cabin professionals from across the global supply chain will meet to shape the cabin concepts of the future.

The global aircraft cabin interiors market is experiencing a surge, with a projected CAGR of 6.81 per cent from 2024 to 2032. This growth correlates to a renewed demand for international travel, with recovery rates notably highest in the Asia-Pacific region (Pacific Asia Travel Association). Against this backdrop, AIX will offer attendees unmissable opportunities to explore the latest innovations and network with exhibitors.

TRENDS TAKING OFF IN 2024

The 2024 edition will welcome thousands of visitors and senior airline buyers, all looking to source products and solutions for the cabin of the future. Featuring most of the world's biggest names in the aircraft interiors industry, the show promises to offer unrivalled networking as well as learning opportunities through dedicated speaker programmes. Confirmed to attend are representatives

from the world's top airlines, including American Airlines, United Airlines, Cathay Pacific Airways, Air France and EVA Airways as well as Southwest Airlines, Scandinavian Airlines, EL AL, Air Transat and Air New Zealand.

At this year's event, increased adoption of eco-friendly materials, exploring lighter weight alternatives and implementing innovative design strategies to minimise the environmental impact of air travel will all be on display from the likes of international leaders such as Zotefoams, Expliseat and Muirhead. Sustainability continues to be a focus actively seeking solutions to reduce emissions and optimise fuel efficiency, featuring eco-friendly and weight-saving solutions from leading companies like Teledyne, Simona Boltaron and Crystal Cabin Award Winner 2023 Lantal.

IMMERSIVE INNOVATION

Improving the passenger experience for both leisure and business travellers remains a priority for all elements of the supply chain. With the latest advancements in inflight entertainment and connectivity playing a role in aviation interiors, AIX gives exhibitors pushing the boundaries of wi-fi and entertainment systems a place to demonstrate their wares. Here, companies exhibiting at AIX for the first time, including Rosen Aviation and Stellar Entertainment, will join several global leaders such as Astronics, Thales and Panasonic.

Finally, AIX's BizJet offering continues to grow, with refurbishment, interior design and completion products and services all on display. Equipment developer and supplier Aerospace Technologies Group and aerospace service provider Fokker Services Group will be among those showcasing their latest innovations to serve the business jet market.

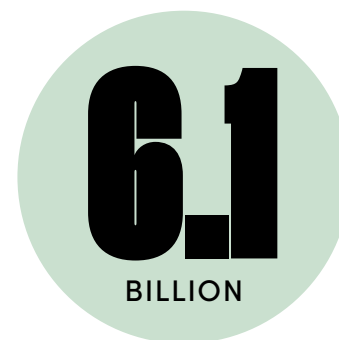


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The In-Flight Entertainment & Connectivity market, projected to reach US \$6.1 billion by 2026 with a 5.2 per cent growth rate, will again take the spotlight at AIX 2024

manufacturers Vandewiele. Each will showcase their unique offerings as they contribute to the growing market.

CONNECTIVITY

The In-Flight Entertainment & Connectivity market, projected to reach US \$6.1 billion by 2026 with a 5.2 per cent growth rate, will again take the spotlight at AIX 2024.

The dedicated IFEC Zone will enable visitors to easily find the latest advancements, designed to elevate the passenger experience. This year, the zone reflects the industry's growing focus on LEO satellite solutions, offering airlines and passengers the potential for higher bandwidth, lower latency and a seamless in-flight experience.

Over 50 exhibitors will gather in the IFEC zone, including industry leaders like Hughes, Eclipse and Telesat LEO.

1 A wide variety of exhibitors will be showcasing their products 2 The latest seat design innovations will be on display



2

“VISITORS WILL BE ABLE TO MEET WITH THE LEADERS IN MANUFACTURING CABIN EQUIPMENT”

AIX 2024 is the hub of innovation within the industry, bringing together over 400 exhibitors totalling a combined range of more than 1,000 products for the aircraft cabin interiors market, with brand new solutions and partnerships set to be announced across the three days. Attendees will be able to meet and engage with industry leaders and rising stars, with over 20 new exhibitors including Daher, Optimum Aero, Peter-Lacke, Comi and Sabena Technics.

CABIN COMFORT

Teledyne will bring its ACES Cabin Air Monitoring System which reduces operational costs for airlines. Simona Boltaron, a specialist in thermoplastic materials, offers lightweight cabin interior applications, while Muirhead will display its LightCore leather range which is 33 per cent lighter than standard leather.

Lantal provides an alternative approach to sustainable cabin seating materials, with its new natural leather using a wet-green tanning process to reduce water consumption during the manufacturing process.

Visitors will get the chance to meet with the leaders in manufacturing cabin equipment. Among the many companies exhibiting is ImaginAir, which will be

demonstrating galleys, front and last row monuments, cockpit doors, second barrier doors, class dividers and more. The firm can also offer repairs and overhaul thanks to its P145 agreement.

The event will recognise the importance of inclusivity and accessible travel, featuring leading companies including Airchair and Operational Aviation Solutions. Airchair's lightweight and compact transfer system assists passengers with reduced mobility when boarding and disembarking. Meanwhile, Operational Aviation Solutions will debut the world's first functionally touchless lavatory door, demonstrating advancements in accessibility.

Exhibitors ACM and Avital will present solutions that enhance comfort and satisfaction to encourage passenger wellbeing. ACM's interactive meditation app and Avital's passenger monitoring system exemplify the industry's recent commitment to creating holistic and enjoyable travel experiences. Additionally, Schott will demonstrate how flexible lighting solutions contribute to a comfortable cabin environment to relax passengers.

Visitors will also have the opportunity to connect with industry newcomer, Swiss consulting service provider Adequate Swiss; sustainable interior design experts Avalon; 3D printing technologist Materialise; and textile

A person wearing a headset is looking at a tablet device. They are positioned in front of a bright, rectangular airplane window. The scene is dimly lit, with the primary light source being the window, which casts a warm glow on the person's face and the device. The background is dark and out of focus, suggesting the interior of an aircraft.

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2

1 Cabin mock-ups help to inspire new ideas
2 AeroAid are among this year's exhibitors 3 Panel sessions generate thought-provoking discussions

"DELEGATES CAN HELP EVOLVE THE VISION FOR THE CABIN OF THE FUTURE"

These companies are at the forefront of developing and deploying innovative connectivity solutions, leveraging both GEO and LEO satellite technologies to ensure reliable and efficient in-flight internet access. Furthermore, Aeroplay will demonstrate how it delivers tailored content for airlines, while ThinKom will showcase its advanced antenna solutions.

Also joining the IFEC Zone, newcomer Gladi8tor, alongside partner Inflight Media Digital, will present its gaming entertainment ecosystem for the modern traveller, and Airfi will offer its 2023 Crystal Cabin award-winning LEO connectivity solution.

DEEP DIVE

CabinSpace Live, the show's dedicated speaker theatre, will offer visitors opportunities to hear and learn from the industry's most experienced leaders and experts. The first day's programme, curated by media partner HMG Aerospace, will explore key industry topics through several sessions including 'Cabin environment: achieving the ultimate ambiance and wellbeing for passengers'; 'In-flight entertainment: a captive audience'; and 'Cabin refurbishment: investing to impress'.

Day two will be curated by Real Response Media, the parent company of *Aircraft Cabin Management* and

Aviation Business News. It will host panels and presentations touching on current trends in cabin interiors, (see panel on page 18) including: 'An MRO perspective on elevating aircraft cabin interiors' and 'The use and impact of predictive maintenance on aircraft cabin refurbishment'.

CRYSTAL CLEAR

The Crystal Cabin Awards, one of the most coveted awards for industry professionals, will take place on the evening of the first day of the show, 28 May. The recent shortlist announced 72 products spanning the eight award categories and demonstrated the strides the industry is making to deliver sustainable aircraft with a seamless, comfortable experience for passengers. Winning entries will be also presented at CabinSpace Live the following day.

The renowned Passenger Experience Conference, taking place one day ahead of AIX on 27 May at the Hamburg Messe, will bring together experts and visionaries from airlines, airframers, OEMs, the global supply chain and design organisations to discuss the overarching theme, 'Innovating tomorrow's travel experiences'.

Experts from Air Canada, Airbus, Orson Associates, Gen Phoenix, Doy Design, Flying Disabled, Omnevo,

Delta Air Lines, Boeing, Icelandair and more will be collaborating to solve the frustrations and respond to the needs of the new cohorts of travellers who will be flying into the next decade. Attending delegates can join thought-provoking discussions and panels, uncover emerging and exclusive insights regarding future direction for passenger experiences, and help evolve the vision for the cabin of the future.

The 2024 edition of the conference will feature three streams. 'Future Now' will discuss the changes to the passenger experience already in progress. 'Future Connected' sessions will dive into how aviation can navigate the ever-competitive travel landscape, how data and technology can ease the way and create opportunity, as well as how innovations across different travel systems can inspire fresh ideas. Lastly, 'Future Efficient' will examine how airlines and supply chain partners can boost profits, streamline processes and reduce costly wastage while delivering desirable value and quality of experience to passengers.



3



“AIX REMAINS THE ONLY SHOW WHERE THE BIGGEST AIRLINES AND SUPPLIERS COME TOGETHER TO DISCUSS CABIN INTERIORS”

Among those confirmed to speak, Christopher Wood from Flying Disabled and Roberto Castiglioni from Reduced Mobility Rights, will join a representative from Boeing to discuss initiatives improving the inflight experience for travellers with disabilities.

Meanwhile, Michael Raasch, CEO of Omnevo, Kolbrun Ýr Jónsdóttir, product manager inflight service & experience, products & service management at Icelandair and Kevin Clark, CEO of Bluebox Aviation will be joining a conversation on the potential of artificial intelligence to revolutionise inflight experiences.

With the broad range of sessions covering future-forward industry topics, delegates will leave the conference feeling inspired and with a clearer vision of the next decade of travel. The Welcome Party, following the conference from 6pm onwards, will also offer invaluable networking opportunities by bringing together the industry under one roof. Tickets for this are also available to non-conference delegates.

NETWORKING OPPORTUNITIES

All show attendees can streamline their experience and maximise investment into the show with AIX Connect, the show's online planning tool. The platform offers personalised matchmaking

recommendations and search tools to schedule meetings ahead of the event. In 2023, AIX Connect facilitated more than 3,400 meetings across the three days, ensuring a productive show for all.

Polly Magraw, event director, Aircraft Interiors Expo, says: “We look forward to welcoming the industry in Hamburg in May to highlight exceptional passenger experiences, upcoming interior insights, supply chain partnerships and cabin expertise. AIX remains the only show where the biggest airlines and members of the supply chain come together to discuss cabin interiors, and with 2024 expected to be a year of growth for businesses, we are delighted to play a supporting role in that.”

Aircraft Interiors Expo (AIX) returns to the Hamburg Messe from 28-30 May 2024 in Halls B1 – B7. It will follow Passenger Experience Conference (PEC) on 27 May and is co-located with World Travel Catering & Onboard Services Expo (WTCE), which can be found in Halls A1 and A4. Together, the events provide passenger experience professionals with a unique opportunity to identify new products and solutions throughout the cabin. Your AIX badge allows you free access to WTCE across the show days. 📍

▲ 2024 promises to be a busy event

Aviation Business News Panel Sessions

Panel Discussion #1:

An MRO perspective on elevating aircraft cabin interiors

CabinSpace Live Seminar Theatre –
Wednesday 29 May, 11:30-12:15

The surge in demand for cabin refurbishment projects and interior upgrades as airlines aim to enhance the passenger experience has created opportunities for the Maintenance, Repair and Overhaul (MRO) industry.

This panel will offer insights into the dynamics of cabin refurbishment, including seating replacement, lighting overhaul, in-flight entertainment system installation and the use of modern, lightweight materials to enhance the overall passenger experience.

The session will also address regulatory challenges, certification requirements, and the integration of emerging technologies, highlighting the MRO industry's essential role in improving cabin comfort, safety and operational efficiency while meeting evolving passenger demands and industry competition.

Panel Discussion #2:

The use and impact of predictive maintenance on aircraft cabin refurbishment

CabinSpace Live Seminar Theatre –
Wednesday 29 May, 12:30-13:15

The use of predictive maintenance technology is unlocking numerous opportunities for the MRO industry. This discussion will explore how predictive maintenance is currently reshaping the industry's approach to cabin refurbishment by facilitating proactive identification of component degradation, optimising part replacement schedules and ultimately enhancing the passenger experience through reliable cabin amenities and systems.

The panel will also address barriers to adopting predictive maintenance for cabin refurbishment, and how the industry can overcome challenges to bolster safety, cost-effectiveness and customer satisfaction.



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PASSENGER EXPERIENCE CONFERENCE

A preview of the discussion to be held in Hamburg on 27 May

The organisers of Passenger Experience Conference (PEC), the expertly curated one-day event driving the evolution of onboard, will return to Hamburg Messe on Monday 27 May. Focusing on how to elevate onboard environments, services and the experience for airline passengers, the first details of this year's programme have been revealed.

