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Aircraft

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VOLUME 13 • ISSUE 03 • JUNE/JULY 2024

CABIN

Perfecting the passenger experience

Management



SOUND ADVICE

Noise cancellation doesn't always need headphones

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Find out what the world's biggest cabin expo had in store

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Coloured paint doesn't have to be uniform

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Contrails are a non-CO₂ pollutant, but technology has an answer

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RECHARGING MY SOCIAL BATTERY

Recently, I was sent a press release with the slightly pompous headline: 'Enhanced Experiences May Be the Solution to the Declining Popularity of Duty Free'. The gist of the story is that airports need to remodel themselves for a new generation of passengers for whom the idea of picking up 1,000 Marlboros or a case of strong liquor for friends and colleagues seems unethical and unattractive.

The solution to convincing holidaymakers to part with their cash before their vacation has even got underway is to provide millennials with something referred to as a 'VIP Retail Experience' in the terminal which results in 'Instagram-able moments', and this is something that they apparently desire.

Respectfully, I disagree. As a grumpy old 40-something I might be a little out of touch with what younger travellers want, but I don't think I'm that far off. I'm not going to bore you with the details, but recently I was stuck at Heathrow Terminal 2 for an entire day and I can confidently tell you that there is not a single thing in there that I found even slightly desirable. Sure, there was an outlet for Burberry, one for Gucci and a Harrods concession that sold nothing but watches, but all I wanted was a place to sit, charge my devices and do some work – a privilege I'd gladly pay for.

I couldn't go to the airline lounge as, although I had a membership card, the room was permanently full and had an arcane queuing system designed to keep



LHR T2 (Adobe Stock)

people out. In any case, they only let you stay for a maximum of two hours and I know from experience the lounge is a windowless, joyless box in that terminal.

Instead, I sat on the public seats in the main area, where I discovered that not a single plug socket or USB outlet built into the seats worked. They had likely worn out years ago and simply been switched off.

So, I ended up spending about 10 hours leaning against a column and plugged into an outlet intended for a vacuum cleaner, while ruminating on how modern airports just can't seem to get the basics of the passenger experience right. Hardly a good look, but perhaps I should have shared this reality on Instagram.

Greg Whitaker

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de·risk

/dē'risk/

verb

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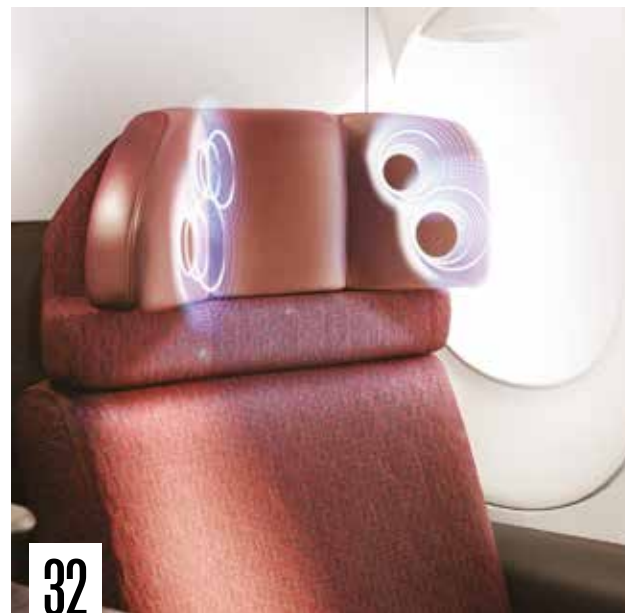
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NEWS FROM ACROSS THE INDUSTRY

Business Briefing



IFE & Connectivity

ROSEN AVIATION LAUNCHES JOINT VENTURE

> Inflight technology provider Rosen Aviation and content providers Touch, castLabs and 101media are to collaborate on a joint project.

This partnership focuses on developing a new type of modular IFE platform that uses modern technologies and integration to meet the needs of modern airlines and passengers.

The collaboration has several different elements. For one, Rosen Aviation and castLabs are enabling a web-based platform powered by castLabs' media player, known as PRESTOplay. This will deliver content playback in HDR quality on Rosen's screens. This collaboration ensures compatibility with any browser-based entertainment system, delivering a seamless experience whether content is streamed from within the aircraft or via connectivity from the ground.

Meanwhile, 101media is developing an IFE experience that does not rely on connectivity, but rather will integrate its standalone entertainment system onto Rosen's compute platform. This integration allows for consistent

content delivery and quick updates through Above, a content supply chain platform owned by Touch and castLabs, whenever connectivity is available. This approach eliminates the need for maintaining separate systems, streamlining operations and enhancing passenger satisfaction.

Touch will fully integrate its Touch Media Center (TMC) system into the collaboration, providing flexible licensing terms to operators. This integration enables airlines to update content with the push of a button. Additionally, collaboration with edge caching providers will allow the implementation of media caching on onboard servers. This technology optimises bandwidth usage ensuring smooth playback even during high-demand periods.

“This partnership focuses on developing a new type of modular IFE platform



Revenue

United to serve up individually targeted adverts

United Airlines has launched 'Kinective Media', a system that serves up advertising and content to IFE screens and the airline's app based on insights gleaned from individual passenger travel behaviours.

The platform will allow marketers to increase their reach on channels including United's mobile app and inflight entertainment screens. In addition, the airline expects its MileagePlus members will receive added value through personalised and real-time offers that drive loyalty.

Advertisers cannot access any personally identifiable information – instead, the system uses insights of US customers aged 18 and over to create aggregated and anonymised audience segments that it offers to advertisers. Customers can opt out of the targeted advertising at any time.

At launch, the Kinective Media team is working with brands that include Norwegian Cruise Line and IHG Hotels & Resorts.



Passenger Experience INNOVATION TAKES CENTRE STAGE AT PEX

> At the Passenger Experience Conference in Hamburg, industry leaders gathered on stage to explore how airlines innovate to improve the customer experience.

The panel discussion highlighted lessons from the pandemic and explored strategies to enhance in-cabin experiences while still maintaining profitability.

Jo Hirayasu, product marketing manager from Japanese low-cost airline Zipair Tokyo, emphasised the necessity of continuous innovation. "We must always innovate the cabin experience," he said. "It is key to our future growth and will enable us to stand out from the crowd."

Melanie Berry, director of customer experience at Iberia, shared her insights on the digital transformation of in-flight entertainment (IFE). "At Iberia, we are 95 per cent connected. The future will continue to be digital-focused for our passengers."

Berry expressed both enthusiasm and the challenges faced in implementing new technologies. "Innovations in IFE such as screen mirroring will be something the industry must explore. We want to move forward, but it can be hard to be the first to innovate."

Nick Galano, director of Starlink sales and partnerships at SpaceX, encouraged a bold approach to innovation despite challenges. "The industry always has to balance and remain aware of challenges, but sometimes the best innovations come from being bold, so just go for it!" Galano advised, advocating a proactive stance in the pursuit of cutting-edge solutions.

Hirayasu agreed, adding, "Someone has to be first to move the industry forward and keep innovation coming through; I know we can't hide away from making bold changes."

The panel also touched on the critical issue of sustainability, with Berry highlighting Iberia's commitment to environmental responsibility. By focusing on enhancing the passenger experience and embracing sustainable practices, the panel agreed that airlines can better position to withstand future economic cycles and meet customer expectations.

**“
Sometimes the best
innovations come from
being bold, so go for it!”**



BRIEFS

- Seating supplier Unum won the Cabin Service Concept category at the RedCabin Trinity Awards in Dallas. The prize was awarded for the firm's 'Zen Door 2.0' concept, which radically lightens the weight of premium class privacy doors by using the ancient art of origami as inspiration for a foldable privacy screen crafted out of stiff but lightweight fabric.

- Acro Aircraft Seating has won the contract to line-fit 50 Airbus A321neo aircraft within the Pegasus Airlines fleet with its Series 9 fixed back seats. Deliveries to the low-cost Turkish carrier will start in the first quarter of 2025, with the inaugural order completed by the end of 2029, and the potential for 50 further aircraft to follow soon after.

- Private aviation group Volato has inked an agreement to equip its fractional fleet with SmartSky inflight connectivity. The first aircraft to be so equipped is a HondaJet and the installation was performed by Banyan Air Service, at KFXE in Fort Lauderdale.

- At the close of the Hajj pilgrimage season, Saudia has released flight statistics revealing that it transported 509,000 Hajj pilgrims on 3,400 flights from over 150 destinations worldwide.



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intelligent products
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COMING SOON

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



IFE & Connectivity

AIR CANADA AGREES DEAL TO INSTALL PANASONIC'S ASTROVA IFE IN FLEET

➤ Air Canada has agreed to install Panasonic Avionics new range of Astrova screens in its fleet as it upgrades its in-flight entertainment offering.

The system will be installed into the carrier's 80-plus aircraft from 2025 as part of a deal announced this week during the Aircraft Interiors Expo in Hamburg.

The Canadian flag carrier will fit Astrova on its Boeing 787-10, Airbus A220-300 and A321XLR aircraft. Additionally, it will be retrofitted on A321s. It will be the first time Astrova will be installed on an A220.

Hernan Abbes, vice president of global sales at Panasonic Avionics Corporation, said: "Our long term agreement with Air Canada represents the future of airline IFE programmes. "With its flexible design and modular

approach to upgrades, we are confident that our award-winning Astrova IFE solution will enhance Air Canada's brand and increase passenger engagement for many years to come.

"We look forward to continued collaboration with Air Canada to perpetually deliver the latest technology throughout the lifetime of its fleet."

John Moody, managing director of onboard product at Air Canada, added: "We're very excited to build on our long term relationship with Panasonic Avionics by selecting Astrova for our next generation cabins.

"It represents our commitment to delivering the best experience to our customers. Astrova is the best available solution on the market today, and we are proud to make it part of Air Canada's award winning in-flight entertainment."



Humidity

New orders for CTT Systems

● Humidification system provider CTT Systems has confirmed that it has orders from three airlines, following its participation in AIX Hamburg.

The deals involve CTT's Humidifier Onboard for business class for fitment in new A350s, as well as for the upcoming B777X.

In addition, they all confirmed selection of humidifiers in flight deck and crew rest compartments.

In total, these airlines have 120 firm orders on the brand new wide body aircraft.

"CTT can wrap up its participation at AIX in a high note," commented Ola Häggfeldt, chief commercial officer at CTT. "We are pleased to get these awards and enthusiastic about meeting all new airlines that consider humidification as part of their next-generation business class product."

