

Aircraft

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VOLUME 13 • ISSUE 05 • OCTOBER/NOVEMBER 2024

CABIN

Perfecting the passenger experience

Management



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ME GOOD**

**A new dawn for
cabin illumination**

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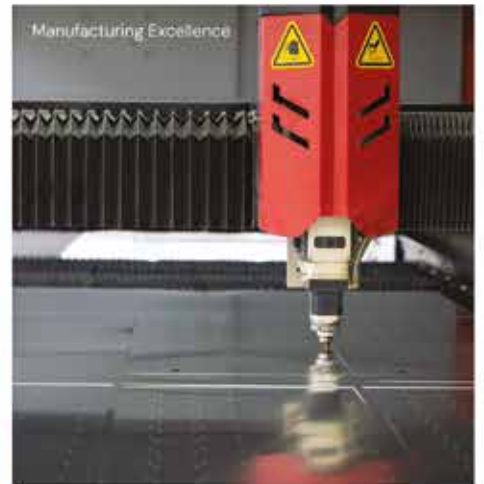
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TOXIC AIR

Last month I attended a conference titled 'Cabin Air'. I didn't really know what to expect, but as it was nearby and wellness is a topic of interest to me, I thought it might be worth discovering what topics were raised.

As it turned out, it was fascinating. The main subject was 'bleed air', where air for the cabin is extracted from the compressor stages of an aircraft engine. The problems come if there are any leaky seals in the system where contaminants, such as burnt oil, can cause what is known as a 'fume event'.

I learned that continually breathing contaminated air can result in symptoms that range from nausea, eye and skin irritation at one end of the spectrum right up to neurological problems, such as migraines, dizziness, confusion and changes in mental state.

Astonishingly, aircraft don't have sensors fitted to warn the flight deck of any fume event. Instead, the crews are on the alert for a smell, most often described as 'dirty socks' from the vents. The problem here is that scent is subjective and, often combined with the other smells in the cabin, it can be overlooked.

This is becoming a big problem as the number of aircraft crew that have been affected by what has been coined as 'aero toxic syndrome' is growing every day. Many were at the conference, and all said how they loved flying, but had been struck down by this cabin sickness.

Fortunately, there are things that can be done. Sensors are a good first step and an oil blender has produced a lubricant that doesn't emit the toxic chemical chain when burnt. Aircraft design in the



▲ The Boeing 787 doesn't use bleed air. Will other aircraft designs follow suit?

"We suspect this might become the next big aviation scandal of our age"

future can also be improved. For example, the B787 uses an entirely different design for cabin air and there have been no reported aero toxic incidents on this aircraft type.

However, the feeling in the room at the conference was that not enough was being done by the airline industry, which delegates believed was obfuscating. It's an issue we'll be writing about in a lot more detail next year, and one which we suspect might become the next big aviation scandal of our age.

Greg Whitaker

Greg Whitaker

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Business Briefing



Airline News

SOUTHWEST REVEALS 'TRANSFORMATIONAL PLAN' AT INVESTOR DAY

➤ Following pressure from 'activist investors', embattled chiefs at Southwest have announced a strategy to modernise the airline.

At the heart of the plan is a proposal to introduce an assigned seating model, which the airline had not introduced, even though the rest of the low-cost and short haul market switched years ago.

The airline expects to begin selling assigned seats in the second half of 2025, with its first flights operating with the new model in the first half of 2026.

Once the assigned seating model is in place, Southwest will again follow the rest of the industry, offering extra leg room for approximately a third of its seats. New seating product options will drive demand and are expected to generate more revenue. A form of 'priority boarding' can also be offered once the new seating policy is in place.

One aspect that the airline has no plans to change is its 'bags fly free' policy. According to the carrier, this "remains the most important feature by far in setting Southwest apart from other airlines".

In a statement, the company said: "Based on Southwest's research, we believe that any change in the current policy that gives every customer two free checked bags would drive down demand and far outweigh any revenue gains created by imposing and collecting bag fees."

Whether the plan will go far enough to placate investors, and notably Elliott Management, time will tell. Elliott has repeatedly criticised CEO Bob Jordan, accusing him of "playing with investor's money" and has urged him to step down. However, as of the time of writing, Jordan remains in post.

Not all of Jordan's colleagues have survived the changes. Six directors are to step down in November, with executive chairman Gary Kelly departing after the 2025 annual meeting.

“
New seating product options will drive demand and are expected to generate more revenue



Aircraft Orders

T'way to lease five widebody aircraft

South Korea-based T'way Air has signed a deal to lease five widebody A330-900neos.

The agreement is with global aircraft leasing company Avolon, with deliveries starting in 2026. Further negotiations are underway to operate a total of 10 of the aircraft by the end of 2027, which will help modernise the fleet and strengthen operational capabilities for longer haul routes.

The A330-900neo has a range of around 13,300 km, and offers a 25% reduction in fuel consumption and CO₂ emissions. It is equipped with the latest Rolls-Royce Trent 7000 engine and is considered to be a better fit for sustainable aviation fuel.

Paul Geaney, president and head of sales at Avolon, said, "We are delighted to welcome T'way Air as a new customer of the A330-900neo as we are rapidly expanding our routes."

Hong Geun Jeong, CEO of T'way Air, said, "We expect to provide better service and reliability to our customers with A330-900neo, which is more fuel-efficient and sustainable."