The renowned conference will bring together experts and visionaries from airlines, airframers, OEMs, the global supply chain and design organisations to discuss the conference's overarching theme, 'Innovating tomorrow's travel experiences'. Experts from Air Canada, Airbus, Orson Associates, Gen Phoenix, Doy Design, Flying Disabled, Omnevo, Delta Air Lines, Boeing, Icelandair and more will be envisioning how to solve the frustrations and respond to the needs of

the new cohorts of travellers who will be flying into the next decade.

Attending delegates can join thought-provoking discussions and panels, uncover emerging and exclusive insights regarding future direction for passenger experiences, and help evolve the vision for the cabin of the future.

The 2024 edition of PEC will feature three streams: a look at the changes to the passenger experience already in progress; how air travel experience should fit within collaborative and connected ecosystems; and ways to maximise the efficiency of delivering a future seamless passenger experience.

Future now

The first stream, 'Future Now', will create an open discussion for delegates to review initiatives already underway which look to gain traction. The sessions will cover current and changing industry standards, the influential role that AI and other tools will have over the next ten years, and approaches to manufacturing and the supply chain that offer the real possibility of achieving systemic change.

Discussions will serve perspectives from the end-to-end supply chain, aimed at opening the door to improved travel experiences and new ways of doing business.

Speaking in the 'Future Now' sessions, aviation accessibility experts Christopher Wood from Flying Disabled and Roberto Castiglioni from Reduced Mobility Rights will join a representative from Boeing to discuss initiatives improving the inflight experience for travellers with disabilities.



Industry leaders Nico den Ouden, chief innovation officer and GM seating at Gen Phoenix, Gary Doy, founder and managing director at Doy Design, and Sabeti Wain Aerospace will explore how airlines and seat manufacturers can rethink traditional processes to pioneer sustainability and redesign aviation's circular future.

Other confirmed speakers for 'Future Now' include Michael Raasch, CEO, Omnevo; Kolbrun Ýr Jónsdóttir, product manager inflight service & experience, products & service management, Icelandair; and Kevin Clark, CEO Bluebox Aviation who will be joining a conversation on the potential of artificial intelligence to revolutionise inflight experiences.

Future connected

The next stream, 'Future Connected' will prompt industry leaders to re-evaluate the role of air travel within an integrated





2

'FUTURE CONNECTED' WILL PROMPT BOSSES TO RE-EVALUATE THE ROLE OF AIR TRAVEL



4

and connected transport ecosystem and how it meets the needs of passengers who already expect to manage their lives – and their travel – from their mobile devices.

This stream will look at how aviation can navigate the ever-competitive travel landscape, how data and technology can ease the way and create opportunity, as well as how innovations across different travel systems can inspire fresh ideas.

Maruan El Mahgiub, vice president, Mormedi, will join the programme to present the challenges and opportunities of data sharing in aviation. Other confirmed companies set to join discussions at 'Future Connected' include AIX exhibitors Expliseat, Lilium and Tangerine.



3

Future efficient

The final stream, 'Future Efficient', will provide fresh perspectives on the initiatives step-changing the aviation industry. Delegates can examine how airlines and supply chain partners can boost profits, streamline processes and reduce costly wastage while delivering desirable value and quality of experience to passengers.

Leading discussions on lowering the resource footprint of the passenger experience sector, Matt Crane, founder, Aviation Sustainability Forum, and experts from the Green Cabin Alliance will take the stage.

PEC will provide all attendees with unmissable opportunities to collaborate with the entire industry, including senior airline decision-makers, designers, engineers, specifiers, manufacturers and more from every corner of the globe across seminars and networking breaks.

Commencing the day before the doors of Aircraft Interiors Expo (AIX) and World Travel Catering and Onboard Services (WTCE) open, the conference marks the beginning of a week dedicated to showcasing cutting-edge advances in the aircraft interiors and passenger experience community. ●

1. The conference always features intriguing presentations
2. It's a perfect time for the sharing of ideas
3. A variety of speakers are in this year's line-up
4. The PEC always attracts a high number of attendees

Vision Experience

What is the outcome you want to achieve with your IFE? Lateral thinking may be required, as **Verena Bintaro** discusses

The aviation sector continues to navigate through a labyrinth of technological obstacles to replicate the speed and reliability of ground-level internet within the confines of an aircraft cabin. However, ongoing developments, such as the integration of antennas capable of leveraging both Low Earth Orbit (LEO) and Geostationary Earth Orbit (GEO) constellations, hold promise for optimising network performance, increasing bandwidth and enhancing the passenger experience.

With costs for airlines steadily decreasing, there is a growing trend of both regional and long-haul aircraft offering complimentary wi-fi services to passengers. Notably, Bluetooth technology is redefining in-flight entertainment, allowing passengers to pair personal devices. This seamless integration is a cornerstone of the modern digital cabin experience.

As the aviation industry is facing many opportunities in yet a very dynamic environment, a question arises: What type of connectivity will best serve an airline's fleet? The answer is not in



the technology itself but in the vision of the experience an airline aspires to deliver. Let's think backwards: what is the outcome you want to achieve? What digital cabin experience do you want to present your passengers with? What are your airline's needs? Once these questions are answered, a suitable connectivity framework can be selected and implemented.

NEW INSTALLATION

Discover Airlines, a Lufthansa Group airline, has embraced this strategic approach. The airline has taken its passenger experience on short- and medium-haul voyages to a next level by integrating AERQ's Aerena Inseat System into its A320 aircraft – a move set to distinguish them from competitors. Discover Airlines opted for Aerena, a dynamic and flexible open IT platform, to achieve a state-of-the-art cabin

experience that can be perfectly tailored to the passengers' and airline's needs.

With Aerena, passengers can benefit from personalised offers and information digitally, including access to the onboard catering menu, a moving map and a variety of applications, such as booking tours for their destinations. This is also supported by the PED (Personal Electronic Device) friendly environment that inspires interaction. By smart data capturing, analytics and matching, the airline can learn about the passengers' entertainment demands and address them specifically.

This is also an opportunity for airlines to create revenue, savings and growth. As Aerena allows an instant onboarding of third parties, it creates an ecosystem with opportunities for revenue through advertising, destination services, onboard platform businesses and more.

But what anchors Aerena's digital cabin? The foundation lies in a ground infrastructure based on cloud solutions, automated processes and virtual environment. This robust backbone allows airlines to control the digital experience through a singular login into the Aerena Experience Studio.

Now it is possible to control the digital cabin experience, designing the choice of applications, media content and user interface. Once laborious App updates are now a swift and rapid process, increasing airline flexibility while trimming down costs and time. ●

▲ Verena Bintaro is marketing director at AERQ



“**WHAT IS THE OUTCOME YOU WANT TO ACHIEVE? WHAT EXPERIENCE DO YOU WANT TO PRESENT PASSENGERS WITH?**”

Illustration: Phil Couzens



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EMOTIONAL BAGGAGE

Passenger satisfaction rates on luggage issues are falling, but fix the ‘luggage journey’ and you’ll improve the passenger experience



“By investing in emerging technology, the travel industry can minimise the rate of lost and misplaced luggage, improving the overall passenger experience”



Tomasz Pawliszyn, chief executive of AirHelp

To learn more about AirHelp, visit airhelp.com

The rate of mishandled luggage was 7.6 bags per thousand passengers in 2022, doubling from the previous year and leaving more customers across the globe frustrated and inconvenienced.

What’s more, the financial implication on the global airline industry reached a staggering \$2.2 billion.

Flight disruptions are continuing to be a leading cause of the rise in lost luggage with tight transfer times and missed connections impacting the handling of operations.

While passengers have continued to take proactive steps to keep track of luggage, such as using distinctive luggage tags, AirTags and opting to purchase travel insurance that covers the loss of baggage, global airports and airlines are looking for solutions to tackle this issue.

Through the implementation of new solutions, including enhanced tracking analytics, automation and improved communication within the baggage handling process, airports and airlines can together improve plummeting customer satisfaction and save significant costs.

EMBRACING TECHNOLOGY

In an era defined by digital transformation and technological advancements, airport baggage handling processes are falling behind.

The ongoing rollout of Artificial Intelligence (AI) within the travel industry is offering airports and airlines



1

unique opportunities to pave the way for luggage management, offering innovative solutions that facilitate tracking and enhanced data management.

By harnessing AI-powered recognition algorithms and machines, airports can develop sophisticated luggage management systems capable of efficiently and accurately managing the movement and tracking of passengers’ baggage throughout their journeys.

Additionally, AI-powered predictive analytics can anticipate potential disruptions for routes and destinations and divert baggage accordingly, enabling airlines and airports to proactively prepare for the redistribution of luggage.

Radio-frequency identification (RFID) technology is another solution which will transform the handling of luggage across airports, enabling airport staff to pinpoint a single bag and track its movements throughout the journey.

Deploying RFID readers at various points along the baggage handling journey, including check-in counters, conveyor belts and transfer points,

1. Beumer Group's CrisStore baggage system enables efficient and accurate handling
2. Tracking bags is key to passenger satisfaction

means the tags can be automatically scanned and traced from a central location, providing real-time visibility.

Bluetooth technology seems to be fully embraced by travellers using various luggage tags and devices to track their luggage, but this common, easy and cheap technology has not been fully embraced by the industry.

By investing in emerging technology, the travel industry can minimise the rate of lost and misplaced luggage, improving the overall passenger experience.

Such solutions can both save costs from reduced lost luggage claims and give airports and airlines a competitive edge, driving new customers with services which minimise luggage complications.

BLENDING OPERATIONS

With 96 per cent of airlines and 72 per cent of airports aiming to make touchless unassisted bag drop available by 2025, it's clear that automatic baggage drop-off points are becoming a major development in airport procedures.

Although automated services will certainly help to tackle issues with speed and precision, they cannot eliminate the opportunity for luggage to be mishandled in all circumstances, particularly during peak travel periods or when unforeseen disruptions occur.

To optimise baggage handling, these methods should be met with investment in staff training and the introduction of robust quality control measures that can further enhance the reliability and accuracy of baggage handling operations.

Transforming the entire infrastructure across the passenger's luggage journey requires a blended approach.

Combining automated systems with traditional manual methods to leverage the strengths of technology and people will optimise the luggage handling processes to mitigate risks and reduce errors that threaten the safety and movement of passengers' belongings.

The objective for airports is to ensure they can deliver a seamless and reliable luggage operations system that enables passengers to enjoy an easy and stress-free travel experience.



2



Almost three quarters of airports are planning to make unassisted baggage drop available by 2025

PROACTIVE AND TRANSPARENT COMMUNICATION

Improving communication channels between airports, airlines and passengers is vital in facilitating enhanced tracking and tracing of lost luggage.

Developing a transparent and centralised hub for customer queries when facing issues with misplaced luggage will streamline the process of locating passengers' items and increase satisfaction rates.

Airports and airlines can also combine AI capabilities with easily accessible

communication channels that offer immediate updates on luggage handling and whereabouts, eliminating the need for increased customer service staffing and delays in updates. These can process a huge number of passenger enquiries with close to 100 per cent automation.

With the adoption of a proactive communication strategy – alongside digital platforms and mobile applications that allow real-time updates, automated notifications and personalised alerts – passengers will gain peace of mind with reduced frustrations and stress.

Airlines and airports must foster confidence in their capabilities to reunite passengers with their luggage, with a focus on communication to improve the overall customer experience.

BETTER AND CHEAPER?

The travel industry continues to navigate hurdles triggered by staff shortages, increased travel appetites and workforce strikes, but customer satisfaction is now at the forefront of operations.

Airports and airlines must implement strategies that provide a smoother travel experience for passengers. Addressing these issues, the industry can tackle falling satisfaction rates and save significant costs in the process. ●

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COPING WITH STRESSED PASSENGERS

Why do so many passengers seem to be in an emotional state onboard? Neuro expert James Roy has some suggestions

It is no coincidence that people are more likely to cry on a plane than anywhere else, as flying – for some – can be an uncomfortable and painful experience. The air pressure inside the ear is regulated by a narrow passage called the Eustachian tube, an opening that connects the middle ear with the nasal-sinus cavity, which helps to regulate pressure inside the ear in accordance with our surroundings.

The process of adapting the pressure inside the ears causes the muscles controlling the Eustachian tube to open up, which can result in a painful popping sensation, and can even cause the eardrum to stretch. This can be why children often tend to cry more during

the flight, as the smaller the Eustachian tubes, the more discomfort caused.

Heightened emotions can be both psychological and physiological, which can be related to hypoxia or low oxygen levels whilst flying. Even though the plane is pressurised, we are still breathing in less air than we would if we were on the ground. Hypoxia, or oxygen deficiency, can impair cognitive function and increase emotional responses, as well as influencing depression or sudden mood changes.

TRIGGERING

Air travel may involve emotional triggers, such as saying goodbye to loved ones, or coming back from a stressful business trip, in addition



Heightened emotions can be both psychological and physiological



James Roy is a specialist at Brainworks Neurotherapy. Find more at brainworksneurotherapy.com

to travel fatigue. These emotional triggers combined with the discomfort of travelling can lead to people feeling more vulnerable. When flying, we are disconnected from the outside world and forced to gauge into suppressed emotions and reflective consciousness, which can lead to overthinking and crying.