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RIVAL AIRLINES CALL FOR 'RADICAL COLLABORATION' OVER SAF USE

Two sets of airlines agree to work with each other as SAF roll-out pressure mounts

An unlikely alliance has been formed between Virgin Atlantic and BA as well as Cathay and Singapore Airlines.

Bosses from the four long-time rival airlines have called truces at high-profile industry events to further the aviation industry's plans to decarbonise.

Sitting on a panel at the recent Sustainable Skies summit, Virgin Atlantic CEO Shai Weiss and his counterpart at BA, Sean Doyle called for 'radical collaboration' between airlines and others in the industry in order to seriously reduce emissions.

The two CEOs were joined onstage by the chief sustainability officers from Airbus and Boeing.

Describing how the airlines had shared data regarding sustainable aviation fuel (SAF) use and efficiency, Weiss explained: "The real findings that we share with the world are what we refer to as 'radical collaboration' and 'open source'.

"We always said that sustainability is bigger than any one of us on this panel. Any progress that anyone of us should make, we believe that it should be shared for the advancement of our industry."

Weiss furthered that the goal was to clean up aviation to the point that consumers didn't need "to make a choice between flying or being green".

After the event, he commented: "It's not often that you see two sets of competitors going toe to toe on stage, but today was unusual.

“It's not often that you see rivals going toe to toe on stage, but today was unusual



2

"We agreed that radical collaboration is required for our industry to reach Net Zero by 2050 with a focus on the near-term, including fleet modernisation, wide adoption of SAF, and longer term technological innovation including Hydrogen and electrification."

PACIFIC ACTION

Meanwhile, on the other side of the world, rival carriers Cathay and Singapore Airlines also signed an MoU to collaborate on the development, production and use of sustainable aviation fuel as well as a wider range of green initiatives.

These collective efforts are aimed at sharing best practices to boost sustainability performance.

The MoU was signed by Cathay Group CEO Ronald Lam and Singapore Airlines CEO Goh Choon Phong on the sidelines of the 80th IATA Annual General Meeting and World Air Transport Summit.

The agreement, which focuses on two areas, underscores both carriers' stated plans to achieve net zero carbon emissions by 2050 and combine



3

resources to help drive sustainability changes in the airline industry.

Firstly, Cathay and SIA will jointly advocate for the greater use of SAF in the Asia-Pacific region. Initiatives will include raising public awareness about SAF's critical role in decarbonising aviation, and promoting a standard global accounting and reporting framework to ensure the transparency and verifiability of emission reductions.

The airlines will also explore potential opportunities for joint procurement of SAF at selected locations. These are aimed at boosting SAF production and supporting its wider adoption in the airline industry.

The second area of focus will be to reduce single-use plastics, minimise waste and improve energy efficiency in ground and cargo operations.

Phong explained: "Singapore Airlines is committed to embedding sustainability in all aspects of our operations. At the same time, we recognise that we cannot achieve our targets alone. Our partnership with Cathay signifies our mutual ambition to enhance collaboration in sustainability initiatives in the Asia-Pacific region." ●



1

1. Singapore Airlines' Goh Choon Phong
2. Sean Doyle of BA
3. Virgin Atlantic's Shai Weiss

AIX 2024: THE SHOCK OF THE NEW

What was new at the Aircraft Interiors Expo this year? Editor **Greg Whitaker** runs through some of the highlights

There aren't many trade events in our industry that attract the interest of the mainstream press, but AIX is one of them.

During the first pre-breakfast meeting, held an ungodly three hours before the show opened, I jostled with reporters from CNN, BBC, CNBC and many others to pick up on the first launch of the show. I wouldn't say there was attitude exactly, but you could tell some of them hadn't had their coffee yet...

This first launch turned out to be the 'Maya' business class seat that had been a closely guarded joint venture between Collins Aerospace and Panasonic Avionics. Despite the grumbling from the media about having to get up early, holding the launch first turned out to be an inspired move as the product got

perhaps the most amount of coverage worldwide of any of the new products at the show.

Apart from being first to announce, the Collins seat garnered a large amount of attention, partly because of its synergy between ergonomics and electronics, but mainly because of a huge 45-inch curved screen that entirely fills your field of vision, while haptics in the seat and speakers in the headrest provide a literally spine-tingling and headphone-free experience. While the jury is out as to whether this is immersive or overwhelming for the passenger, there was no doubt that both the Panasonic and Collins booths were filled with curious visitors for the duration of the show.

Also launching before the show had even got underway, Safran showcased its Rave IFE system, a set of new cloud-based services that will drive its next generation of IFEC, branded under the banner of Rave Cloud Services. The system is designed to move large volumes of data to and from aircraft, as well as processing and storing large data onboard the aircraft.

Closed Shop

One point to note about this year's event was the quality of the stands. They were good, exceptionally good in some cases, but all too often they were closed away from view, and you only got to see the wares if you were lucky enough to get an invitation for a meeting.

"What is the point of a public exhibition, if the public can't see what is being exhibited?" one attendee complained to me during the event.



A case in point was the Recaro stand. Spanning three aisles, and standing the height of the hall, the monolithic booth was entirely clad in black with no way to see what was inside. This was a pity, as those lucky enough to get past the front desk and look behind the curtain got to see a number of interesting new products, including the upcoming custom seats for Southwest (which were both softer and had better headrests than I had imagined) while there was also considerable space given to the 'R-Shere' concept, which uses recycled materials such as polymer from fishing nets and bottles and so on to create new cabin materials.

Others were more open. Unum, for example had built its stall so that people were almost walking across it before they realised they were looking at the firm's products, such as the 'origami-style' folding door for the business class suite.

Other aircraft seat manufacturers on display included Paris-based Expliseat,



1



2



3

HAPTICS AND SPEAKERS IN THE SEAT PROVIDE A SPINE-TINGLING, HEADPHONE-FREE EXPERIENCE

known for producing the world's lightest range of commercial aircraft seats. The company attracted swarms of crowds as it revealed its all-carbon-and-titanium structure, TiSeat 2x, designed for Air France. The seat will be making its debut on Air France flights this autumn as part of the airline's cabin renewal program for its regional subsidiary's Embraer E190 fleet.

We also took a seat in Geven's stylish new line-up, which you can read about elsewhere in this issue.

More in Store

There was more to the AIX than just seats. As has been the case for previous editions, the World Travel Catering Exhibition was held alongside it, and

while I didn't have as much time as I'd have liked in this hall, I did sample the usual salty snacks as well as being introduced to a new alternative to single-use plastics, a plant-based material called Solinatra. I need to investigate this further, but the promise of the product is that it is made entirely from natural sources, with no plasticisers, and will compost in about the same time as a banana skin. If this is true, then it might be the solution that the industry has been looking for.

As always, a number of companies used the show to announce deals, or as a platform to talk about contracts recently signed. On this count, I was delighted to catch up with Beat Burlet, CEO of Bucher who was pleased to talk about a deal recently signed with JetBlue to design a bespoke range of products exclusively for the US airline. These include JetBlue Pantry, a self-service counter for Airbus A320 and A321 aircraft, which is designed to bring added convenience and a real point of difference to the carrier's proposition.

"It is very good news, and we're delighted to be working with the airline," Burlet told me while giving me a tour of the stand.

1. The carbon and titanium Expleseat
2. Panasonic's stand was busy
3. Attendees could experience VR painting
4. Applus Rescoll simulated its testing methods for cabin interiors



4

1. Skyted's noise-cancelling face covering 2. Collins/Panasonic's 'Maya' suite with integrated electronics was the talk of the show



1

PERSONAL HIGHLIGHTS OF THE SHOW

- We liked Rosen Aviation's giant 97-inch screen, apparently certified for a client's private jet. We did wonder how on earth did it fit through the cabin door?
- The French Pavilion was superbly presented, with numerous smaller suppliers from that country exhibiting any number of interesting products.
- Our interest was piqued by Sela's multi-coloured cabin lighting systems and by the Skyted headset, which somehow cancelled the noise of the user's own voice – useful for making confidential phone calls while in flight.
- We also saw a giant 3D printer hard at work on the Hamburg Chamber of Commerce stand. While mighty impressive, I never did work out exactly what it was making!



2

A NEW TREND IS TO MERGE THE OFFERING BETWEEN SEATING AND IFEC PROVIDERS

Sideshows

As always, there were a number of talks, presentations, awards and parties happening on the fringes of the show. As I was rushing from meeting to meeting, I didn't get a chance to drop in on as many of them as I might have liked. However, I've heard that the Women in Aviation panel was very good, and another panel hosted by my colleague Craig Waters on the subject of MRO staff retention was equally well received. I did manage to attend the Crystal Cabin awards (covered elsewhere in the issue) and an after-hours shindig hosted by Safran deserves a special mention as the organisers had gone to the trouble of hiring robotic dancers to get the party moving!

New trends

One trend I noticed at this year's event was to merge the offering between seating, connectivity and IFEC providers to provide more integrated solutions. I've already mentioned Collins and Panasonic presenting a jointly developed product on both stands, but it was evident in other parts of the show as well. For example, IFPL was demonstrating its

Cobalt drop-in colour-changing lighting alongside complementary products from the IFPL Group's range, which includes connectors, jacks and other items an airline might wish to install together when an aircraft is undergoing maintenance operations.

An extension of this trend is cloud-based IFEC services, which have the advantage of being able to be updated very quickly, enabling airlines to offer content, products and ancillary revenue streams that might differ, for example, by season, or on one route to another. Lufthansa Group and LG's joint venture called Aerq was on display at the show, where the team were in an ebullient mood as the system is now flying on the Condor airline.

Meanwhile, Thales revealed its new FlytEdge cloud-based IFEC system, which has been developed in partnership with Netskrt Systems to enable cloud-based content management and onboard edge caching. The plan is to further facilitate streaming content partnerships, and therefore improve the passenger experience which, when all is said and done, is exactly what this show was all about. ●



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SPARKLING FUTURE

The annual Crystal Cabin awards that celebrate cabin innovation have happened, but who won and why were they chosen?

The Crystal Cabin Awards – arguably the most prestigious trophies in the fields of cabin technology and passenger experience – was presented at a gala dinner in Hamburg one evening during AIX.

A jury of 28 industry experts selected what they felt were the eight most innovative products from a wide range of submissions. Overall, the award-winning entries represent a vision of air travel that is more connected, more comfortable, more sustainable and more accessible than ever before.

“This year’s submissions included many outstanding innovations that set new standards for the passenger experience by better recognising and responding to the individual needs of passengers – across all ticket classes,” commented Ralf Gust, president of the Crystal Cabin Awards Association.

“The Crystal Cabin Awards 2024 have once again shown that innovation in the aviation industry continues unabated. It is impressive to see so many creative

solutions developed to make travelling more comfortable, safer and more environmentally friendly. We are proud to recognise these ground-breaking developments and look forward to seeing the impact these innovations will have on the future of flying,” continued Gust.

So, let’s have a look at the winners.

WINNER CABIN CONCEPTS:

Factorydesign, Coop. BermudAir “The BermudAir Aisle Class Suite”

The BermudAir Aisle Class Suite is a business class passenger seat for single-aisle aircraft flying from the USA to Bermuda. It was created by converting 2-2 economy seats into a 1-1 suite. This solution is extremely cost-efficient and sustainable, as over 70 per cent of the existing seats are reused. Instead of designing new seats, the existing seats were remodelled to provide more comfort and additional storage space.

WINNER MATERIAL & COMPONENTS:

Collins Aerospace “STARLight”

STARLight by Collins Aerospace is a structural technology that uses advanced composite designs, robotic manufacturing and sustainable materials to reduce the weight of aircraft components while also lowering manufacturing costs. This technology enables airlines to efficiently design their cabin spaces without adding extra weight, and offers enhanced thermal and acoustic insulation properties.

WINNER CABIN SYSTEMS:

Safran Cabin “theCUBE”

Safran’s galley waste disposal unit theCUBE can be easily integrated into

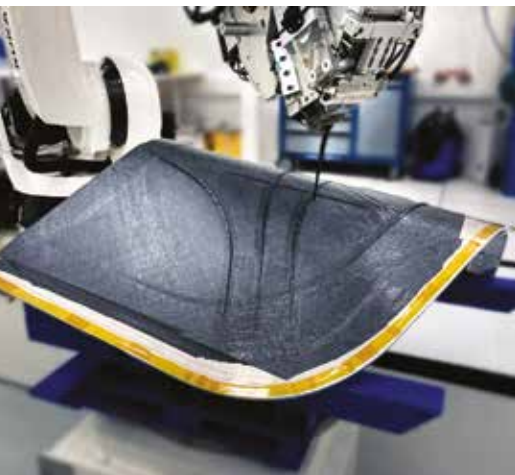
any unused space in the galley and is automatically flushed by simply closing the door, making it easier for the cabin crew to operate. With a plug-and-play concept and utilising the standard ARINC rail, it is easy to install and remove, simplifying maintenance and adding flexibility for the airline. TheCUBE uses 30 per cent less water per flush than conventional disposal units and automatically activates UV light for odour control and bacteria prevention when closed. This ensures a leaner, more efficient and more hygienic waste disposal system on board.

WINNER HEALTH & SAFETY:

Accenture GmbH

“Accenture PED safety bag”

Lithium-Ion battery fires pose a potentially catastrophic risk to flight safety. The Accenture Personal Electronic Device (PED) safety bag is





CRYSTAL CABIN



30%

TheCUBE uses 30 per cent less water per flush than conventional disposal units and automatically activates UV light for odour control and bacteria prevention when closed.

Safran Cabin "theCUBE"

2

WE LOOK FORWARD TO SEEING THE IMPACT THESE INNOVATIONS WILL HAVE IN THE FUTURE

the first to meet the highest standard UL 5800 Performance Level 1, which ensures complete containment of fire, smoke and toxic gases in the event of lithium battery failure. With increasing use of personal electronic devices and rising reports of lithium battery fires in aircraft, this bag offers double protection: the inner bag keeps out flames and heat, while the outer bag prevents smoke from entering the cabin. The intelligent insulation ensures that the outer temperature of the bag does not exceed 85°C. The jury was impressed by the fact that in the event of a burning PED, an aircraft can continue to fly safely for up to six hours before reaching an airport.



3

WINNER PASSENGER COMFORT:

Diehl Aviation, Coop. Qantas Airways Ltd "The Wellbeing Zone"
With "Project Sunrise", Qantas plans to redefine the historic Kangaroo route from London to Sydney by flying passengers non-stop in less than a day. These direct flights from Sydney to London and New York will set new standards for ultra-long flights, with particular emphasis on passenger comfort and health. The innovative Wellbeing Zone offers science-based wellness products, biorhythm-optimised lighting and real glass doors. This area is accessible to all passengers, supports healthy eating and offers space for physical activity. The jury praised the Wellbeing Zone in its refreshing approach to ultra-long-haul comfort.

1. Collins' STARLight proved impressive
2. Delighted winners at the event
3. Diehl's 'Wellbeing Zone' was a hit



10%

Through the use of lightweight materials and innovative design, the weight of the sidewall has been reduced by 10 per cent, which reduces the CO₂ footprint in the production phase by 19 per cent

Diehl Aviation "ECO Sidewall"



2

BERMUDAIR'S HIGHLY SUSTAINABLE AISLE CLASS SUITE REUSES OVER 70 PER CENT OF EXISTING SEATS



1

WINNER IFEC & DIGITAL SERVICES:

Thales Avionics "FlytEdge"

Thales Avionics' FlytEdge is the first Cloud-based and natively digital in-flight entertainment (IFE) solution. This platform enables the rapid integration of any web application, including streaming services, and offers fully remote operation, software and content updates anytime, anywhere. FlytEdge offers full autonomy for

airlines and continuous evolution, supported by innovative technologies such as edge and continuous evolution, supported by innovative technologies such as edge caching and cross-content recommendations. This ground-breaking solution optimises airline operations while enhancing the passenger experience.

WINNER SUSTAINABLE CABIN:

Diehl Aviation "ECO Sidewall"

With the ECO Sidewall, Diehl Aviation presents an innovative, eco-efficient sidewall concept that sets new standards in sustainable aviation. Through the use of lightweight materials and innovative design, the weight of the sidewall has been reduced by 10 per cent, which reduces the CO₂ footprint in the production phase by 19 per cent and CO₂ emissions during operation by 10 per cent. Advanced technologies also reduce waste from prepreg blanks by more than a third. This holistic approach makes the ECO Sidewall a particularly environmentally friendly solution

that fulfils customer expectations for sustainable products and processes. This achievement was honoured by the jury with the Crystal Cabin Award 2024.

UNIVERSITY WINNERS:

Tongji University, Coop.

Dupont "Flexifold"

The "University" category is one of the most innovative areas of the Crystal Cabin Awards and is intended to provide a forum for particularly creative designs. This year, the award goes to a team from Tongji University in Shanghai for the "Flexifold" concept. The innovative economy seat offers airlines more flexibility and new revenue opportunities. A folding and snapping mechanism provides efficient body support. The design combines lightweight and comfort with three cushions for customisable privacy, recline angle and footrest that can be easily attached to existing seats. ●

1. 'Flexifold' super light seat concept

2. BermudAir's innovative cabin design

DIEHL
Aviation

 **IMAGINE**

Imagine bringing your vision into reality.

Together with Diehl Aviation, you are not just imagining the future of air travel — you're creating it! Explore our product highlights, a pinnacle of innovation and comfort that sets new standards in cabin interior design. With our broad portfolio, you can elevate every aspect of the passenger experience.

**YOU INSPIRE
WE CREATE**



**MADDY KERRIGAN**Senior product line manager at
Teledyne Aerospace Electronics

KEEP IT CLEAN

We met up with **Maddy Kerrigan**, senior product line manager at Teledyne Aerospace Electronics, during AIX to find out more about the ACES air quality system



1

Q: Tell me about Teledyne, and tell me what you have brought to AIX?

At Teledyne our core business is in data management and acquisition systems. We are here at AIX to showcase our topline product, the ACES air cabin environment system for aircraft.

Q: Has that product been to the show before?

As a matter of fact, last year we won the Crystal Cabin award for ACES under the health and safety categories. So we were very thrilled for that recognition that we received and this product has now been in the market for

the past two years and been flying on the A320 and B737 aircraft.

Q: Have you had much interest at the show?

Absolutely. The first day of the show was a very busy day for us and we have continued to see equally high traffic throughout. I'm very happy and pleased about the questions and the enthusiasm from the customers, as well as meeting new faces and also seeing some of the current customers that we are servicing right now. There are a lot of airlines here, and it has been a really productive time.

Q: Is the product something that they can readily understand? Do you find that most customers are looking to upgrade from an existing system?

This product is unique in that there's nothing directly comparable on the market. That means we are in a niche market, and nobody in the history of aviation has collected the amount of data that we have accrued on the quality of air inside the aircraft.

By studying this data we can analyse what can go wrong. Safety and health monitoring inside the aircraft are very important, and this product can help us achieve that.

Airlines are our best partners, and they have a stake in this. Health and safety for everyone onboard, from passengers to crew, is essential. We've been partnering with the most significant, major players in this industry and they have been very helpful. I think that everybody came to the realisation that they are in a position to monitor the air quality inside of the cabin.

Q: At what point would this product typically be fitted? Would it be during major overhaul?

It depends on the availability of the customer. Sometimes it will be fitted during the C-check where the aircraft will be staying at the MRO for a few weeks; sometimes they will want to do it on multiple overnights.



1. ACES system in use 2. High load factors put focus on air quality

WE'VE BEEN PARTNERING WITH MAJOR PLAYERS IN THIS INDUSTRY AND THEY'VE BEEN VERY HELPFUL

Q: Are there any potential new markets for this technology?

I think air quality matters for everyone. Every industry has its own set of standards, and you'll particularly see that in industrial business areas such as mining or construction. They will have the same approach as the airline industry. With recent discussions that have been going on in the House as well as the Senate of the United States and other places the topic is getting the attention that it deserves, and it is the beginning of a new horizon.

Q: Is there anything you'd like to change in the industry?

Yes, I think everyone strives for better safety regulations. We all agree that people should have the right to get off the airplane in the same way that they got on it. It would be good to work together so there is some kind of consensus. We are getting very close to having such a conclusion. ●

AIR QUALITY ON THE AGENDA

Most people who have flown have probably not given the air in the aircraft cabin much thought. Occasionally smoke incidents on commercial flights will provide some dramatic photos on a slow news day. Dig further, and cabin air quality turns into a much more complex and nuanced topic.

For aircraft designers, there are several factors to worry about to ensure passenger safety and comfort. Some are fundamental, including overcoming the hostile environment experienced at altitude, while others shape the customer experience, such as the perception of space, seat ergonomics, row spacing and entertainment systems.