Aeroplanes keep humidity levels at about 10-20 per cent to prevent structural damage to the plane, much lower than the 35-65 per cent humidity which humans are comfortable with. Dry air means that we lose more water through evaporation and breathing, which can lead to mild dehydration, often resulting in mood imbalances and generally feeling more emotional.

Lastly, the fear of not being in control can lead to feeling more nervous and cause emotions to be heightened. Given there have been reported plane crashes over the years, many have developed what is known as aviophobia – the fear of flying – leading to feeling unsettled during the flight. While this is understandable, particularly given the stories just in the first weeks of 2024, aviation is now the safest that it has ever been.

Nonetheless, all of these factors combine to explain why some passengers behave differently inflight compared with how they are on the ground. ●





Rick Gonzalez, president
3Chem Corporation

WE'VE GOT YOU COATED

Innovation, product development and supporting sustainability are all priorities for the future success of 3Chem Corporation, explains president **Rick Gonzalez**



1

Q: What are the biggest challenges that airlines and OEMs are telling you they face when it comes to making decisions around coatings?

Among the main challenges faced by airlines and MROs are overall cost reduction and improving coating lead-time from suppliers.

As a smaller aerospace paint manufacturer, 3Chem Corporation offers various solutions to these issues.

We optimise our production processes to minimise waste, reduce energy consumption and improve operational efficiency. By streamlining manufacturing processes and adopting lean practices, we lower production costs and pass on the savings to our customers. In addition,

this aids in our ability to manufacture and deliver products faster to meet our customers' needs.

Q: Can you tell us more about how 3Chem Corporation works with airlines and OEMs? Do you often need to develop products to meet unique demands and specifications?

We prioritise building collaborative partnerships. By working closely with airlines and MROs to understand their challenges and objectives, we develop long-term relationships based on trust and mutual benefit. This collaborative approach leads to innovative solutions that address cost management and product lead time concerns effectively.

3Chem Corporation also provides personalised technical support and expertise to airlines and MROs, assisting them in selecting the most suitable coating materials and application methods. By offering guidance on surface preparation, application techniques and maintenance practices, we help maximise the lifespan of coatings and minimise maintenance costs.

Customer services is truly what sets us apart from other manufacturers. We offer more responsive customer service compared to larger manufacturers. Our team adapts quickly to changing customer needs, addresses concerns promptly and provides ongoing support throughout the coating lifecycle. This level of attentiveness contributes to cost management by minimising downtime and optimising coating performance.

Although we do work hand in hand with OEMs to develop innovative products, our business was mainly built to support the aftermarket. We currently hold AMS 3095 specification approvals for both our Glair high Solid Polyurethane Topcoat and FlyGloss basecoat/clearcoat exterior decorative paint systems which qualifies these products for use on Airbus and Boeing exteriors. In addition, FlyGloss basecoat/clearcoat is qualified to specification MEP 10-125 Type 1 for use on Embraer aircraft exteriors.

Q: To what extent do you agree that today's market struggles with managing inventory levels?

I do agree; airlines and MRO facilities



1. 3Chem Corporation's exterior coatings were used on the Global Crossing Airlines' A320 retro design 2. Cabin interior and exterior coatings are supplied by the company

“BY PRODUCING SMALLER BATCHES OF CUSTOMISED PRODUCTS AS NEEDED, WE REDUCE INVENTORY OVERHEAD AND RESPOND QUICKLY TO CHANGING CUSTOMER REQUIREMENTS”

often face challenges in maintaining optimal inventory levels of aircraft paints and primers due to several factors.

Predicting the demand for aircraft paints and primers can be challenging due to factors such as seasonality, fleet utilisation and unexpected maintenance requirements. Fluctuations in demand can lead to inventory imbalances, with airlines and MROs either holding excess inventory or facing stockouts.

Airlines and MROs have become accustomed to long lead times for procurement, especially for specialised or custom colours. Lead times can vary depending on factors such as production capacity, shipping logistics and regulatory approvals. Longer lead times can make it difficult for airlines and MROs to react quickly to changes in demand or unexpected maintenance events.

3Chem Corporation has invested heavily over the years into resolving these issues. Even during the supply chain bottleneck a couple of years ago, we were able to continue supplying

products within the time frames required by our customers.

Offering customised colour formulations and batch production capabilities enables us to meet the specific needs of each customer while minimising lead times. By producing smaller batches of customised products as needed, we reduce inventory overhead and respond quickly to changing customer requirements. As an example, 3Chem Corporation can produce a ‘ship set’ of exterior paint for a B767 aircraft within 72 hours and have the material shipped anywhere worldwide. This type of unmatched service is what the 3Chem Corporation brand is known for.

Another issue that impacts the management of inventory levels for airlines and MROs is that most coatings have limited shelf life (mostly ranging from 12-24 months), especially if they contain volatile components or require specific storage conditions. Managing inventory levels to minimise waste and ensure product freshness can be challenging, particularly for products

with short shelf lives. Our exterior coating touch-up kits have proven to be a huge success in helping our customers have just-in-time inventory which minimises material waste. These small touch-up kits are excellent for aircraft line maintenance and other minor paint repairs which need to be performed.

Q: What challenges does 3Chem Corporation face when trying to ensure products remain compliant with relevant industry standards and approvals/certifications?

The aviation industry is subject to many regulations and standards imposed by various regulatory bodies, including OEMs. Navigating this complex regulatory landscape requires a thorough understanding of applicable requirements and ongoing monitoring for updates and changes.

Our products must meet stringent performance requirements to ensure durability, corrosion resistance, weatherability and chemical resistance. We conduct extensive testing and validation to demonstrate compliance with these performance standards, which can be time-consuming and resource intensive. Regulations such as REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) in Europe and EPA regulations in the US impose restrictions on the use of certain chemicals in coatings, requiring us to formulate products to meet newer environmental standards.

Many of our coatings must undergo rigorous certification and approval processes before they can be used in commercial aviation. This typically involves submitting samples for testing, conducting field trials and obtaining approvals from regulatory agencies and aircraft manufacturers. Regulatory standards and industry requirements are subject to change over time, requiring us to continuously monitor developments and update our products accordingly. This involves investing in research and development to innovate new formulations, technologies and manufacturing processes while



“MY VISION FOR THE FUTURE OF THE COMPANY REVOLVES AROUND SUSTAINABLE GROWTH, INNOVATION AND GLOBAL EXPANSION”

maintaining compliance with evolving standards. Our technical director has years of experience in the aerospace and industrial coatings market. His leadership and hands-on approach to research and development has helped us stay ahead of the curve on these issues.

Q: In what ways does 3Chem Corporation contribute to the sustainability of the aviation industry?

We prioritise the development and production of environmentally friendly paint formulations that minimise the use of hazardous chemicals, reduce volatile organic compound (VOC) emissions and lower the environmental impact of aircraft coatings. By offering eco-friendly alternatives, we help airlines and MRO facilities reduce their carbon footprint and comply with increasingly stringent environmental regulations.

In 2024, we have implemented various energy-efficient manufacturing processes and technologies to minimise energy consumption, reduce greenhouse gas (GHG) emissions and improve overall sustainability. We are also optimising production workflows, investing in energy-efficient equipment and adopting renewable energy sources where feasible.

We provide education and support to our customers on sustainable coating practices, including proper application techniques, maintenance strategies and disposal methods. By empowering airlines and MRO facilities to make informed decisions and adopt sustainable practices, we feel that we contribute to the broader goal of creating a more sustainable aviation industry.

Q: What is your personal favourite aircraft paint job that has used 3Chem Corporation products, and why?

3Chem Corporation was founded in Florida, US, and I am a South Florida native. My favourite most recent paint livery using our exterior coatings is the Global Crossing Airlines' A320 retro design paying homage to Eastern Airlines.

The Eastern Airlines retro livery holds a special significance for aviation enthusiasts and history buffs, particularly those with ties to South Florida, where Eastern Airlines had a major presence.

Founded in 1926, Eastern Airlines was headquartered in Miami for many years and operated numerous flights to and from Miami International Airport. The

◀ Offering customised colour formulations and batch production capabilities enables 3Chem Corporation to meet specific customer needs while minimising lead times

airline was instrumental in shaping the growth and development of aviation in the region, making it an integral part of South Florida's aviation history.

The Eastern Airlines retro livery serves as a tribute to the rich history and legacy of aviation in South Florida. Seeing the retro livery on aircraft flying evokes a sense of pride and nostalgia for the region's aviation heritage.

Q: And finally, as president of 3Chem Corporation, what is your vision for the future of the business?

My vision for the future of the company revolves around sustainable growth, innovation and global expansion. We will prioritise innovation and product development to create cutting-edge aircraft coatings that meet the evolving needs of the aviation industry. By investing in research and development, we will continue to develop eco-friendly formulations, advanced coatings technologies and tailored solutions that deliver superior performance, durability and environmental sustainability.

We will focus on expanding our presence in key markets, particularly in Europe, Asia and India, where there is significant demand for aircraft coatings. By establishing strategic partnerships, distribution networks and local manufacturing facilities, we will strengthen our foothold in these regions and capitalise on emerging opportunities for growth.

We will remain committed to understanding and meeting the needs of our customers through collaborative partnerships and exceptional customer service. By continuing to actively engage with airlines, MRO facilities and OEMs, we aim to establish strong long-lasting relationships and deliver tailored solutions that address specific challenges and opportunities in the aviation industry; hopefully for years to come. ●

Visit [3chem.com](https://www.3chem.com) for more information

de·risk

/dē'risk/

verb

1. To take steps to make something less risky or less likely to involve loss
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Honor Puciato, a consultant with Ricardo, shares her experience as an Ambassador for Aviation for the UK government as the sector begins to decarbonise



“Every challenge presents an opportunity for improvement when approached with determination”



Honor Puciato is a consultant at Ricardo and an Aviation Ambassador for the UK government. To learn more about the DfT's Aviation Ambassadors visit gov.uk/government/groups/aviation-ambassadors-group, and to find out more about Ricardo, go to ricardo.com

As I reflect on my journey in the aviation industry, I am honoured to have been appointed as an Aviation Ambassador by the Department for Transport (DfT) under the Generation Aviation programme.

This role signifies not only a recognition of my professional experience but also a profound opportunity to inspire and guide the next generation of aviation professionals.

My story with the aviation sector began five years ago when I joined Heathrow Airport Ltd as an environmental manager and later assumed the role of air quality strategy lead. This journey exposed me to the challenges the aviation sector is facing, but it also revealed to me that every challenge presents an opportunity for improvement, especially when approached with determination, innovation and forward thinking.

In 2021, I was excited to join the engineering and environmental consultancy Ricardo, where my contributions extended to multiple UK airports, including Heathrow, Gatwick, Luton and Highlands and Islands Airports. I enjoy being part of the Ricardo team as we provide a wealth of expertise and technical knowledge to improve the sustainability of the aviation industry, from managing emissions at airports to helping aircraft and ground vehicle manufacturers transition to hydrogen or electrification.



1

CONSULTANCY

Our aviation consulting services support a wealth of programmes from aerospace design and engineering to niche volume manufacture, improving water management and air quality, and I love that about working here.

Ricardo provides me with an ideal platform to continue my work addressing environmental challenges within the aviation industry, further fuelling my commitment to shaping a more sustainable and environmentally conscious aviation sector.

My decision to join an airport as an environmentalist was driven by a passion for challenge and a realisation that if I wanted to make a tangible impact on the environmental footprint, I needed to focus my efforts on working with challenging industries. Aviation offered me this opportunity.

The aviation sector stands as one of the most challenging frontiers in decarbonisation and environmental

1. Honor Puciato in action at the DfT
2. The 2024–2026 Aviation Ambassadors group



2

sustainability. Yet, it is also among the most dynamic and swiftly evolving domains in this endeavour.

Aviation thrives on change, actively collaborates with governments to forge new policies, and embraces innovation. This makes aviation an incredibly rewarding field for anyone passionate about sustainability and safeguarding our environment.

NEXT GENERATION

Young people are increasingly conscious of the detrimental effects of flying on our planet and hold sustainable development in high regard. This awareness has the potential to sway career choices, with some young individuals hesitant to enter an industry often associated with environmental harm.

However, lasting change in aviation, as in any industry, hinges on the participation of young, impassioned individuals.

Through my involvement in the Aviation Ambassador programme, I aspire to illuminate the aviation industry's possibilities for young minds. I wish for them to realise that by joining this sector, they become catalysts for change, integral to a monumental movement. The unwavering dedication and contributions can genuinely shape not only the future of aviation but also the destiny of our planet.

As an Aviation Ambassador, I embrace a transformative role aimed at inspiring, guiding and nurturing the next generation of aviation professionals. Over the next two years, I will serve as a mentor and advocate, visiting

“Through the Aviation Ambassador programme, I seek to empower young individuals to realise their potential and become catalysts for change”

schools, attending mentoring events and delivering bespoke outreach activities to underrepresented groups.

Through these initiatives, I aim to demystify the aviation industry and encourage young people to pursue careers in aviation, especially those from underrepresented backgrounds.

My journey into aviation was shaped by my own experiences as a female born in Poland, navigating a path to success through determination and skill.

My diverse background aligns perfectly with my mission to raise industry visibility, deliver outreach and improve career pathways for individuals from all walks of life.

Through my involvement in the Aviation Ambassador programme, I seek to empower young individuals to realise their potential and become catalysts for change within the aviation sector.

As I embark on this new chapter, I am filled with hope and optimism for the future of aviation.

Together, we can cultivate a new generation of aviation professionals who are not only skilled and knowledgeable but also passionate about shaping a more sustainable and inclusive industry.

If you would like to get in touch to speak about the aviation industry, find me, Honor Puciato, on LinkedIn. 📍



Is your business proud of its efforts in nurturing a new generation of aviation professionals and helping the sector develop the skills and talent it needs? If so, you could become one of Aviation Business News' first Best Places To Work In Aviation. Register to take part in our independent employee survey by 7 June at bestplacestoworkaviation.com

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Future Foams

Foams used in passenger aircraft interiors offer a range of characteristics enabling more efficient performance while providing high comfort levels, as *Bernie Baldwin* reports

As the airline industry pushes on in its sustainability drive and moves towards the goal of achieving net-zero by 2050, every ounce or gramme of weight that takes to the skies on an aircraft is examined to ensure it has earned its place.

Within the cabin, the task for engineers and designers is to provide safety and comfort with as little weight as possible. Every successful reduction in weight while maintaining those attributes means less fuel used and thus fewer emissions – both very good outcomes – plus the other costs saving

of paying for fewer carbon credits in emissions trading schemes.

Choices in materials are crucial to progress in this quest, and the use of foams in their different forms is one of the leading options to provide the appropriate mechanical properties, while keeping the structure light.

Using her company's own products as examples, Igna van der Weide, global product manager at Zotefoams, outlines the wide range of foams that are used for different purposes, such as seats for short-haul and long-haul cabins, as well as those used for sidewalls and insulation.

“Zotefoams’ Zotek F OSU is the material of choice for many applications in aircraft interiors, due to its feel, its lightweight, exceptional processing versatility and its outstanding fire, smoke and toxicity (FST) properties,” she begins. OSU refers to heat release standards based on the Ohio State University (OSU) Rate of Heat Release Test Method.

Van der Weide continues: “For aviation seating, Zotefoams offers two main grades from its Zotek F range – Flexible and Semi-Rigid.” The company’s offer goes further with some firmer grades of foam. “Zotek F OSU Rigid and

“AVIATION FLAMMABILITY STANDARDS ARE TOUGH, EACH SOFT-TOUCH PART IS SCRUTINISED UNDER BURN TESTS”

Extra-Rigid have both been successfully incorporated into other areas of the aviation seating market,” says van der Weide. “Extra-Rigid can be used to replace traditional solid thermoplastic components such as seating back-shell panels, which delivers significant weight savings of up to 50 per cent [compared with materials previously used for the task]. The material is also self-insulating, eliminating the need of extra insulation layers on the outside and offering the advantage of saving space in the aircraft cabin.”

Not only is there a range of foams that can be employed in the cabin, but different production methods can also deliver different properties. Van der Weide describes the key processes used to create each product type from the appropriate foams.

“Zotek F benefits from a uniform cell structure, offering the same properties in all directions, providing exceptional processing versatility as

well as the opportunity to fabricate via multiple methods, allowing flexibility and efficiency,” she remarks. “These characteristics derive from our three-stage manufacturing process, which uses only temperature, pressure and inert nitrogen as the expansion medium, rather than a chemical agent to expand foams.

“This gives all Zotefoams products an extremely fine and consistent cell size, as well as the isotropic mechanical properties mentioned above. These factors combine to ensure Zotek F is one of the easiest foams to cut, shape and mould into any design imaginable. Complex shapes, such as snap-fit gap fillers and flexible ducts, can be one-shot moulded,” van der Weide adds.

As noted earlier, fire, smoke and toxicity properties are key to the use of any material, but particularly in upholstery in an aircraft cabin. Foams, of course, have air locked into them, so meeting the necessary requirements is arguably tougher than a solid material.



2

“In aviation, safety is paramount. The industry prides itself on being the safest transportation industry in the world, and this is in no small part down to the infinitesimal detail that goes into every single one of the millions of parts fitted to an aircraft,” van der Weide emphasises. “Aviation flammability standards are tough, each soft-touch part is scrutinised under a variety of burn tests, with everything from smoke, toxicity, and even heat release measured and quantified.

“Achieving a pass in many of these tests is one thing. Passing with flying colours, however, can make a huge difference to the design of a seat. In the heat release test for example, the limit for the entire stack up is 65/65,” she adds.

This numerical reference relates to the heat release levels for materials established by the US Federal Aviation Administration (FAA). A figure of 65/65 means a maximum acceptable two minutes total heat release (HR) of 65 kW min/m² and peak heat release (PHR) of 65 kW/m².

“The lower the amount of this limit the foam can take up, the greater the possibility for choice in coverings,” van der Weide concludes.

Such developments ensure that as all those involved in the air transport industry are devoted to meeting sustainability targets, structural foams – however deployed – are playing an important role. ●



1

1 Seat materials have to work hard for years 2 An MGR seat panel featuring Zotek OSU Extra-Rigid

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A PERFECT



◀ Diehl expects visualisation effects to become commonplace



Fluorescent interior lighting systems can make a cabin feel aged. Switching to an LED system gives a more contemporary feel. *Alex Preston* looks at the drivers behind cabin lighting retrofit projects

Lighting is one of the simplest and best ways for airlines to create an environment where passengers can relax and feel comfortable. It also allows the airline to give the cabin a completely new look without affecting the rest of the aircraft infrastructure.

“New aircraft are delivered with ever improving lighting features,” says Rhian Bache, Product Manager at STG Aerospace. “As this becomes the norm, airlines want to achieve consistency across their fleet and keep up with cabin design trends.”

But she warns, OEMs are struggling to keep up with airline’s demands for new aircraft. “Airlines are resorting to retrofitting rather than waiting for deliveries,” Bache explains. This could be either through leasing aircraft and updating the interior to match the look and feel of their existing aircraft or modernising the cabins of older aircraft in their existing fleet.

Cobalt Aerospace is also seeing an uptick in cabin lighting retrofit requests, overseeing fleet re-fits on behalf of Electra Airways, WAMOS and BermudaAir so far this year, with more projects in the pipeline. But such interest is no overnight phenomenon.

“We have been seeing this for almost a decade now and it shows no sign of slowing down,” the company says. “However, if an airline is to remain a credible player in the market now, they absolutely need to be utilising an LED mood lighting system. There will soon come a time when white-only fluorescent systems are a relic of the past.”

BLAST FROM THE PAST

That time is nearly upon us, as in September 2023, the EU Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS), a directive banning the sale/supply/import of fluorescent bulbs in the region, came into effect.

In response, Jonas Balzar, Manager Business Development, Diehl Aviation (Strategic Business Segment Aircraft Systems – Cabin Systems) says the company is noticing that many fluorescent tube manufacturers are now halting their European production of such tubes, making spare parts less available and more expensive.

Cobalt too has seen an increase in airline enquiries for LED mood lighting, as “their alternative was to stockpile fluorescent tubes manufactured before the ban, but this comes with its own problems and simply kicks the issue further down the road.”

Airlines are also contacting STG Aerospace with concerns about the Directive, says Bache. “As the exemptions on EU directive



▲ LED lighting is more efficient and lighter than previous systems

“YOU WON’T SEE YELLOWING OF THE LIGHT AS THE UNITS AGE”

2011 EU/65 come to a close, airlines using fluorescent tube lighting may find disruptions in their supply chains. The use of mercury products is frowned upon, if not outright banned, and as such non-aircraft use of fluorescent is dwindling. As demand reduces aerospace may find that their supply chain is affected. We’re finding this is leading airlines to a move to LED lighting within retrofit projects.”

Bache continues: “Time is moving along. We originally started warning airlines about this project before AIX 2023; we’re now at the point where action is needed.”

HELPING HANDS

When navigating the waters of retrofit cabin lighting, airlines face multiple challenges. On the one hand, they want to change the appearance of their cabin with state-of-the-art coloured cabin lighting to improve the cabin and customer experience. On the other hand, they want operational reliability and efficiency, for example, when switching from old fluorescent tubes to LED technology, with additional cost savings.

Bache says STG can support this with fast, reliable delivery schedules. “We’re very experienced at large scale fleet conversions and understand the importance of keeping to delivery

schedules, risk-mitigating these by holding stock, and the comfort of knowing on-wing support is available for first install. We’ve also introduced standard light scenes so if an airline wants a fast turnaround, an off-the-shelf solution is available.”

Diehl supports its customers through all of the project phases based on their specific needs. “This means that we support our customers from the idea of changing their cabin with a new lighting technology to its integration with our many years of experience and technologies,” states Balzar. “For example, we can simulate the integration of lighting (units) into the cabin to give our customers a feel for their new cabin even before the first integration test.”

Balzar says Diehl retrofits cabin lighting with high-quality line fit solutions. “Because our products are developed in conjunction with the aircraft manufacturers, they are designed to match the look and feel of each aircraft cabin,” he says. “This means that a unit developed for an aircraft programme ensures a consistent look throughout the cabin and is fully integrated into the existing aircraft cabin, taking into account its surfaces and the cabin system.”

COLOUR ME LED

Each unit is also calibrated for brightness and colour at Diehl’s facility in Nuremberg. “This is where we operate our Light Verification Centre, one of the largest lighting laboratories in the aviation industry. Here, we create the looks and scenarios desired by our customers in ‘light definition workshops’ in one of our many full-size cabin mock-ups. The selected colours are integrated into the aircraft system as part of the project,” says Balzar.

All of STG’s light units are calibrated prior to leaving the firm. Each addressable segment of the light is tested three times to ensure it matches the base line. This means that the light output is perfectly matched with regards to both brightness and colour. Bache explains: “You really see the benefit of this when you look down the aisle of the aircraft; there’s no colour banding and you won’t see yellowing of the light as the units age.

“When we run colour workshops in our aircraft simulator, we encourage airlines to bring as many on-wing materials as possible. That could be seat antimacassars, inflight magazines and menus, carpet swatches, CMF (colour material finish) mood boards... a whole seat if an airline wanted! That way you can see how different colour tones affect ►



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1 Cobalt lighting on Electra aircraft 2 STG's 'Curve' flexlight

COMPARED TO SHORT-LIVED FLUORESCENT TUBES, LED LIGHTING CAN LAST 20 YEARS

the way these materials look. We use high CRI, architectural LEDs so we know that the colour will render well and look highly saturated under the lights. Red tones look vibrant and purples and browns with high red content look rich; you don't lose the depth of the colour," she says.

"We can also support first installs and tune the colours at this point. This means we can compensate for the combined effect of all the different cabin components together. Different surfaces reflect differently, so there are nuances in how the total effect looks. We can adjust the light scenes parameters at this point and then flow this into future kits."

Bache also explains that STG's light units are section addressable and also cover animated effects, such as Azores Airlines who timed the animation to audio output. For example, their Ocean Scene was paired with wave noises.

Cobalt says it gives its customers "a virtually unlimited choice of colours." A spokesperson explains: "We provide a demonstration kit and a colour configuration tool that they can use to select the right colours to work with their cabin interiors and their brands. They can also select the transition time between scenes to their specific

requirements. We have received feedback that it is much better than visiting a static colour clinic with an interior that is unlikely to reflect their own aircraft, and the fact it is done on their aircraft means they can include many more stakeholders in what is a very important decision."

Cobalt's Spectrum lighting system can be completely reprogrammed for any and all parameters of the scene definitions in a matter of seconds. Giving further details, the spokesperson says: "We combine this feature with our customer interface tool which allows our customers to experiment with lighting scenes under real-time control with things like colour wheels in complete safety knowing that nothing will be permanently changed by mistake.

"At any point when a customer has scenes they would like to embody (this could be during the initial selection process with a demo kit, or later in service following a rebranding for example) they simply provide the output of the customer interface tool to us by email and we provide them with a file complete with a certified minor change document for them to embody the changes under full control."

YOUNG AT HEART

Diehl also employs technologies such as anti-ageing algorithms and temperature corrections, run during operation to ensure a consistent look throughout the cabin for the entire life of the system.

Compared to fluorescent tubes, which need to be replaced every year, LED lighting can last 20 years depending on the operation of the aircraft. STG has a Mean Time Between Failures (MTBF) of 1.5 million hours whilst Cobalt Spectrum has a MTBF in excess of 750,000 hours, "slashing operational maintenance and spares-related costs."

Cobalt's Age Correction Technology continuously counteracts the effects of LED ageing to ensure that when a unit is replaced, the older units in the system still have the exact same colour match they had on day one, thus the new part is indistinguishable from the old.

"For each aircraft solution we develop we work hard to ensure that the colour wash is correct, and we optimise the lens design for this," the company says.

As Bach concedes, not all LED systems are of the same calibre. "We can't all be the Rolls-Royce option. Some LED systems yellow as they age. This is because they haven't been designed for good thermal dissipation, aren't calibrated, and they run their LEDs at a high operating current. Selecting high quality, architectural LEDs means you can guarantee that they are fit for purpose and will stand up to the flight hours required.