Cabin air quality became a prominent issue in the 1990s, once smoking was

banned on commercial flights. Around the same time, reports were surfacing of air quality events associated with the British Aerospace 146 plane, which caused a government enquiry to be initiated. In these cases, crew allegedly became sick because of system fluids leaking in the cabin, raising the prominence of short-term events.

While issues like these have changed design practices for the better, SOF events, or Smoke, Odour and Fume events, continue to be a sensitive topic, as do reported long-term health impacts on a small number of flight crew and frequently travelling customers.

Teledyne has produced a white paper explaining the importance of air quality, and of systems to monitor and improve it. You can read it by visiting: go.teledynecontrols.com/white-paper/aircraft-cabin-air-quality



See the full interview, and others, on ABNcast. Search YouTube for Aviation Business News



FABRIZIO GARBIN
project engineer

BUILT FOR BUSINESS

We caught up with project engineer **Fabrizio Garbin** and others in the Geven team as we toured the firm's AIX stand



1

A different version of the Essenza seat for regional aircraft, the Essenza RJ, was also on display at AIX. The version that we saw was equipped with an adjustable headrest, which would be a welcome addition to a regional economy class seat. Other options are also available on the seat.

However, our interest was piqued by the firm's latest product, which saw its launch at the show.

Known as Eterea, it is a business-class suite now offered on ATR aircraft as part of the new ATR HighLine All-Business Class configuration. There are not many options for premium seating in the regional sector, but the new offering bucks this trend with a seat that combines luxury and functionality.

As you might expect from a business class seat, the newcomer is equipped with amenities such as USB A and C charging ports, a phone or tablet computer holder and a large tray table. There's also an individual side console with built-in stowage compartment that doubles as a tabletop or cocktail shelf, to add to the practicality of the seat.

Perhaps the most important point about an aircraft seat is how comfortable

At AIX this year, *Aircraft Cabin Management* was delighted to be invited onto the Geven stand. The company designs and manufactures aircraft seating from its base in Naples, Italy and has been doing so since the 1990s.

Geven's roots stretch back even further than this, having originally been established decades earlier as an interior supplier to the automotive industry. The company branched out into producing seating for marine, rail carriages and eventually aircraft seating.

The stand displayed the firm's entire range of seating, including the Essenza economy seat, which fully dressed weighs around 8kg. The seat can be

specified with conveniences such as USB at-seat power, but features a very low part number count to make it durable and easy to maintain.

Critically, it is also nice to sit in. "In the upper part of the cushion, we've used a very soft foam to guarantee the comfort of passengers," explained project engineer Fabrizio Garbin, adding that the bottom seat cushion has an original self-sustaining design and is also very comfortable and supportive.

"THE SEAT BRAND ENHANCES THE CONCEPT OF PURE BEAUTY PERCEPTIBLE TO TOUCH AND SIGHT"

1. The Etereia combines comfort with a range of practical features
2. ATR's HighLine All-Business Class configuration



2

it is for the passenger. In that respect, the Etereia scores highly as it is made from top-quality materials with a very good standard of finish. The seat has been ergonomically designed to provide optimal support and comfort with a width of 21.6in between armrests along with a generous recline and optional leg rest.

The seat also features adjustable privacy screens, allowing passengers to create personal space and enjoy uninterrupted relaxation.

Danilo Malacaria, deputy head of programs at Geven said: "Etereia was conceived as a fellowship between ATR and Geven in the high-end segment. The project aims to elevate the flying experience by combining comfort, privacy, and available space. The seat brand enhances the concept of pure beauty perceptible to touch and sight."

ESSENZA: ECONOMY CLASS IN COMFORT

As we saw at the show, the Essenza seat has been designed to fit in the economy class section, but with added features and a lot more comfort than you might normally associate with regional economy seats – and designed with Italian style.

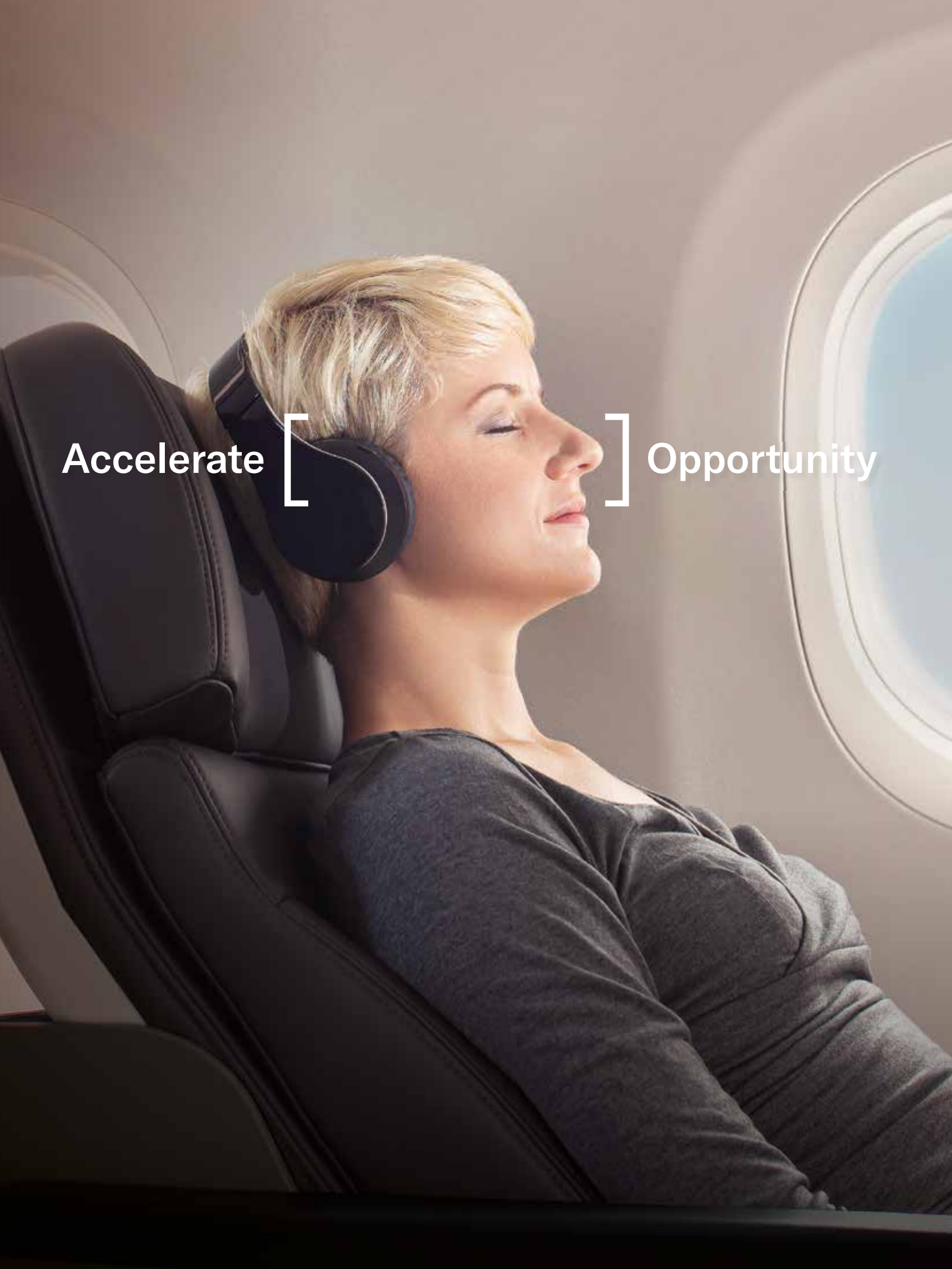
The seat has been designed to achieve the best balance between weight, comfort, living space, cost and maintenance for every kind of passenger arrangement scenario, with a number of extras to elevate a normally basic high density economy cabin section into something with a bit more.

Maintenance costs are kept to a minimum due to the low part number

count, while the design includes a full composite backrest as part of the manufacturer's plan to reduce both weight and part numbers.

Essenza also provides a range of options for the extra touch. Ample recline, personal electronic device holders, ISPS integration, a variety of literature pocket solutions and different functionality adjustable headrests are just some of the options that are available.

Clients looking for economy class seats can also choose from the Elemento or SuperEco seat ranges, which are also designed with the same Italian flair for style.