"Airlines need to consider not only moving to an LED system, but moving to the right system that has been designed for reliable, uniform light by balancing diffusion, LED pitch and quality LEDs." ●



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◀ Using a phone as well as the IFE screen is becoming more popular

However, this revolution in IFE has brought a range of challenges. Tsirangelos says that bandwidth and the price of connectivity for airlines are currently the most challenging topics.

LEO ROARS

In terms of bandwidth, he explains, LEO-based connectivity is providing part of the solution. Additionally, “better encoding formats and innovative broadcasting solutions could enhance passenger experience without negatively influencing the quality and the overall cost of service.”

In terms of the price challenge, Tsirangelos says the expanding availability of connectivity could offer a solution. The connected aircraft, he explains, “creates myriad opportunities to better monetise IFE with smart advertising solutions, better personalisation and interactive sponsorship arrangements that marry entertainment with commercial opportunities in a way that feels natural and adds to the passengers’ overall enjoyment.”

For example, he continues, Spafax has recently worked with British Airways to livestream the England versus Ireland match in the Guinness Six Nations Rugby tournament.

Andy Masson is VP at Panasonic Avionics, provider of in-flight connectivity and the Astrova IFE package. He says that customer demands today have been transformed by the experience of the pandemic, which fuelled passenger use of IFE and in-flight connectivity beyond anything the company expected.

“People got used to being at home and perpetually connected on multiple devices, watching multiple screens, etc,” he explains. “That’s what they expect today when they get onboard an aircraft. They want to be engaged and entertained, they want to be productive and to be connected.”

The industry is meeting these needs, he argues, but there are technical challenges that must be addressed to safeguard an airline’s reputation and net promoter score (NPS). “We’ve reached a point in in-flight connectivity where previous challenges, like the development of electronically steered antennas,



Passengers today have high demands for in-flight entertainment (IFE), with many expecting to connect their own devices to high-quality, seamless wi-fi. How are providers meeting these demands and overcoming the technological and business challenges they present?

Dimitrios Tsirangelos is vice president – business development, technology and innovation at Spafax, which delivers content technology and media assets for a range of airlines, including the Lufthansa Group, British Airways, Qatar Airways and more. He outlines a dynamic and varied IFE experience for passengers, including the integration of personal devices with IFE systems; the ability to access diverse forms of entertainment, from the traditional offerings of movies to live content, including sport; and new integration of wearable technology and Bluetooth accessories.

Many systems now support a ‘second screen’ experience, he adds, with the passenger’s device serving as an auxiliary to the seatback display. The introduction of LEO satellite constellations is transforming access to high-speed internet, while the latest IFE systems can synchronise with personal content or offer an array of interactive applications.

“The technology enabling these advances is rapidly evolving and, with it, the in-flight entertainment experience is moving from a passive consumption of content to a dynamic, interactive and personalised journey,” he says. “Passengers today expect not just variety but also the flexibility and quality of experience they are accustomed to on the ground, in the air.”



1

1 Passengers can simply scan the code to connect 2 AERQ menus are easy to navigate



2

“WE’VE RESEARCHED METHODS TO MITIGATE BLUETOOTH INTERFERENCE AND MINIMISE CROSS-CONNECTIONS BETWEEN SEATS”

are being addressed and will improve the airline and passenger experience.

A multi-orbit satellite network is the means to meet these demands, Masson argues. He says that Panasonic recently expanded its GEO network, leading to a 50 per cent increase in global capacity that ensures speeds of up to 75 Mbps per aircraft. He adds that the company is also pushing forward with the introduction of LEO services, including through work with its partner Eutelsat OneWeb.

“The integration of LEO services is ongoing with an expected launch in 2025. However, the low latency experiences it unlocks will be a game changer for in-flight connectivity. The combined result of our GEO and LEO networks will be a connected experience that delivers the consistency that passengers expect to stay connected, informed and productive when they fly.”

The use of Bluetooth in connectivity has expanded over the past decade, with Panasonic embedding it into its IFE systems from 2015. This was further accelerated by Apple’s 2016 decision to remove headphone jacks from iPhones and introduce AirPods, Masson notes.

However, deploying Bluetooth on a large scale in an aircraft presents its own set of hurdles, says Masson, principally interference, which is “exacerbated by the

dozens of overlapping connections within a confined space. Additionally, certain aircraft configurations impose constraints on available Bluetooth channels.”

To address this challenge, Masson says Panasonic has adopted an approach that optimises signal levels for each passenger’s personal space and re-uses channels effectively across the aircraft. “Simultaneously, we’ve researched methods to mitigate interference and minimise cross-connections between seats,” he adds.

Martin Orzechowski is business development manager at AERQ, provider of the Aerena IFE package. He says Bluetooth significantly enhances the in-flight experience, particularly in wireless audio entertainment and connectivity with personal devices. However, he warns there may be potential compatibility issues in future.

“Bluetooth technology undergoes frequent updates and releases of new versions, each introducing novel features that may not be compatible with devices utilising older Bluetooth versions,” he explains. “While efforts are made to maintain backward compatibility across versions, there is a possibility that compatibility issues may emerge over time, potentially affecting connectivity with seatback IFE systems.”

Henry Wong, senior manager – market development for Bluetooth Special Interest Group (SIG) says the organisation has seen more airlines offering IFE systems equipped with Bluetooth technology; deployments have expanded “beyond first class and throughout the cabin”, he explains.

MODERN BLUETOOTH

In particular, Wong says that airlines have shown an interest in Bluetooth LE Audio and its Auracast service, “a new Bluetooth capability that allows an audio transmitter, such as an IFE or an aircraft PA system, to broadcast to an unlimited number of passengers. This can help elevate the in-flight experience by enabling travel partners to watch and listen to the same IFE together, while also allowing passengers to receive cabin announcements directly into their Bluetooth headsets, earbuds, hearing aids or other personal listening devices.”

On a wider level, Orzechowski points to challenges and limitations for IFC in several areas, including bandwidth and latency constraints. Still, ongoing developments, notably the increasing integration of both LEO and GEO constellations, “hold promise for optimising network performance, increasing bandwidth and enhancing the passenger experience”. ►



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“ADVANCEMENTS IN CONNECTIVITY ARE SET TO TRANSFORM THE IN-FLIGHT ENTERTAINMENT LANDSCAPE”

There are also challenges on the business side, Orzechowski warns. “It remains uncertain how licensing agreements would function if aircraft were to serve as ‘edge caches’ for streaming services, enabling smooth streaming experiences even at 30,000 feet.” Overcoming these challenges will be crucial for a truly immersive and unrestricted IFE experience, he contends.

Job Heimerikx is CEO of AirFi, a provider of portable IFE, lightweight connectivity and digital onboard retailing solutions. He says the main barrier for smaller airlines is the cost of installing IFC, whether LEO or GEO. His company is working to address this through its AirFi LEO platform, which offers a low-bandwidth LEO connection and uses a window-mounted antenna instead of a radome to strip out costs.

Additionally, he notes that while unfettered broadband connectivity can allow passengers to use their own over-the-top (OTT) subscription services (such as streaming providers), the bandwidth required to do so is costly. On top of this, airlines could be concerned that they will lose a direct connection to consumers and the brand engagement

30K

It remains uncertain how licensing agreements would function if aircraft were to serve as ‘edge caches’ for streaming services, enabling smooth streaming experiences even at 30,000 feet

opportunities and advertising revenues that a captive audience can deliver.

A solution such as the AirFi LEO connectivity package could offer an attractive alternative, he argues; it may not support streaming or web surfing, but many passengers will value access to free messaging more than the paid ability to stream their own content. This also “leaves space for the airline’s own entertainment platform – and their own brand partnerships – to shine”.

Many IFE systems have yet to fully harness the latest advancements in IFC, says Orzechowski, but it is vital they do so to remain competitive against smartphones, tablets and laptops onboard.

He explains: “Currently, the ‘cutting edge’ in IFE is somewhat constrained, as the potential of in-flight connectivity often remains untapped by the IFE systems.” However, AERQ expects a shift in the landscape, with Aerena designed to enable various use cases to leverage connectivity, enhancing the passenger experience while driving ancillary revenue.

The future holds numerous possibilities for IFE, Orzechowski continues, from seamless streaming of direct-to-consumer services in 4K during flights to interactive experiences like multiplayer games and cloud gaming, or even AI-powered flight travel agents.

“These advancements in connectivity are set to transform the in-flight entertainment landscape, providing passengers with an unparalleled array of choices, interactivity, personalisation and convenience during their travels,” he concludes. ●

▲ AERQ’s Aerena system offers a wide range of digital content

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UNITED WE SIT

Mark Hacker, CTO at Unum and Chair of the UK Aircraft Seating Manufacturer's CAA Committee, talks to *Alex Preston* about why partnering with the UK's Civil Aviation Authority could prove mutually beneficial

When UK clocks chimed 11pm GMT on 31 December 2020, they weren't just announcing the final hour of that year but the beginning of a new era, as the time signalled the end of the UK membership of the European Union aviation system, and its respective aviation institutions, including the European Union Aviation Safety Agency (EASA).

As a result of Brexit, which was formally initiated at 11pm GMT on 31 January 2020, along with the UK government's decision not to seek continued EASA membership, the UK is now considered as a third country and no longer has the status of an 'EASA Member State'.

Consequently, the UK's Civil Aviation Authority (CAA) took on EASA responsibilities, including certification of aircraft design and production.

However, four years on, there remains concern over an apparent asymmetry in the current regulatory framework and design processes. Drawing attention to some of these fears, a new united voice has emerged, motivated about promoting the seating industry and collaborating with the CAA.

In late 2023, several major UK seat manufacturers (including Acro Aircraft Seating, Martin-Baker Aircraft Co Ltd, Mirus Aircraft Seating, Thompson Aero Seating Limited and Unum Aircraft Seating) joined forces to form the UK Aircraft Seating Manufacturer's CAA Committee (UKSMC).

"Following post-Brexit frustrations, the UKSMC was formed to align and advance the interests of the UK seating industry to ensure competitiveness and innovation for generations to come," explains Mark Hacker, Chief Technology Officer at Unum and Chair of the UKSMC.



“As a consortium, we bring together many years – decades, even – of collective experience and market knowledge,” he states. “This active insight means we can be a force for positive change within the UK aircraft seating sector and address the common challenges we face – such as certification delays and a slowing of innovation – as well as the opportunities we can seize. These opportunities include further cementing a sustainable mindset across the supply chain and advancing digital capabilities to enhance creativity and innovation within the industry.”

As Hacker explains, upon launch, the UKSMC has three core objectives: to ensure the global competitiveness of the UK aircraft seating industry; to support the CAA's growth, direction and policy setting in relation to seating; and to direct and prioritise CAA decisions, resources and policy making.

As part of this, the Committee currently lists the following three main challenges that UK seating manufacturers would like addressed.

EASA VALIDATION

“One of the key issues we are facing is around EASA validation of UK Technical Standard Order Authorisations (UKTSOA),” says Hacker.

UKTSOAs are equipment approvals issued by the CAA using CS-ETSO (Certification Specifications for European Technical Standard Order).

As described by Sofema Aviation Services, a Bulgarian-based provider of aviation training and consultancy services, equipment used in aircraft may be eligible for a stand-alone approval or ‘authorisation’. These authorisations do not constitute an approval to install on an aircraft, but credit may be claimed

from the equipment authorisation towards the showing of compliance with the aircraft Certification Specifications (CS) when certifying its installation.

The UKTSOA is granted in accordance with Part 21 Subpart O when the manufacturer (Applicant) can demonstrate to the CAA that the equipment meets a prescribed Minimum Operational Performance Specification (MOPS).

“UK suppliers will be required to apply for a UKTSO before the validation though EASA can begin,” notes Hacker. “This is putting UK suppliers at a disadvantage by increasing the overall time it takes to obtain an EASA-validated TSO and significantly increases the risk of EASA requesting further tests or a design change post-certification,” he warns. “If all EASA validations are to be treated as full technical validations to enable them to assess the decisions and the approach made, then it must be beneficial for all to perform this concurrently.”

Hacker says the Committee suggests a parallel and integrated process as per the Technical Implementation Procedures (TIP) as a solution. The associated TIP covers such areas as design approval, design related operational approval, production approval, airworthiness approval, environmental protection compliance and continuing airworthiness of the seating products in question.

“Benefiting all, this would improve alignment of the CAA to EASA standards, allow fair lead time to market and ultimately reducing EASA's workload, allowing it to focus on working with the CAA on any complex or controversial elements to the seat certification,” advocates Hawker.

CERTIFICATION STANDARDS

For UKSMC members to remain competitive as global businesses, the rapid adoption of harmonised certification standards is crucial, Hawker believes.

“Typically, the FAA leads the standards with respect to interiors and seating. Therefore, maintaining full alignment to both the FAA and EASA would be an absolute minimal requirement, together with the minimal legislation adoption timing delay.

“This is highlighted by the fact the adoption of TSO 127 rev. c. by EASA was over a year later (in 2022) than the FAA, and the CAA over a year later (2023) than EASA. This gave companies under FAA jurisdiction a three-year advantage over UK-based businesses, equal to a full development cycle,” he stresses.