Accelerate [Opportunity

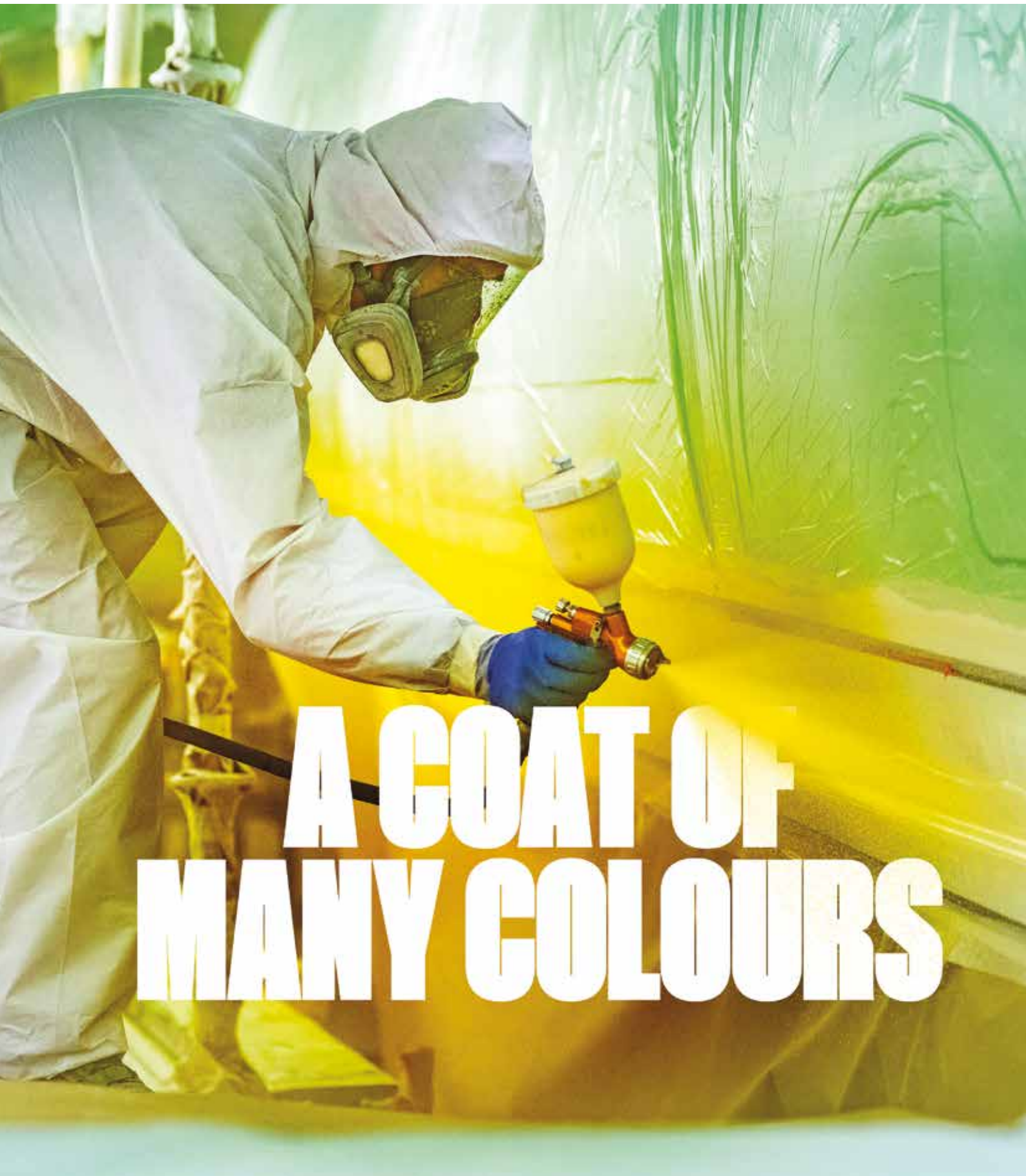


E2

Small narrow-body, big on comfort. No middle seat in any class. Large windows. Ambient mood lighting. More personal space. The E2 cabin is the happy place for travellers.

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 **EMBRAER**



A COAT OF MANY COLOURS



◀ White is not the only colour for an aircraft

Special liveries bring a splash of colour to the otherwise analogous aircraft exterior. *Alex Preston* dips a paintbrush into this technicolour world

The aircraft exterior is an exciting canvas that offers more than just a space for the traditional accoutrements of corporate livery. An airline's logo branding, partial or full tail branding, and country flag are details we've grown accustomed to seeing on aircraft, but occasionally we're lucky enough to glimpse something more visual, something a little more eye catching.

Special liveries or decorative liveries are often highly original and designed for a specific period, normally to celebrate a milestone or event, or as part of a wider advertising campaign or a brand link-up.

Some airlines choose to apply these decals using a vinyl wrap. Notable examples include Air New Zealand, whose 2002 promotional livery of the first instalment of *Lord of the Rings* weighed over 132 lbs (60 kg), and the *Star Wars* livery series from ANA. Others to join the Rebel Alliance, albeit temporarily, include Alaska Airlines, LATAM, United and Virgin Atlantic, who have all promoted themed areas at Disneyland Park, Disneyland Resort, Anaheim, California using vinyl wraps. Others have chosen to rely on the steady hand of painters.

EYE FOR DETAIL

In November 2023, QantasLink's first brand new Airbus A220 aircraft rolled out of the paint shop at Airbus' facility in Mirabel, Canada.

The aircraft spent two weeks in the paint shop undergoing an Aboriginal paint scheme, making this aircraft the sixth to join the national carrier's longstanding Flying Art Series.

According to René Lang, executive managing director aviation at Mankiewicz, "Special liveries are always lighthouse projects for all parties involved: the airline, the paint crew and the paint manufacturer. So, a close cooperation is needed for this.

"Designers sometimes come to us with samples with specific colour specifications, which we work out with them in close collaboration with our colorimetry department," Lang continues. "Our international design team constantly searches for new colour trends in various industries and design fields. We can support livery designers with a team for creative and professional exchange at eye level."

PPG provides customers with a wide variety of choices for their livery by manufacturing topcoats in solids, gloss ranges and special effects, using mica and metallic colours. Applying the clearcoat after all the base colours helps maintain the vibrancy, brilliance and durability of the livery.

Aerospace Coatings' PPG global military segment director Duane Utter and PPG global product director Robin Pepper outline how the company is able to match most colours and gloss ranges needed for special liveries. "We offer design services through PPG's



1



2

SEVERAL ASPECTS COME INTO PLAY WHEN IT COMES TO THE FINER DETAILS OF A SPECIAL LIVERY

Livery Lab, which is a partnership with Aerobrand. Many of these special liveries will be for special events and the aircraft could remain in service for quite some time.”

Under the partnership with Aerobrand, PPG develops colours quickly while Aerobrand provides the design. “This work takes place at our design studios in Burbank in the US, Shildon in the UK and Toulouse in France, with the customer present. By being at the same location, we can rapidly match colours for customer approval,” the pair explain.

“Special liveries also usually come in very individual shades,” says Lang. “The designers have a very clear idea of precisely what the new shade should look like. They often provide a sample of the required colour. Our global Colorimetry team can then use these samples to match and recreate the shade with our laboratory.

“When painting special liveries, it is also vital that we can offer local support for the paint job worldwide with our technical team to accompany the paint job on site. As a global paint manufacturer, we have 16 locations worldwide from which our team can quickly be on-site at the customer’s premises,” he adds.

PERFECT FINISH

Coatings have evolved to allow such inspiration to be realised on aircraft exteriors. Paint can now be used in areas where decals would have been the first choice, allowing for more vivid coloured liveries with finer details and higher gloss and colour retention values.

“Several aspects come into play when it comes to the finer details of a special livery,” explains Lang. “A coating that is easily adjustable via the thinner and whose drying time is ideally adjusted to the surface to be painted, in combination with stencils for the filigree shapes and a talented and experienced paint crew, is the formula for perfect craftsmanship.”

In the case of Qantas’ Minyma Kutjara Tjukurpa aircraft, some 100 painters were involved in completing the livery, with the Airbus teams working with 130 stencils to replicate the detailed designs. It features over 20,000 dots and is the most complex livery Airbus has ever completed for an A220.

Many impressive special liveries are brought to life by various colour shades that come together creatively and in complex shapes. Working with a BaseCoat/ClearCoat (BCCC) system is a game changer for reducing turn-around time.

The recent adoption and qualifications of the BCCC systems into the aerospace

industry has had many advantages. PPG’s Desothane HD/CA 9008 has much better weathering and allows airlines to go longer prior to repainting. In addition, since the base coat has higher hide, it requires less coatings and dries much faster so you can apply the more complex liveries quicker, according to Utter and Peffer.

Other advances for the exterior market include PPG’s solar heat management coating. This enables designers to use darker colours on the exterior while the aircraft stays up to 25 per cent cooler on the inside, depending on the exterior paint colour.

“PPG also offers a specialty intermediate coating which is used between the primer and the topcoat. When the aircraft goes through the repainting process, only the topcoat and intermediate coat have to be stripped, leaving the primer intact. This allows for a faster turnaround and therefore less down time,” explain the PPG duo.

To further optimise the painting processes and surface performance, Mankiewicz developed the Alexit BaseCoat/ClearCoat system, whose ►

1 Qantas special ‘indigenous’ livery

2 Mankiewicz coating being applied



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BUCHER



◀Brussels Airlines' Amare aircraft took 16 days to paint

INSTEAD OF STARTING WITH THE MOST FREQUENT COLOUR, THE LOWEST IS APPLIED FIRST

properties include adjustable drying times, which fit large areas with good overspray uptake and fast drying properties for smaller areas.

"The time required to paint a special livery is a crucial factor," says Lang. "Due to the usually extensive range of colours and the high level of detail on the fuselage and fin, it is essential to keep the drying times as short as possible. The high opacity of the Alexit BaseCoat is very helpful here. If the paint covers with one coat - and our Alexit BaseCoat does with the majority of shades - you can save a second coat of the same colour and, therefore, time."

One complex project Mankiewicz was involved in was WestJet's 'Magic Plane', a 2013 collaboration with Walt Disney Parks & Resorts (Canada) to promote Walt Disney World Resort in Florida. The custom-painted livery of the Boeing 737-800NG aircraft, which featured Mickey Mouse as The Sorcerer's Apprentice casting a spell, included a total of 36 different paint colours and took a team of 26 people 24 days working around the clock to paint.

For Lang, one of the most significant advantages of the Alexit BaseCoat/ClearCoat is that the paint system

enables the so-called wild spraying technique, reversing the classic painting process sequence.

"Instead of starting with the most frequent colour, the lowest is applied first," he explains, adding, "In a standard procedure, you would start to spray the most-used colour first (primarily white), followed step-by-step to the less frequently used colour. An intensive workforce and material are needed to mask the aircraft between the paint application.

Wild spraying also allows for spraying two colours at the same time, provided that they are not too close to each other, to avoid overspray.

KEEPING COVERED

Aircraft livery coatings must withstand tough environments. Whilst needing to be durable, long-lasting and decorative, they also need to have excellent chemical and abrasion resistance, without compromising a rich, high gloss finish with excellent Distinctiveness of Image (DOI). DOI is an indication of the perfection of a reflection, and lack of haze or "orange peel" in a surface.

Using a BaseCoat/ClearCoat layer structure, the ClearCoat as the final

layer is the most protective coating. The polyurethane system offers strong UV protection and perfect gloss and wet-look properties. "The vibrancy of the livery benefits from the outstanding DOI of the Alexit BaseCoat/ClearCoat system," says Lang, who adds that it lasts for a long time. WestJet's Magic Plane will finally retire this year after 10 years in glorious colour.

The latest highlight for Mankiewicz is the recently launched Brussels Airlines' Airbus A320neo dressed as a "Belgian Icon." The aircraft, "Amare", contributes to the Tomorrowland music festival. Joëlle Neeb, senior media relations manager at Brussels Airlines reveals that the paint job itself took 16 days. "But if you look at the full design process, this was a project of 13 months."

Neeb says the new design needed to be aligned with the airline's branding as well as the most recent Belgian Icon, Trident, with a gradient from light to dark - front to back. "No fluorescent colours could be used nor small details around the doors," she says.

Amara features the world's first livery to include augmented reality, as the bird design comes to life when scanned with a smartphone. "When you scan the logo of Tomorrowland on the engines within Instagram and select a specific filter, you will see the magical bird come to life. That is how it is done today, but this will probably change in the future to make it even easier," says Neeb.

Mankiewicz is a long-standing supplier of paint for the airline's Belgian Icons, a collaboration Neeb says has always been "very nice". "The same goes for Airbourne Colours who utilise it with their highly skilled paint crew during a paint job," she adds.