UK CAA CAPACITY

“Since 2021, when the CAA assumed UK State of Design responsibilities, we have seen several highly experienced CAA staff retire. While we are encouraged to see that the CAA is recruiting and training new certification staff, it is not yet at a rate which prevents bottlenecks from occurring when issuing certificates,” Hacker asserts.



◀ Partnering with the CAA could help all concerned

“The message we are getting from various forums – such as the recent TSO Workshop and the SAE Seat Committee – is that the CAA is viewed as being under-resourced and inexperienced.

“These forums have regular attendance from both EASA and the FAA, and this message does not build confidence in the CAA’s reputation as an independent national airworthiness authority. For example, to date, EASA have been insisting on validating TSO approvals issued by the UK CAA. We fear this will not change until the CAA is properly resourced,” he warns.

The CAA says it supports the development of harmonised certification specifications (CS) and wishes to ensure that stakeholders can make use of new and updated CS without undue delay after they are published. In August 2003, the agency announced it wanted to implement an abridged adoption process that would not result in an additional round of consultation in the UK after other significant regulators have published a new or revised certification specification.

According to the CAA, expediting adoption would help to increase the competitiveness of UK businesses, while continuing to recognise the value of the internationally harmonised specifications.

This, they say, will enable British businesses to design and produce products, parts and articles that, when certified by the CAA, can be exported without the need for redesign to meet the specifications implemented in other major regulatory systems.

“THE MESSAGE FROM VARIOUS FORUMS IS THAT THE CAA IS VIEWED AS INEXPERIENCED AND UNDER-RESOURCED”

To this end, the agency held a four-week consultation period, the result of which strongly supported the proposed changes. “There is a clear view that expediting the adoption of EASA Certification Specifications is in the best interests of businesses in the UK,” the agency wrote on its website.

It noted the comments that seek to extend the scope of the policy to Special Conditions and to CS applicable outside the initial airworthiness domain. “We have decided not to include these additional areas in the scope of the new policy until we have gained some experience of implementing the new policy. Of the comments that did not fully support the proposal, we note the desire to increase the involvement of the CAA in the development of internationally harmonised standards. The CAA will endeavour to increase UK involvement as our design capability grows,” the organisation stated.

In reference to the aforementioned concerns, Hawker says the Committee has a number of immediate changes it would like to see and that the UKSMC members are more than happy to assist and support the CAA in any way it can.

“The CAA plays a vital role in regulating and supporting our industry. We believe that a partnership with the CAA would further our shared objectives and are welcoming any opportunity to work with the association on any projects or policies that are relevant to seating. We are open to any guidance or assistance the CAA can provide,” he says.

“We also want to support and work with existing industry bodies, suppliers and vendors. We believe that, by working together, we can greatly benefit our industry and the wider aerospace community.”

The UKSMC welcomes contribution from any UK seating manufacturer who would like to be involved in evoking growth and success for the industry. ●

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Cast a spell

Aviation Business News, the parent digital brand of *Aircraft Cabin Management*, has launched a regular podcast, ABNcast

Regular half hour episodes of ABNcast will be released on YouTube and Spotify featuring guest interviews and focusing on a range of important topics for aviation professionals.

ABNcast is being supported by launch partner Amadeus, the global aviation technology giant and leading developer of critical airline and airport operations, sales and distribution and payments technology solutions.

Lee Hayhurst, ABN editorial director, says: "Podcasts have become a hugely popular channel for media brands to engage with their audiences and, as we strive to expand our digital reach, we're delighted to launch ABNcast.

"As well as a host of expert aviation professionals, we'll be featuring our own in-house editors Greg Whitaker and Craig Waters to discuss and debate some of the key challenges and opportunities the aviation sector is facing.

"While the ABNcast studio is based in our north London headquarters, we'll also be taking it on the road to record episodes with key partners and contributors and at some of the big industry events that we attend.



1 Editors Greg Whitaker and Craig Walters **2** ABN editorial director Lee Hayhurst

“
our editors will discuss and debate challenges facing the aviation sector
”

AMADEUS

Hayhurst continues: "I'm delighted that Amadeus sees the value in ABNcast and has agreed to be our launch sponsor as we establish it as a must-listen for aviation sector professionals, and we'd welcome feedback and suggestions about what and who we should feature in future episodes."

Upcoming episodes will feature interviews with pioneering sustainable aviation fuels developer Avioxx and global online travel agent giant Trip.com Group. We'll also be talking to Remarkable Group experts about their airline digital maturity index, and Trigo Group's Emmanuel Marquis will discuss how the aviation industry can address its current supply chain issues.

As well as weekly ABNcast episodes, ABN's editorial team will record special

instalments at upcoming industry events like Farnborough International Airshow in July, the T2REngage conference in London in September and October's World Aviation Festival in Amsterdam.

ABNcast will also highlight other important ABN initiatives such as our Best Places To Work In Aviation awards which will honour employers who are rated highly by their staff for their dedication to developing skills and talent in the industry.

The podcast will also preview the Predictive Aircraft Maintenance (PAM) Conference which is being run by *Aircraft Cabin Management* sister title *MRO Management*, taking place on 13-14 November in Dublin. ●



How to listen

Type ABNcast into Spotify, or wherever you get your podcasts. Alternatively, you can watch on [youtube.com/@aviationbusinessnews](https://www.youtube.com/@aviationbusinessnews)



1

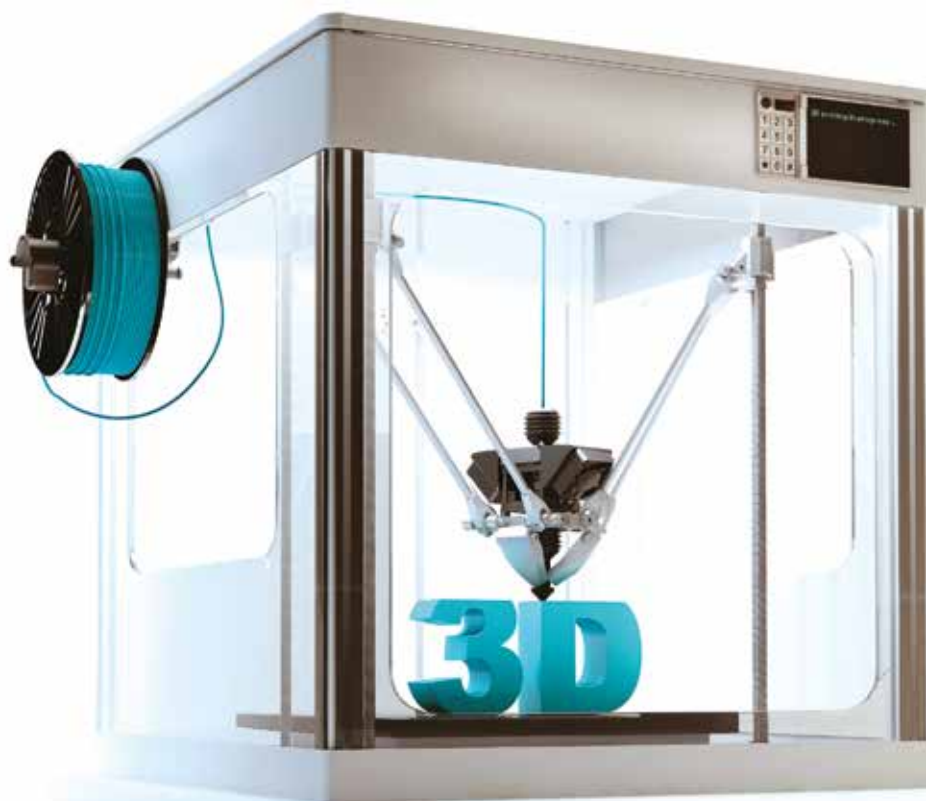


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Shaping the future

Most people have heard of 3D printing, also known as additive manufacturing, but what can it offer to the aircraft cabin maintenance business? *Bernie Baldwin* discovers some of the benefits from leading players

Whether you refer to it as 3D printing or additive manufacturing (AM), the technology to create a 3D shape, layer by layer, is on the increase, particularly in the aviation industry. And while the two terms refer to the same basic process, it is the latter which is becoming prevalent for items that require greater precision for industrial usage.

The production of aircraft parts generally involves high volume manufacturing, so replacing that requires a strong business case. In recent years, there has been much anxiety about the supply chain for spares, so AM is being seen as a solution to alleviate that concern.

THE BUSINESS CASE

Melissa Orme, vice president of Boeing Additive Manufacturing, agrees. “The business case for spares is different than for standard parts,” she says. “This is because there is an urgency surrounding the need for spares, especially in the military environment, and often the spares are for older platforms where the tooling may no longer exist, or the original supplier may no longer exist.

“The business case to create an expensive tool for a one-off spare part is non-existent. Hence, the ability to additively manufacture the spare part becomes very important, as it provides the ability to manufacture rapidly almost any spare part without legacy tools. Additionally, the ability to use

AM for low volume one-off tooling for out of production parts, to speed up the traditional fabrication process, is also an important business driver,” Orme elaborates.

“Currently, Boeing is creating a framework to address the rapid manufacture of spare parts through additive manufacturing,” she continues. “Non-safety critical parts have already been printed and provided in many instances. For safety critical parts, we are creating the engineering analysis and testing flow that responds to the urgent need to provide these parts while simultaneously addressing engineering requirements. Our first NAVAIR pathfinder for spares on the F/A-18 will be flight tested this year, and



◀ GKN Aerospace says that using additive manufacturing significantly cuts emissions, costs and lead time

this opens the door to subsequent spare parts, which are expected to be qualified in a faster timeframe, leveraging the pathfinder framework.”

EOS is a company specialising in industrial 3D printing technologies, which works with its customers ‘to innovate and differentiate through expert guidance, technology and services, leveraging its end-to-end additive manufacturing (AM) industry partnerships’. According to Thomas Friedberger, the company’s key account manager, Aerospace and Defence, the business case is driven by three core factors: producing spares at a lower cost than conventional methods; significantly reducing lead times for production and logistics; and a reduction of physical inventory in the long run.

“Locally printed aircraft spare parts, such as those for cabin interiors, can be produced 30-50 per cent cheaper than the cost of the OEM spare parts, with the added benefit that lead times for production and logistics

of usually 12 weeks or more can be shortened to two weeks or even just a few days,” Friedberger explains. “Another added value of industrial 3D printing technology is that the design of the parts can be improved to address known weaknesses or to enable part customisation.

“As one of few OEMs, EOS provides high quality technology and materials to deliver parts into regulated industries such as aviation. An incremental benefit of AM is that it enables on-demand manufacturing of required parts in a mixed parts batch, which significantly reduces stock-keeping. Again, this will lead to cost reductions.”

Friedberger adds: “Companies have two options, either to source parts from certified service providers – such as our joint venture, the Aviation AM Centre (AAMC) – or to build up their own MRO production hub. The capability to offer in-house manufactured spare parts is a strong USP and customer retention tool for aircraft maintenance service providers.

In this case, EOS can offer a whole end-to-end solution to operate a production hub. And with AAMC, we can help customers comply with regulatory norms.

“Industrial 3D printed spare parts are certified and in service already, so the question is more when AM will fully scale to series production. Geopolitical crises and supply chain resilience are already driving adoption faster than we anticipated.”

Sébastien Aknouche is responsible for material solutions at GKN Aerospace, a company with wide-ranging AM expertise, and particularly strong in using the technology to manufacture aircraft engine components. He too, offers the business case for AM, believing that in the short term, the AM processes with the most important transformation factors are probably led by the lead time of demand-design-make-deliver.

“It is probably down to 5 per cent, maybe even less, of the traditional approach for a new demand,” Aknouche remarks. “This is because there are fewer steps in the process than the traditional manufacturing of aircraft parts. Through AM, the lead times for industrialised production are just a fraction of traditional production’s lead times, where any change in demand may take more than two years to meet.

“AM allows for rapid changes in demand and a much more flexible supply situation,” he continues. “This will allow for much smaller inventory and unlock a huge amount of cash currently tied up in inventory. The process also allows for less cost to the customer through higher flexibility of supply and higher security of supply.

“Finally, AM allows us to utilise the already limited global availability of super alloys significantly more efficiently. We may produce 2-10 times as many engines with the same amount of metal. This again reduces the amount of waste material.” ▶

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“POLYMER AM ENABLES SUSTAINABLE SPARE PART PRODUCTION AND HELPS LOWER MANUFACTURERS’ OVERALL CARBON FOOTPRINT”

SUITABLE COMPONENTS AND PROCESSES

While many parts and components can be produced with AM, in these still early stages of its use, there are certain products that are leading candidates to be made this way for spares. “The applications revealing the greatest impact of AM in aerospace are primarily complex, lightweight components such as engine components,” Aknouche contends. “These parts benefit from the design freedom offered by AM, resulting in improved performance, fuel efficiency and reduced environmental impact. Moreover, the ability to consolidate multiple components into a single, intricately designed AM part also contributes to overall weight reduction.”

Boeing’s Orme says candidate parts for AM production are wide-ranging. “Any component that is difficult to procure due to obsolescence issues, that can be printed to requirements in one of the qualified material systems, and

that fits in a qualified printer platform, is an excellent candidate for additive manufacturing,” she declares. “That said, simple parts such as brackets, clips and knobs can be readily machined instead if machining capability is available at the point of need. More complex parts are ideal for additive manufacturing.”