"In the end, it all comes under the big heading of "Cooperation," avers Lang. "An outstanding special delivery is always the result of close cooperation between the airline, designer, paint crew and paint manufacturer." ●



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THE ART OF NOISE REDUCTION

Developments in cabin noise reduction technologies are bringing the 'quiet cabin' within reach, as *Bernie Baldwin* reports



You've got a comfortable seat with sufficient legroom, the temperature is just right and you are preparing for a relaxing flight. Then the noise begins from the engines and air conditioning system... and it can really spoil a flight.

Reducing noise within the cabin interior has been a challenge for quite some time. In the late 1990s, for example, the Saab 2000 and Bombardier Q Series (now De Havilland Dash 8s) used active noise cancellation systems to eliminate noise, particularly that from the propellers. In these, microphones around the cabin picked up the sound and fed it to a processor, which then used speakers around the cabin to emit soundwaves 180 degrees out of phase with the source sound, thus reducing the noise significantly.

Neither of those types is currently in production, so what are the current systems being used to reduce noise across the cabin as a whole? In the turboprop

market, ATR is the logical place to start.

According to ATR noise activities engineer Gianluca Venzaga, three main systems are currently used on ATR aircraft to deliver an efficient and simple passive cabin noise reduction. "The first is a 6-blade propeller with high accuracy electronic control and synchro-phasing for low noise and vibration," he begins. "Next is the suppression of intrusive noise sources in the cabin and passive treatment of the cabin interior."

"Within this system, the technologies used as passive treatment to reduce cabin noise can be identified as two main types. The first is related to the noise sources generated on the fuselage skin outside the cabin environment. These are due to the turbulent boundary layer developing on the fuselage, characterised by wall pressure fluctuations that create an excitation that is transferred and radiated inside the cabin," Venzaga continues. "This phenomenon has a significant impact on the cabin noise during



▲ Safran's new 'Euphony' technology

the cruise phase. For this kind of noise source, the technology used comprises a thermo-acoustic blanket insulation which is encased in a polymeric film bagging material.

"The second important factor within the system is the suppression of so called 'parasitic noise sources'. These are secondary noise sources due to systems such as air re-circulation fans, hydraulic pumps, bleed valves and others," he continues. "For this kind of noise source, ATR uses acoustic mufflers with embedded acoustic foam. Several actions and studies are currently ongoing at ATR in order to optimise these kind of technologies in terms of thickness, new material's acoustic efficiency and installation.

"The final main system being used for cabin noise reduction involves stiffened frames with dynamic vibration absorbers," Venzaga reports.

"The effect of these three systems combined is considerably reduced cabin noise. Our solution is maintenance free compared with active noise control systems. Generally, noise and vibration attenuation devices act on a specific frequency related to an intrusive noise source, to attenuate and reduce its energy content and thus the noise," he explains.

According to Daniel Galhardo, strategic marketing director for Embraer Commercial Aircraft, cabin

noise reduction technologies for turbofan aircraft also focus on trying to block noise coming from external sources, like the engines and the turbulent boundary layer along the fuselage, as well as controlling noise sources located inside the cabin, including air conditioning distribution and several other systems installed underneath the floor.

"The isolation for the external noise sources is generally achieved using passive control treatments, incorporating both noise insulation blankets between fuselage and interior panels, as well as damping material patches attached to fuselage parts," he states. "The blankets provide an acoustic transmission loss that reduces the energy of external noise sources travelling across the fuselage to the cabin. The damping material patches dissipate the vibratory energy associated with the fuselage vibration that radiates noise to the cabin. Embraer has dedicated modelling techniques to optimise the thermal acoustic insulation treatment to extract the best noise performance with minimum weight impact.

"The air conditioning distribution system was designed to incorporate low noise solutions, avoiding turbulence inside air distribution ducts, and targeting low outlet air speeds, while ensuring a reasonable balance between the amount of air distributed throughout the cabin with temperature," Galhardo continues. "Embraer E2 jets currently incorporate several innovative designs in these areas, resulting in a homogeneous cabin, with low noise levels throughout. These make the E2 family the quietest single aisle aircraft in the market," he claims.

**A VERY IMPORTANT FACTOR
WITHIN THE SYSTEM IS THE
SUPPRESSION OF SO CALLED
'PARASITIC NOISE SOURCES'**



1



2

1 A350-900 Airspace Explorer cabin
2 Cancelling prop noise has long been a challenge for airframe designers

ONE TECHNOLOGY GETTING NOTICED IS THE CREATION OF PERSONAL 'SOUND BUBBLES' AROUND THE PASSENGER

AMBIENT COLLECTION

Airbus believes that a global design approach is preferable to create the best ambient noise levels in the cabin, combined with minimum noise emitted by intrusive noise sources. The company highlights four potential sources: ambient noise coming from outside the aircraft; continuous noise from systems inside the aircraft; intrusive intermittent systems noise events; and noises from hatches, latches and so on.

Regarding ambient noise from outside the aircraft, the acoustic design to realise a low ambient noise environment is the result of Airbus's targeted investment on all aircraft elements related to the transfer of noise energy from outside the aircraft to passengers and crew inside the cabin – in other words, from 'source' to 'receiver'.

BELOW THE WASTE

Of course, noise emanating from systems inside the cabin also needs to be targeted and treated so it does not become intrusive to passengers. Airbus says its choice is to use an air distribution system which results in slower air flows while improving the air distribution compared to other aircraft designs.

The third noise category covers intrusive (temporary) noise events from systems and 'operational' noise, that which appears while the aircraft is being operated. Examples here include the noise of the water/waste system vacuum-based toilet flushing, the noise of galley systems (ovens, coffee makers) being used, and electrical system noise (transformers) among many others.

INVISIBLE SILENCE

Finally, noise can occur simply by using the aircraft interior – such as from use of hatches, latches, door locks or by trolley handling in the galley. The art, according to Airbus, is to identify the driving noise sources and determine how to treat them.

Both the A330neo and the A350 have fully integrated Airspace cabins, with panels, hatches, monuments, doors, galleys and other equipment all designed and operationally tested to minimise noise events, and to suppress overall resonance and vibration. The result is a quiet cabin during all phases of the journey, from boarding right through to the destination gate, the company claims.

The furnishings of a cabin interior can also play a role in noise reduction, a fact emphasised by Arthur Glain, advanced concept manager at Safran Seats. "Cabin noise reduction is crucial for ensuring a pleasant journey. As seat manufacturers, we focus on sound-absorbing solutions that reduce perceived cabin noise for each passenger in business and first class. We have created noise absorbing padding, covering the inside of seat shells, which use a patented combination of materials to trap sound waves, making the cabin noticeably quieter. This noise reduction gets even more impressive as passengers lie down in bed mode, allowing for a quieter and restful sleep," Glain reports.

One technology getting noticed is the creation of personal 'sound bubbles' around the passenger. These are similar to the active noise control systems mentioned, but on a localised basis around each traveller. They can also be used to deliver sound from the IFE without the use of headphones.

REDUCTION

"Safran recently developed Euphony, a new technology which could be qualified as providing a sound bubble as it provides high-quality sound to each individual passenger without disturbing fellow travellers," Glain reports. "This allows users to enjoy the entertainment

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- Available for **cable-to-cable or cable-to-PCB** applications
- With **standard contacts** (size 22 / 20) or **coax contact** (size 12)





◀ Euphony provides high-quality sound to individual passengers without disturbing fellow travellers

content provided by the airline in any seat position, free from headsets and cables. With no communication barriers with fellow travellers or the cabin crew, Euphony enables a seamless onboard experience.

“Some of the main challenges of a sound bubble solution are preventing sound leakage to neighbouring passengers while providing high-fidelity audio and clear dialogues. For that reason, we partnered with a truly innovative acoustic engineering company, Devialet, whose expertise was instrumental in bringing Euphony to life,” he adds.

“Available across most of the Safran Seats business- and first-class product portfolio, Euphony has received widespread industry recognition and numerous innovation awards. The technology made its debut on Japan Air Lines’ A350 business and first class in January 2024, where it garnered unanimous positive feedback,” says Glain.

Gianluca Venzaga says that within ATR, cabin noise is constantly monitored during test flights to find ways to reduce it further and confirms that the sound bubble is one method being studied. “This aims to reduce noise around passengers’ heads. It is a technology that needs careful evaluation, as its effectiveness depends on the frequency of the noise. Furthermore, it may increase the aircraft’s weight and maintenance costs. Currently, we are continuing to explore this technology, but it has not yet been installed on any ATR aircraft,” he states.

CABIN NOISE IS CONSTANTLY MONITORED DURING TEST FLIGHTS TO FIND WAYS TO REDUCE IT FURTHER

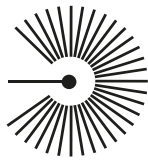
Embraer’s Galhardo describes his company’s take on the sound bubble as “an evolution of a traditional active noise control system that includes further features in addition to the noise control, such as passenger customised sound fields”.

He explains further: “Traditional active noise control systems are designed to operate in acoustic sound fields dominated by low frequency tonal noise sources, such as those associated with propeller aircraft. The basic architecture includes microphones to detect the actual acoustic field and speakers to generate the cancelling waves.

“The application of this technology for a turbofan aircraft, where acoustic sound field inside the cabin is broadband in frequency, sets the challenge of developing a control system that can handle an acoustic field that extends up to a frequency range of thousands of hertz instead of hundreds, as turboprop aircraft,” he adds. “In this sense, in addition to the challenges of the weight and space required for both acquisition and generation of acoustic fields, turbofan aircraft require a more complex system to define the cancellation acoustic field.

“Embraer is currently tackling the application of an active control system to a turbofan aircraft by evaluating alternative means of generating the cancelling sound field, making use of currently existing cabin interior components without the need of adding dedicated items and increasing weight. These technologies could enable the evolution of the active control system towards the introduction of the sound bubbles for turbofan aircraft,” Galhardo envisages.

The crusade to create the ‘quiet cabin’ is likely to continue for some time yet, but efforts in noise reduction technologies are certainly making waves – or not! ●



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Skills shortage continues

Lee Hayhurst reports on the MRO Management panel debate that took place at Aircraft Interiors Expo in Hamburg in May

A lack of skilled cabin technicians is the major challenge facing the airline sector as it strives to maintain, repair and overhaul aircraft interiors.

An expert panel put together by Aviation Business News' specialist magazine *MRO Management* at Aircraft Interiors Expo in Hamburg discussed "how to elevate the cabin".