For Stephan Keil, managing director of The Aviation AM Centre (AAMC), cabin interior parts are the primary candidates for on-site printing. “Certification of this parts category mainly revolves around flammability testing, which our EOS material PA 2241 FR fulfils for the targeted part sizes that are suitable for printing on EOS systems,” he explains. “We also see parts from the flight deck and cargo areas as well as the electronic equipment bay are a perfect fit for our customers. Recently, we also saw that certain aluminium parts can now be additively manufactured using our EOS HT-23 material for applications in the fuel pump systems and others, again bringing weight reduction.”

Like welding, the term additive manufacturing covers a range of processes, many of which suit the creation of certain component types better than others. “Selective laser sintering (SLS), for example, suits cabin interior parts that are visible to the passenger and have high requirements regarding surface quality,” Keil says. “They can be spray-painted or colour-dyed in combination with mechanical or chemical surfacing. Currently, SLS parts are the most cost-effective industrial 3D printing solution for aviation.

“Another process, fused deposition modelling (FDM) with high temperature materials, is suitable for large parts that

are invisible to the passenger and do not need to be finished with high surface requirements (air ducting, for example),” adds Keil.

The wide range of technologies under the AM banner is also recognised at Boeing. Orme picks out some of the key processes. “For polymer printing of tubes, ducts, covers and similar items there are several options: liquid based technologies such as stereolithography and digital light processing; powder-based technologies such as selective laser sintering and binder jetting; and filament-based technologies such as fused filament fabrication. The decision of which technology to use resides in the application, material system available, material properties required and surface finish.”

Orme continues: “For metallic components, such as heat exchangers, manifolds, waveguides and other items, the possibilities include: either laser or electron beam powder bed fusion technologies, which are the most prevalent in industry currently; directed energy deposition technologies of either powder or wire source material; wire extrusion; and liquid metal jetting.

“The choice of technology is often governed by the size of the end component,” Orme explains. “Directed energy deposition is useful for larger components with a trade-off of part resolution necessitating more machining than other 3D printing technologies, while powder bed fusion is the choice for components less than approximately 24 inches depending on the printer platform (and newer platforms are extending this size limitation), because the surface finish is better and requires less machining.” ►



▲ A Boeing 787 manifold

According to Aknouche, GKN Aerospace employs additive fabrication, which involves layer-by-layer construction using metal wire or powder fused together with lasers. “Large-scale laser metal deposition with wire (LMD-w) enables the production of complex and lightweight structures,” he comments. “These structures optimise the overall performance of aircraft components, contributing significantly to weight reduction, fuel efficiency and, as noted, the ability to create intricate geometries that were previously challenging with traditional manufacturing methods.”

As the aviation industry moves forward, every new procedure and process will be scrutinised for their improved environmental benefits. The use of AM is no different.

“Overall, the AM process fully implemented will bring lower costs to the customer, higher margins for the suppliers, improved utilisation of global resources and much less negative impact on the environment,” Aknouche says. “For example, improved buy-to-fly ratio (the weight ratio between a substrate and a completed part) will enable us to utilise available metal even more efficiently with even less waste.”

ENVIRONMENTAL ISSUES

EOS's Friedberger believes that 3D printed products inherently provide added value when it comes to responsible manufacturing. “Lightweight designs help to reduce carbon emissions and functional integration, and product designs solve complex manufacturing challenges while minimising waste,” he remarks.

“Lightweight AM parts incorporated into an aircraft reduce the aircraft's weight, thereby decreasing not only the fuel consumption and thus the operating costs, but also the CO₂ footprint of each passenger on board. EOS's 3D printing technology actively supports making the aviation industry more sustainable.

“Polymer AM enables sustainable spare part production and helps lower manufacturers' overall carbon footprint.



Boeing has conducted lifecycle assessments in which a 35% reduction in carbon emissions is estimated for an AM component over a traditionally fabricated ('hog-out') of the same component

By avoiding the unnecessary creation of excess spare parts, industrial polymer 3D printing also helps streamline the supply chain, cutting down on production expenses and accelerating time to market,” Friedberger continues. “Establishing a digital and sustainable spare parts management operation can increase profitability, as AM eliminates transportation costs and avoids overproduction.

“EOS goes beyond this. Tools such as the EOS Carbon Calculator create transparency and help customers identify the right levers along the entire production workflow. Adding to this, EOS has climate-friendly raw material production, which further helps reduce our customers' own greenhouse gas (GHG) emissions and lets them achieve their climate targets,” Friedberger emphasises.

Boeing's Orme notes that AM often uses significantly less material than most other manufacturing technologies. “Because of this, there can be a significant benefit to the environment over the reduction in mining the raw materials, converting them into ‘printable’ materials, and transporting the raw ‘printable’ materials to the point of use,” she states.

“Additionally, less machining is required so less energy and hazardous materials are consumed, and there are fewer carbon emissions during the machining steps. Boeing has conducted lifecycle assessments in which a 35 per cent reduction in carbon emissions is estimated for an AM component over a traditionally fabricated ('hog-out') of the same component.

“The aerospace and defence industries have the additional sustainability lever in that AM enables the ability to remove weight through novel design. The installed component will therefore be lighter, resulting in lower carbon emissions from the aircraft during service. In fact, a lifecycle assessment conducted at Boeing to demonstrate this assertion illustrated that reducing the weight through additive manufacturing designs of 0.25lb on one part, resulted in a 19 per cent decrease in carbon dioxide emissions over the life of the aircraft,” Orme reports.

AM might involve a layering process, but it seems the final part adds up to more than the sum of the layers. ●

▲ By employing additive technology, GKN Aerospace is able to minimise raw material waste, energy use and shipping within production

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HARD WEAR FOR HARD WORK

1

Uniforms have to meet a lot of requirements, but fortunately modern materials mean durable and comfortable workwear

Airline uniforms the world over vary in colour and style, but what they have in common is that they need to represent the airline's corporate brand and, just as importantly, they need to be very hardwearing.

In common with other professional uniforms, any airline garment needs to be worn for thousands of shifts while repeating the same tasks over again.

So, smart and hardwearing have always been the main requirements for any new outfit. However, in recent times a new element has entered the chat, namely that of sustainability.

Garment manufacturers must often account for how damaging to the environment the items are to produce, as well as considering how they might be reused or recycled when they are taken out of use.

One of the airlines touting environmental improvements is British Airways, which says that 'sustainability and quality' have been front and centre throughout the uniform design process.

The carrier states that more than 90 per cent of its fabric is created from blends of recycled polyester. As part of a commitment to work with sustainable suppliers, BA only works with manufacturers that are members of the 'Better Cotton' initiative, the



1 Brussels Airlines is one of the many airlines aiming to make uniforms more sustainable

2 Thai Airways' uniforms are weaved with thread that includes recycled materials

sustainability initiative for cotton, whose role is to help cotton communities thrive, while protecting the environment.

Sean Doyle, British Airways' chairman and CEO, says: "Our uniform is an iconic representation of our brand, something that will carry us into our future, representing the very best of modern Britain and helping us deliver a great British original service for our customers. From the very start this has been about our people. We wanted to create a uniform collection that our people are proud to wear; with the help of more than 1,500 colleagues, we are confident that we have delivered this."

NEW AND OLD

Thai has taken the impact of producing new material one step further by reusing some elements of its new cabin uniforms. The Thai Ruan Ton, Thailand's graceful national dress which has been worn by Thai flight attendants for over 60 years, is now weaved with synthetic thread made of recycled materials and

Thai silk. The new uniform offers both aesthetic and utility purposes as it is easier to care for and more flexible in wearing, while also passing the various safety standards.

"During the past two decades, one of Thai's priorities in operations is environmental impact, especially in greenhouse gases emission reduction initiatives such as in-office resources reduction and upcycling to enhance the circular economy, sustainable development and the net zero emission goal in 2050," reads a statement from the airline, adding that the new garb is just a small part of its environmental plan known as 'From Purple to Purpose'.

Korean Air is another airline that is keen to talk about the green credentials of its uniforms. The carrier has recently introduced a new look for ground crews, and the resulting clothing has been constructed from various certified sources. For example, the line-up's winter jacket is made from a textile called Sympatex which is known for its thermal insulation, waterproof and windproof properties. The material has received both Bluesign and OEKO-TEX Standard 100 certification, two of Europe's environmental certification labels for textiles. The eco-friendly fabric can be either recycled or naturally decomposed without emitting any toxic substances into the ground.

Reuse and recycling of old uniforms is also important although it is difficult to ascertain exactly what the airlines do with end-of-life garments.

One airline that has made a statement on the matter is Finnair, which collects worn-out items and recycles them via Finnish uniform supplier Image Wear. It, in turn, sends some of the garments to upcycling company Globe Hope, which utilises them for new products, such as making bags out of jackets. However, the market for such products is finite, and cannot really represent a way of disposing of garments at scale.

Another idea put forward by Image Wear is to shred the textiles and combine them with recycled plastic particles to create a composite material. This versatile material can be moulded into various outdoor items such as pots, tables and benches. These products are specifically designed for outdoor use, offering durability and sustainability. "Composite products are durable – their estimated lifespan is around 50 years and, at the end of their lifecycle,

**"BA ONLY WORKS WITH
MANUFACTURERS THAT ARE
MEMBERS OF THE 'BETTER
COTTON' INITIATIVE"**



1

“EMPLOYEE FEEDBACK WAS CRITICAL IN DESIGNING THE NEW UNIFORMS TO ENSURE PRACTICALITY”

they can still be recycled into new products. In this way, worn-out work clothes do not end up as waste, but continue their life in a new form,” says Kati Tukiainen, Image Wear’s responsibility manager.

HARDWEARING

There’s no point in making a uniform that looks good if it isn’t also comfortable enough to be worn all day and durable enough to last for countless thousands of hours without needing to be replaced. It goes without saying that it needs to be practical for the job in hand as well.

To this end, airlines have invested considerable sums in designing and buying clothing that can do all this. Returning to Finnair, it has recently redesigned its shoes for ground and air crews. Unusually for aviation, it is a training shoe style, rather than the classic leather shoe more commonly seen.

The airline collaborated with Finnish footwear and apparel brand Karhu to design a unisex shoe for cabin and ground crews: the Finnair Mestari Control sneaker. The shoe combines black synthetic-suede uppers with dark-blue detailing in a look that the airline says is designed to complement the Nordic-inspired design of Finnair’s uniforms.

“A few years ago we changed our guidelines so that cabin crew could wear black sneakers without any



2

visible branding,” says Finnair brand development manager Lotta Prinssi.

Improvements to uniforms are often made after getting feedback from crew members. During its recent uniform redesign, BA tested out the new garments with its colleagues. During the trials they gave feedback on the practicability of the garments, resulting in amendments ahead of the rollout. For example, engineers requested easy access tool pockets for when they’re working on aircraft, while ground handlers asked for touch-screen technology fabric in their gloves so they could use their devices in cold climates without having to take them off.

British Airways’ cabin crew Emma Carey, one of the team who carried out trials of the uniform, comments: “It was great to see that adjustments were made after our feedback. The pockets on the apron, for example, were widened after the trial so we had more room for everything we need during meal services on board.”

Korean Air’s new uniforms also prioritise safety and functionality. Specialised fabrics mitigate risks of electrical accidents, and the new design allows for the insertion of knee pads for extra protection when needed. Summer uniforms feature mesh patches behind the knees for breathability, and reflective tape enhances visibility in dim environments. Uniforms ranging from t-shirts and vests to windbreakers and heavy jackets have been developed taking into consideration different tasks and seasons to allow employees to choose an attire suitable for specific environments.

A spokesperson for the airline states: “The new uniforms mark the first uniform overhaul for maintenance, aerospace, cargo and ground handling teams in 38 years. Employee feedback was critical in designing the new uniforms to ensure practicality.”

Public perception of airline staff goes a long way towards them forming an opinion of the airline, but they are unlikely to give a second thought to the uniform itself. This is a pity, as corporate wear is another area in aviation where a great deal of time, effort and investment is made to provide the best possible result. ●

1 BA has worked with sustainable suppliers for its new uniform 2 Comfy shoes are essential for all airline staff members

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16% YOY RISE FOR EUROPEAN AVIATION'S CO₂ EMISSIONS

➤ For all the talk of SAF, efficiency and environmental policy, CO₂ emission for European aviation actually increased by 16 per cent in 2023, according to new data.

Tourism intelligence company Mabrian has shared the results of a study on the impact of aviation on the carbon footprint and tourism sustainability of European destinations in 2023, during its participation in a virtual session organised by UN Tourism and the European Travel Commission (ETC) on measuring the carbon footprint of the tourism sector.

According to the study, in 2023, the aviation sector generated approximately 172 million tons of CO₂ in Europe, equivalent to 4% of the total CO₂ generated on the continent, according to the European Union's estimates.

To offset this carbon footprint, an estimated seven billion trees per year are needed, which represents 11 per cent of the total forest mass in Europe, according to the European Union's estimates and the Encon consultancy report.