Tommaso Fiorillo, business development manager of specialist Madrid-based MRO AIRE, said the biggest challenge was a lack of skilled manpower. "There is, from my point of view, a lack of cabin technicians," Fiorillo claimed. "Cabin has always been seen as a second division part of the aircraft."

"I think this is an issue and this is where we need to focus our attention. It's a matter of focusing on cabin, focusing on the technicians... to get confident with the cabin environment."

WANING INTEREST

Fiorillo continued: "For me there is a lack of interest in the cabin, which is good for a company like ours specialised in cabin interiors, but this is the way forward to get more skilled people."

He added that cabin is starting to attract more attention as airlines focus on customer satisfaction and he urged MROs to open a specialist division to further raise its profile.

"THIS IS BECOMING A BOTTLENECK IN THE INDUSTRY ... WE ARE STRUGGLING TO HIRE ENOUGH PEOPLE"

While the larger MROs do have in-house skills due to their size, there is still a lack of engineers to properly service all the aircraft that require cabin MRO services.

Thomas Sonigo, vice president aircraft modifications at Air France, said supply chain issues and MRO capacity constraints remain a problem, but added that regulations are also stifling innovation. He explained how regulators such as EASA in Europe need more people and skills to enable airlines to make advances.

"This is becoming a bottleneck in the industry. We would expect EASA to focus more on the cabin... because we still have a lot of avionics and structure experts at EASA, but we are struggling on the cabin side to have enough people."

Ioana Predonescu, head of commercial cabin solutions at Lufthansa Technik, said the opportunities for the industry are centred around partnerships and working together: "I do think the MRO industry needs to catch up, and the certification process behind it needs to catch up to the end delivery from the MRO. The industry is not there yet."

Predonescu added that it remains to be seen how the industry will collaborate when it comes to sharing data and intellectual property (IP) of technologies associated with next gen aircraft.

Timothy McVea, marketing director at Airbus, said

engineering data is available to third party MROs and airlines with the OEM's data package services, adding that there is a lot of shared IP in modern aircraft and data should be shared in order to be able to modify the aircraft.

McVea concluded: "The vision is there, the process is there. The process could be faster and improved, but it's certainly not blocked from the OEM side." ●

RAISING EXPECTATIONS

➤ The increasing number of next gen aircraft being delivered by OEMs is raising expectations when it comes to the refit and refurbishment of older models.

Airbus's McVea told the panel: "Just considering how much the technology around us over the past 10 years has changed shows how far we've evolved as an industry."

"Think of your mobile phone as an example. Well, the same goes for the cabin whether it's the seats, the lighting or other elements. As we develop new technology for the line fit aircraft, then airlines and customers are taking this as options when they customise their aircraft."

"This, in turn, is creating passenger expectations for what the airlines need to do to the in-service fleet, but also aircraft need to be reconfigured over their life."

Listen to the ABNcast podcast from AIX

Catch up on ABN's daily ABNcast episodes recorded live at AIX. In our three episodes we speak to Panasonic Avionics, Soisa, SkyFive and many others.

◀ The panel talked about a collaborative approach



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CLEARING THE CABIN AIR

Modern technology is hidden away to keep the air in the cabin safe and healthy

In this magazine we talk a lot about the electronics that passengers can see and touch such as lighting, IFE screens, USB chargers and the like, but behind the panelling of a modern aircraft there is a world of modules and systems that, out of sight, make the cabin a more pleasant place to be.

HUMIDITY

One of these is systems humidity control. Keeping moisture levels to an optimum is essential for both passenger comfort and the efficiency of an aircraft.

On board, the space between the cabin wall and the outer fuselage skin contains insulation blankets. In service, the moisture from passengers' breath is removed from the cabin and condenses into frost on the cold fuselage

skin. During the descent, that frost melts and some of it soaks into the insulation blankets.

Eventually, the blankets become saturated. And water is heavy, with every litre adding a kilogramme to the aircraft's weight. This means the aircraft's engines must work that little bit harder to fly all of this extra water around.

Swedish company CTT Systems has deployed its CAIR system to solve this problem of high humidity levels by reducing that moisture. By removing water from that layer of insulation, and thus weight, CTT can promote its Zonal Drying system to airlines as a cost-saver.

At the same time, the CAIR system is designed to increase moisture where it is needed, in the cabin, to promote

passenger comfort levels. But how do you convince those airlines to put a humidification system on board when it does something as intangible as increase moisture levels in the cabin?

"The latter can be a difficult sell," admits Peter Landquist, CTT Systems' vice-president for sales and marketing. The easy part first: reducing water levels in the insulation can cut the weight of an Airbus A320 in high-density configuration, for example, by almost 300kg. That weight reduction has been proven by multiple weighings, according to Landquist.

He says the reduction can make a small but measurable improvement to the aircraft's fuel burn and emissions. "With the bottom line being all-important, that is a tangible

20 PER CENT OF PASSENGERS CONTRACT SOME FORM OF SORE THROAT OR SIMILAR INFECTION WITHIN FIVE DAYS OF A FLIGHT

benefit, especially for LCCs that aim to shave every possible factor in their operating costs.”

Not only are direct fuel costs reduced but reductions in emissions are likely to become more important as new anti-pollution measures are enforced by bodies such as the European Union and the International Civil Aviation Organisation.

Now the harder part of the equation: what benefits accrue to an airline from making its cabin air more humid?

“Anyone who has been on a flight of more than three to four hours knows that when they walk off the aircraft, they often feel less spry than when they got on board. Partly that is due to being seated in a confined space, but it is also partly because of the dryness of the onboard atmosphere.”

It has long been known, for example, that conditions on board aircraft dry out the body’s membranes, hence that gritty-eyed feeling that many experience. Dried-out nasal membranes are also more likely to be penetrated by viruses; one recent study claimed that as many as 20 per cent of passengers contract some form of sore throat or similar infection within five days of a flight.

Ironically, the problem is at its worst in the premium cabins, as the lower passenger density present means that the atmosphere there can be drier than in the Sahara or the Arctic.

AIR QUALITY

Humidification systems have been in use in flight decks and crew rest areas for some time, says Landquist. “They’re very popular with pilots, who are exposed to an extremely dry atmosphere. They say they can really feel the difference – it’s a big improvement.”

However, unlike the Zonal Drying system, the humidification aspect of the CAIR system provides no obvious cost benefit. “It has to be sold as a passenger service,” Landquist adds.

Humidity isn’t the only issue with air quality in the cabin. The quality of the air, in terms of the mixture of oxygen and nitrogen or contaminants, is also very important. For obvious reasons, the issue of germs spreading in aircraft cabins has been taken a lot more seriously in the past few years.

With this in mind, Teledyne has introduced the ACES system to monitor the air quality in the cabin and flight deck.



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“I think that everybody came to the realisation that they are in a position to monitor the air quality inside of the cabin,” said Maddy Kerrigan, senior product line manager at Teledyne, when we spoke at AIX.

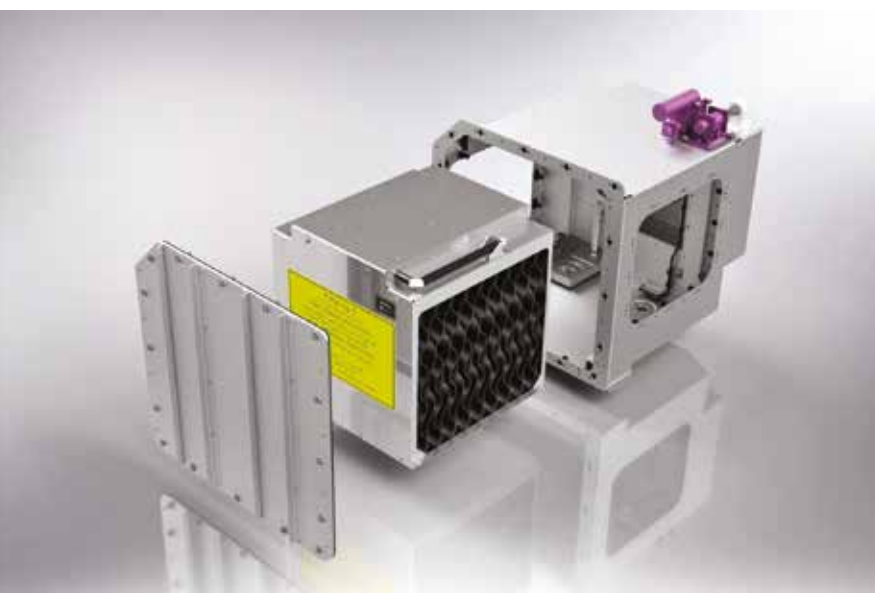
Given automatic access to comprehensive cabin environmental data for every flight, aircraft operators can verify the air quality in the airplane, identify and address potential emerging issues, and ultimately deliver the safe cabin environment crew and passengers expect.

A cabin air quality monitoring system might seem like it is an obvious product to bring to market but, in fact, the Teledyne solution stands alone in the sector. In fact, the innovation won the Health and Safety category at the Crystal Cabin awards last year.

“We are in a niche market and nobody in the history of aviation has collected the amount of data that we have accrued on the quality of air inside the aircraft,” said Kerrigan.

“By studying this data we can analyse what can go wrong. So safety and health monitoring inside the aircraft are very important, and this product can help us achieve that.”

So, next time you step on board, spare a thought about the avionics keeping the air you breathe safe. ●



1

1 Components from CTT Systems' equipment are hidden from sight, but provide a valuable function
2 The ACES system from Teledyne collects useful data on air quality



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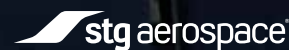
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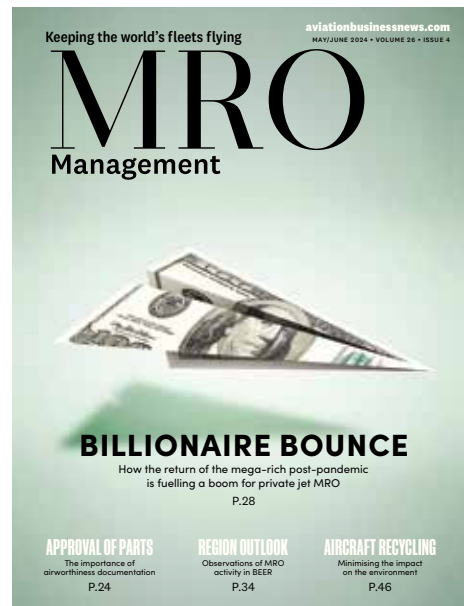
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ABNCAST

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.



2

“
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."

ABNcast episodes so far have featured interviews with pioneering sustainable aviation fuels developer Avioxx and global online travel agent giant Trip.com Group. The team have also spoken to Remarkable Group experts about their airline digital maturity index, and Trigo Group's Emmanuel Marquis discusses how aviation can address its current supply chain issues.

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

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

instalments at upcoming industry events like Farnborough International Airshow in July, the T2RLEngage conference in London in September, and October's World Aviation Festival in Amsterdam.

ABNcast will also highlight other important ABN initiatives such as its 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.

Additionally, the podcast will preview the Predictive Aircraft Maintenance (PAM) Conference, run by *Aircraft Cabin Management* sister title *MRO Management*, which this year will take 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



FREETAN TANNING CHEMISTRY ELIMINATES CHROME AND HEAVY METALS



Who: ST Engineering
What: Access Lavatory
Web: stengg.com

Using modern and human-centric interior design principles, ST Engineering has created Access, an expandable lavatory monument, to promote inclusive air travel.

Developed in partnership with Acumen, a multi-award-winning product and transport design consultancy, the fold-out washroom allows airlines and operators to improve the flying experience of Passengers with Reduced Mobility (PRMs) without sacrificing valuable seating capacity.

The development was seen at AIX, alongside an improved locking strap that improves boarding and dignity for wheelchair users.



JUST LANDED

We look at some of the new gear that was announced at AIX in Hamburg



Who: Muirhead
What: FreeTAN tanning process
Web: muirhead.co.uk

Leather supplier Muirhead announced its chrome and heavy metal-free FreeTAN tanning chemistry with FR technology and free from heavy metals, chrome and glutaraldehyde. The Scotland-based manufacturer has fully replaced its previous tanning process with compostable technology, marking a commitment to eliminating the use of oil-based elements and heavy metals from all its operations and products. The leather, already seen on some British Airways flights, was on public display at the show for the first time.



Who: Expliseat
What: TiSeat 2X
Web: expliseat.com

French manufacturer Expliseat presented its new model at AIX. Called TiSeat 2X, Air France is the launch airline and the product will be introduced as part of the cabin renewal programme for the Embraer 190 fleet operated by its regional subsidiary HOP! Air France says it chose the newcomer for its distinctive design aesthetics and functionalities, embedded in a lightweight and durable design. It comes with a large folding tray as well as a device holder and USB A and C sockets.



Who: Airbus

What: A330 Airspace cabin

Web: airbus.com

Airbus displayed its airspace interior for the A330neo in a full-size mock-up on the show floor at AIX. The interior design now features a new hero light and welcome panel, along with a range of new linings, door frame panels and windows. It also showcased the A321XLR – a ‘game changer’ design bringing a wide-body aircraft feel to a narrow-body.



Who: Safran

What: Rave cloud

IFE services

Web: safran-group.com

Safran Passenger Innovations announced a set of new cloud-based services to drive its next generation In-Flight Entertainment and Connectivity (IFEC) platform, branded under the banner Rave cloud services at AIX.

Rave cloud services will have two main elements, distribution services and edge cloud computing services. The cloud infrastructure deployed both on the ground and on the aircraft, which will create a scalable, reliable and flexible service-based infrastructure, is designed to move large volumes of data to and from aircraft, as well as process and store large volumes of data onboard the aircraft.



Who: Thales

What: FlytEdge

cloud-based IFEC

Web: thalesgroup.com

Launched at AIX, FlytEdge is the IFEC industry's first solution to feature edge caching. Passengers can now instantly stream their favourite entertainment using their personal video subscriptions and continue watching shows from the ground to the air and across flights.

The product features an onboard data centre with 96TB of storage to enable on-board edge caching, reducing connectivity consumption and ensures bandwidth is available for other inflight services. No matter how many people watch the same content, the tech allows them all to watch the same thing.



PASSENGERS CAN NOW INSTANTLY STREAM FROM THEIR PERSONAL DEVICES



ACTION AGAINST GREENWASHING

The EU has had enough of what it sees as baseless environmental claims from airlines

The global aviation industry stands alone in the field of heavy polluters in that it has not reduced net carbon emissions.

Not that you'd know about it from what those connected to the trade might tell you. Read some of the major airline's 'net zero' statements and you might be forgiven for thinking that they, and they alone, can single handedly solve the climate emergency as these documents are full of clichéd buzzwords like

'sustainability', 'pathway to net zero' and 'navigating the green transition'. Newer engine designs may be more efficient, but the way that some of companies talk, it is as if nothing more harmful than wild geraniums are produced from the exhaust.

The reality is a little different. Worldwide sustainable aviation fuel (SAF) production is a fraction of what it needs to be. In fact the entire amount currently generated is not enough to fuel just one of the major carriers, and regular jet fuel

consumption in the coming year is likely to be the highest that it's ever been.

All is this is before we get on to the vexed issue of contrails, which has resulted in a fair bit of finger-pointing between airlines, but very little action. So who, if anyone, can bring them into line?

In May, European officials sent letters to 20 airlines identifying several types of potentially misleading green claims and telling them to bring their practices in line with EU consumer law within 30 days or face sanctions.



CONSUMERS DESERVE ACCURATE AND SCIENTIFIC ANSWERS, NOT VAGUE OR FALSE CLAIMS

Věra Jourová

MISLEADING

The Consumer Protection Cooperation panel inside the European Commission focused on claims made by airlines that can be considered as 'misleading' actions or omissions.

The issues include claiming that the airline is moving towards net-zero greenhouse gas emissions without stating targets or providing an independent monitoring system. The CO₂ 'calculators' provided on some airline's websites have also come in for scrutiny as the panel believes that some have no basis in science.

"If we want responsible consumers, we need to provide them with accurate information. More and more travellers care about their environmental footprint and choose products and services with better environmental performance. They deserve accurate and scientific answers, not vague or false claims," said Věra Jourová, vice-president for values and transparency.

"The Commission is fully committed to empowering consumers in the green transition and fighting greenwashing. We expect airlines, as well as any other industry operator, to make a responsible use of environmental claims."

Other areas of concern include presenting consumers with a

comparison of flights regarding their CO₂ emissions without providing 'sufficient and accurate information' on the elements the comparison is based on.

Carbon 'offsetting' schemes also come in for criticism. The Commission has said that creating an 'incorrect' impression that paying an additional fee to counterbalance CO₂ emissions is against the rules. Such offsetting schemes, fashionable just a few years ago, need substantial documentation to continue.

Airlines will have 30 days to respond to the points raised by the EC. Action plans can then be drawn up, and further non-compliance may result in as-yet unspecified sanctions.

Will this be enough? We've blasted carriers for hot air and little action, but the same can surely be said of the European Commission. What is clear though, is the need for consistent definitions of words, that hopefully will put an end to airlines marking their own homework.

KEY ELEMENTS OF THE ACTION:

The European Commission and the CPC network have identified several types of potentially misleading practices by 20 airlines, such as:

- Creating the incorrect impression that paying an additional fee to finance climate projects with less environmental impact or to support the use of alternative aviation fuels can reduce or fully counterbalance the CO₂ emissions;
- Using the term 'sustainable aviation fuels' without clearly justifying the environmental impact of such fuels;
- Using the terms 'green', 'sustainable' or 'responsible' in an absolute way or using other implicit green claims;
- Claiming that the airline is moving towards net-zero greenhouse gas emissions (GHG) or any future environmental performance without clear and verifiable commitments, targets and an independent monitoring system;
- Presenting consumers with a 'calculator' for the CO₂ emissions of a specific flight, without providing sufficient scientific proof on whether such calculation is reliable and without the information on the elements used for such calculation;
- Presenting consumers with a comparison of flights regarding their CO₂ emissions, without providing sufficient and accurate information on the elements the comparison is based on. ●

The Ice Crystal Maze

A SAF test flight shows that the biofuel can also reduce pollution from contrails

Ice crystals in the upper atmosphere from aircraft contrails have been shown to be a non-CO₂ contributor to the greenhouse effect. However, there's new evidence that sustainable aviation fuel can help reduce this.

Results from an in-flight study of the impact of using 100 per cent SAF on both engines of a commercial aircraft show a reduction in soot particles and formation of contrail ice crystals compared to using conventional Jet A-1 fuel.

The ECLIF3 study, in which Airbus, Rolls-Royce, the German Aerospace Centre (DLR) and SAF producer Neste collaborated, was the first to measure the impact of 100 per cent SAF use to emissions from both engines of an Airbus A350 powered by Rolls-Royce Trent XWB engines and followed by a DLR chase plane.

Compared to a reference Jet A-1 fuel, the number of contrail ice crystals per mass of unblended SAF consumed was reduced by 56 per cent, which could significantly reduce the climate-warming effect of contrails.

Global climate model simulations conducted by DLR were used to estimate the change in the energy balance in Earth's atmosphere – also known as radiative forcing – by contrails. The impact of contrails was estimated to be reduced by at least 26 per cent with 100 per cent SAF use compared to contrails resulting from the Jet A-1 reference fuel used in ECLIF3. These results show that using SAF in flight could significantly reduce the climate impact of aviation in the short term by reducing non-CO₂ effects such as contrails, in addition to reducing CO₂ emissions over the lifecycle of SAF.

“We now know that SAF can also reduce soot emissions and ice particulate formation that we see as contrails”



RESULTS

“The results from the ECLIF3 flight experiments show how the use of 100 per cent SAF can help us to significantly reduce the climate-warming effect of contrails, in addition to lowering the carbon footprint of flying – a clear sign of the effectiveness of SAF towards climate-compatible aviation,” said Markus Fischer, DLR divisional board member for aeronautics.

Mark Bentall, head of research & technology programme, Airbus, said: “We already knew that sustainable aviation fuels could reduce the carbon footprint of aviation. Thanks to ECLIF studies, we now know that SAF can also reduce soot emissions and ice particulate formation that we see as contrails. This is a very encouraging result, based on science, which shows just how crucial sustainable aviation fuels are for decarbonising air transport.”

The research team has reported its findings in the Copernicus journal *Atmospheric Chemistry & Physics* as part of a peer-reviewed scientific process, and provides the first in-situ evidence of the climate impact mitigation potential of using pure, 100 per cent SAF on a commercial aircraft. The ECLIF3 programme, which also includes researchers from the National Research Council of Canada and the University of Manchester, conducted in-flight emissions tests and associated ground tests in 2021. ●

26%

The impact of contrails was estimated to be reduced by at least 26 per cent with 100 per cent SAF use compared to contrails resulting from the Jet A-1 reference fuel used in ECLIF3

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