There is a significant variation in emissions generated compared to 2022,

increasing by 16 per cent overall. This is especially notable in some countries such as the United Kingdom which saw an increase of 24.20 per cent, followed by Italy with an increase of 22.69 per cent, and France with an increase of 15.93 per cent.

Carlos Cendra Cruz, a director at Mabrian, said: "This analysis does not intend to point fingers at the aviation industry, but rather aims to raise awareness among tourist destinations of the need to measure the impact their visitors have on the environment"

"We propose using cross-indicators, such as the relationship between carbon footprint and visitor-generated income in the destination's local economy, which allow for better measurement of the impact from a balanced perspective."



This analysis does not intend to point fingers at the aviation industry



Uniforms

Better materials for Korean Air uniforms

● Korean Air is rolling out new, more eco-friendly uniforms for its maintenance, aerospace, cargo and ground handling employees.

The airline says the new uniforms prioritise safety and functionality, with specialised fabrics being chosen to mitigate risks of electrical accidents and the insertion of knee pads for extra protection.

The uniforms were developed according to the nature of the diverse tasks of the airline's teams, with employee feedback playing a critical role in their designs to ensure practicality.

Summer uniforms feature mesh patches behind the knees for breathability, and reflective tape enhances visibility in dim environments. Additionally, the materials have been environmentally certified.

The airline says the new uniforms mark the first uniform overhaul for these teams in 38 years.

This initiative follows successful safety footwear upgrades for staff navigating airports, hangars and cargo terminals last year. ▶



Facilities

Airbus 'Lifecycle Services Centre' opens in Chengdu

> A new Lifecycle Services Centre (ALSC) has been founded by Airbus and has begun operations in Chengdu, China.

The centre offers a full range of activities – from aircraft parking and storage to maintenance, upgrades, conversions, dismantling and recycling services for various aircraft types. It also covers the controlled distribution of used parts from dismantling.

Certified by both the European Union Aviation Safety Agency (EASA) and the Civil Aviation Administration of China (CAAC), the centre covers a surface area of 717,000 sqm and has a storage capacity of 125 aircraft.

Airbus says the ALSC will ramp up operations between now and 2025, employing up to 150 employees.

Cristina Aguilar, Airbus senior vice president of customer services, said: "The Airbus Lifecycle Services Centre echoes our purpose to pioneer sustainable aerospace."



The Lifecycle Services Centre echoes our purpose to pioneer sustainable aerospace



Net Zero

Maastricht Aachen Airport awarded Airport Carbon Accreditation Level 3

> Maastricht Aachen Airport has been awarded Airport Carbon Accreditation Level 3 (ACA L3).

It means the airport is now designated as an Upgrade to Level 3 – Optimisation.

The accreditation puts the airport in the top 10 per cent of globally accredited cargo airports that have earned at least Level 3 accreditation.

The ACA was launched in 2009 by the Airports Council International Europe as part of its commitment to reduce carbon emissions from aviation with the ultimate goal of making airports carbon neutral.

Founded in 1945, MST is located in the province of Limburg and is often used for the handling of dangerous goods. Conversely, it is also a main import station for flowers.



BRIEFS

● Air France KLM Martinair Cargo and the Global Transport Solutions Group have announced an extension of their collaboration on a combined SAF programme. By aligning efforts, the companies hope to 'set a precedent' for others in the industry to follow in regards to the uptake of SAF.

● Tests on a V2500 engine with 100 per cent sustainable aviation fuel (SAF) have been successfully carried out by IAE International Aero Engines AG (IAE) at the MTU Maintenance Hannover facility. Kim Kinsley, president of IAE AG, said: "This test with 100 per cent SAF demonstrates that V2500 engines can continue contributing towards making aviation more sustainable in the decades ahead."

● The International Air Transport Association (IATA), alongside four other bodies, has published the Aviation Net Zero CO₂ Transition Pathways Comparative Review. This is the first publication to compare 14 different net zero CO₂ transition roadmaps. It aims to provide a "one-stop shop" for airlines, policymakers and aviation stakeholders to understand the key similarities and differences between the various documents, and their visions for achieving net zero carbon emissions for aviation by 2050. ►



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FS 633032



SAF News

WIZZ SETS SAF GOAL OF “10% BY 2030”

Wizz Air has announced it intends to power 10 per cent of its air miles with sustainable aviation fuel (SAF) by 2030, although it has urged wider industry action to make this goal possible.

The airline's corporate and ESG officer Yvonne Moynihan made the announcement at an event held by Firefly, one of its SAF production partners (See page 74).

To hit the new target, the airline is also calling for wider industry action to boost SAF production, urging policymakers to address current barriers to SAF deployment at scale.

Moynihan said: “Wizz Air celebrates two decades of transformation this year, transitioning from a small airline into a global leader of sustainable aviation and affordable travel.

“Alongside fleet renewal and operational efficiency, sustainable aviation fuel plays a crucial role in reducing carbon emissions from aviation. Our investment in Firefly, which has the potential to reduce our lifecycle emissions by 100,000 tonnes CO₂-eq

per year, underscores our commitment to mainstream the use of SAF in our operations by 2030.

“However, achieving our aspiration requires a significant ramp-up of SAF production and deployment. Therefore, we call on policymakers to address barriers to SAF deployment at scale by incentivising production, providing price support and embracing additional sustainable feedstocks for biofuel production.”

Wizz Air has often made the claim that it is the ‘greenest’ airline due to its high load factors and fleet of A220-family aircraft. In 2023, Wizz Air achieved its record low annual average CO₂ intensity result, which amounted to 51.5 grams per passenger/km, a 6.8 per cent reduction year-on-year.



We call on policymakers to address barriers to SAF deployment



SAF News

Ryanair buys 1,000 tonnes of SAF

Ryanair has bought 1,000 tonnes of SAF from Shell. This purchase follows the MoU agreement made between the companies in 2022, providing the budget carrier with access to purchase up to 360,000 tonnes of SAF from Shell between 2025 and 2030.

Speaking at Stansted Airport, Ryanair's director of sustainability and finance Thomas Fowler said: “As demonstrated today at Stansted, by using SAF, the latest engine technologies and electric ground handling equipment, we are making significant investments to decarbonise our operations and achieve our commitments of net zero carbon emissions by 2050 and 25 per cent less CO₂ emissions per passenger/km by 2031.”

Ashleigh McDougall, Shell's GM Aviation Europe and South Africa, said: “Shell is delighted to have started supplying sustainable aviation fuel to Ryanair at Stansted Airport, helping a valued customer reduce emissions on flights from a crucial UK transport hub. Having signed a Memorandum of Understanding to supply SAF to Ryanair in 2022, we're pleased to see intentions converted into actions as we continue to support our customers on their decarbonisation journeys.” ▶



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Sewage into SAF: Can it be done at scale?

Alchemists spent centuries trying to turn lead into gold. Can modern chemists turn something even less valuable into fuel?

Can you really turn sewage, surely the most renewable feedstock, into refined jet fuel? UK-based SAF start-up Firefly Green Fuels believes it to be possible at scale, and as such has announced the signing of several MOUs with industrial partners that will progress its plan to turn raw human waste into SAF.

At a conference in London, the company revealed that it had formed an agreement to produce the fuel at the Haltermann Carless refinery in Harwich, on the east coast of England. Additionally, it has signed deals with energy services company Petrofac and oil major Chevron Lummus Global (CLG). CLG will provide refinery infrastructure, designed to optimise efficiency and flexibility with the minimum of emissions.

The plan is to use the Harwich facility to produce the new SAF at a modest scale while the relevant approvals are being sought, but in time to expand into a much larger refinery once the technology has been proven and further investment has been raised.

A further agreement has been reached with utility company Anglian Water which has committed to provide Firefly with the waste that will be used as feedstock for the planned pilot facility.

“THESE AGREEMENTS MARK A SIGNIFICANT LEAP FORWARD IN OUR AMBITIONS TO DEVELOP A SUSTAINABLE UK SAF INDUSTRY



Holtermann Carless

▲ Harwich refinery aims to turn brown waste into black gold

Separately, Wizz Air announced in late 2023 that it was to invest £5m into Firefly, with the intention to buy up to 525,000 tonnes of its fuel over a 15-year period.

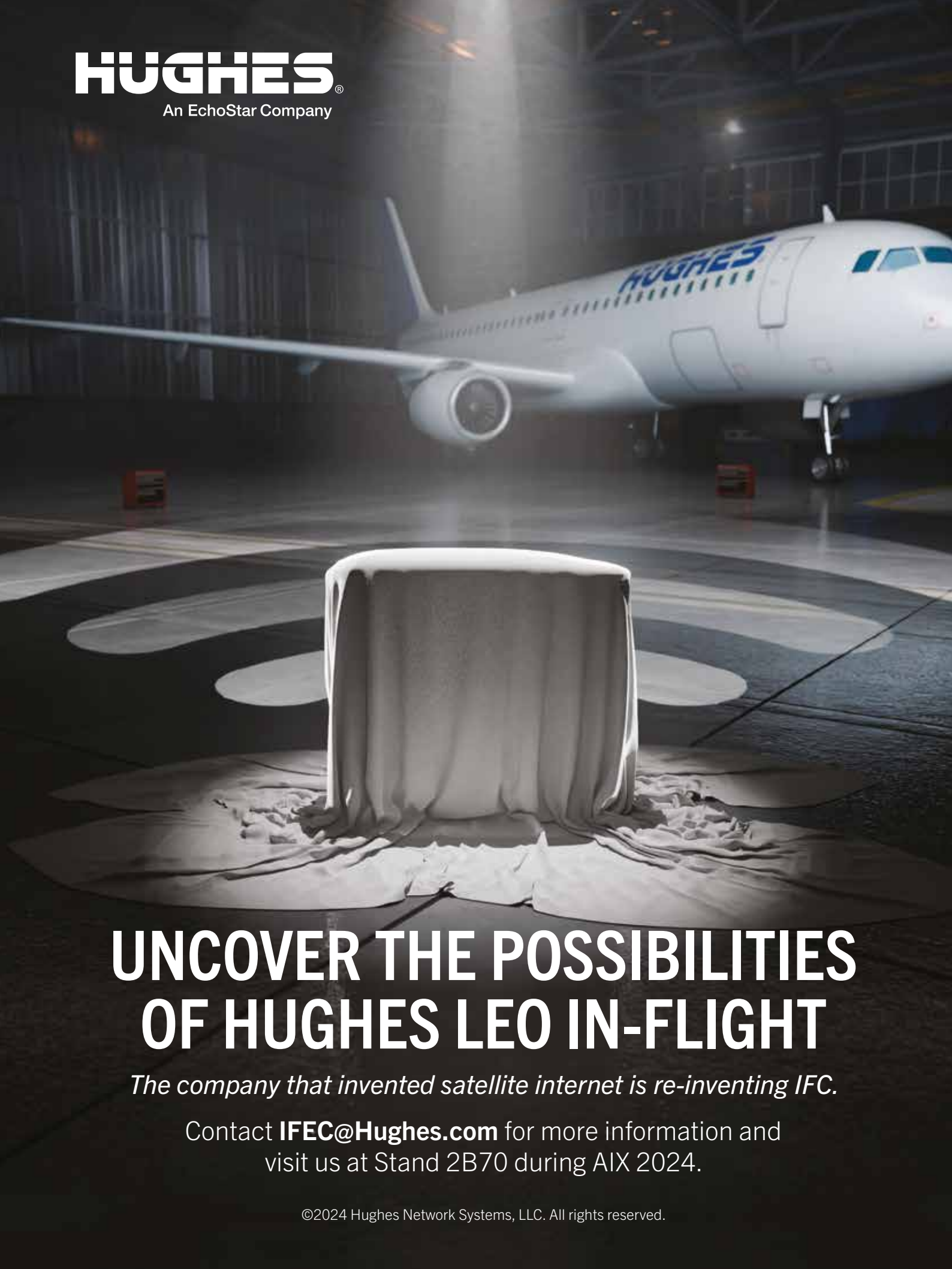
“The signing of these agreements marks a significant leap forward in realising our ambitions to develop a sustainable SAF industry here in the UK,” remarked James Hygate, Firefly’s CEO. “Opening up this new sewage pathway will bring new jobs and growth to the UK, helping us to secure a greener and more prosperous future.”

He added that commercial production at Harwich was likely to begin in 2028 or 2029.

If the company succeeds in producing this novel fuel at a significant scale, there should be no shortage of demand in Europe. Airports across the continent find it difficult to buy enough SAF to meet demands from airlines, which are under pressure both from lawmakers and the travelling public to find ways of reducing carbon emissions.

The UK government has a target for airlines to use 10 per cent SAF by 2030, a goal that most expect to be missed due to a lack of commercial availability of the fuel. It has also stated an ambition to get “at least five” commercial scale refinery plants under construction by 2025.

The obvious question is, if gasification was easy or cost-effective, surely the oil majors would be doing it already? Firefly says it has technology that will overcome both obstacles. ●

A large white commercial aircraft with "HUGHES" written on its side is parked in a dark hangar. A bright spotlight from above illuminates a white, draped pedestal in the foreground, which sits on a circular pattern on the floor. The aircraft is in the background, slightly out of focus.

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