Cabin News

BRUSSELS AIRLINES ANNOUNCES €100M CABIN PROGRAMME

➤ Brussels Airlines has announced plans to spend €100m on new cabins for its fleet over the coming years.

The plan is to gradually introduce a brand-new interior, to further elevate the inflight experience on the long-haul destinations. These new cabins will be installed for all three classes – business class, premium economy and economy class – although in terms of suppliers and design, the airline has only said that “details will be announced at a later stage”.

The news comes as the airline has announced that it will grow its long-haul fleet by adding three Airbus A330 aircraft, bringing its widebody fleet to 13 in the coming years. Additionally, the flag carrier has signed a three-year wet-lease agreement starting in 2025 with Air Baltic. The partner will seasonally operate four Airbus A220s for Brussels Airlines between the end of March and October.

To support the long-haul growth plans, more than 250 new employees will be hired at Brussels Airlines. These will range from pilots to cabin

crew, maintenance and engineering colleagues, airport and office staff. Additional jobs will also be created at suppliers’ and partners’ sides, e.g. in ground handling.

“Brussels Airlines is further embarking on its profitable growth path,” said Dorothea von Boxberg, CEO, Brussels Airlines. “The multi-million investment in cabin interior allows us to offer our customers an even more premium experience. This is a moment of pride for everyone at Brussels Airlines.

“I’m also already looking forward to welcoming the new colleagues who will join us to enable our growth. It’s with great pleasure that we will offer more connections to our increasing number of passengers on our growing network.”

“
The multi-million investment allows us to offer an even more premium experience



BRIEFS

- Hungarian low-cost carrier Wizz Air has updated its payment systems so that Apple Pay and Google Pay can be used by customers on the airline’s mobile app.

- Air Astana has installed additional fuel tanks on Airbus A321LR, enabling non-stop flights over long-haul distances without the need for technical stopovers. Starting in October, the airline plans to resume non-stop flights on the Almaty to London route, which has been operating with a technical stop in Aktau since March 2022.

- Emirates has opened a new lounge at London Stansted Airport. The airline has invested £4 million to design a 900-square-metre area, meaning all of the London airports served by the airline now have a dedicated lounge.

- Korean Air’s inflight magazine *Morning Calm* has been voted Asia’s Leading Inflight Magazine in the 2024 World Travel Awards. The accolade was announced at the World Travel Awards’ Asia & Oceania Gala Ceremony, held in Manila in September.

- Thompson Aero Seating has a launch customer for its Vantage Nova product. The airline’s identity has not yet been revealed, but it will fly in 2026.

de·risk

/dē'risk/

verb

1. To take steps to make something less risky or less likely to involve loss
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IN NUMBERS

47

Long-range A321XLR on order by Wizz Air, with several now in service

\$1.2BN

Investment in SAS as the reorganised company leaves Chapter 11 behind

85%

Qantas inadvertently gave a massive discount to shoppers browsing first class seats



Cabin News

LATAM ORDERS CUSTOM SUITES

➤ South America-based LATAM Airlines is to refit its B787 aircraft and has selected Recaro's R7 suite for business class.

This update will include 20 R7 suites in LATAM's B787-8s and 30 in their B787-9s, totalling 24 shipsets.

The airline has requested some changes to the seat design. The seats will feature an increased shell height for additional privacy and suite doors which will make the carrier the first South America-based airline to offer this experience to passengers. Additionally, seats will feature dress covers using recycled antimicrobial faux leather.

"Both Recaro and LATAM teams have worked in close collaboration to enhance passenger comfort and privacy with this bespoke R7 design," said Mark Hiller, CEO of Recaro Aircraft Seating. "Knowing that LATAM will be

the first South America-based airline to fly our R7 is an outstanding milestone for all involved."

"The new Premium Business seats mark a significant leap forward, combining comfort, privacy and elegance. These renovations position LATAM as a leader in the industry, providing our passengers with an unprecedented level of comfort and an exclusive flying experience," said Paulo Miranda, VP of Customers at LATAM Airlines Group.

With operations spanning over 140 destinations in 25 countries, the LATAM Airlines Group maintains one of the most extensive networks in Latin America.

“LATAM will be the first South America-based airline to fly the Recaro R7



Connectivity

United signs SpaceX Starlink broadband deal

United has signed what it says is the industry's largest agreement of its kind with SpaceX to bring Starlink's satellite Wi-Fi service to the airline's mainline and regional aircraft fleet at no additional cost to passengers.

The airline expects to have Starlink on all of its fleet – more than 1,000 planes – over 'several' years. Testing begins in early 2025 with the first passenger flights expected later that year. United will be the first carrier in the world to commit to offering Starlink service at this scale.

"Everything you can do on the ground, you'll soon be able to do onboard a United plane at 35,000 feet, just about anywhere in the world," said United CEO Scott Kirby. "This connectivity opens the door for an even better inflight entertainment experience, in every seatback – more content, that's more personalised."

TOP SPEAKERS CONFIRMED FOR APEX

Packed schedule announced for
trade show and conference

The annual show in Long Beach is nearly upon us again and the organisers have finalised the airline industry leaders who will speak at the event.

All the speakers are experts in customer experience, fleet management, accessibility and product innovation from internationally renowned flag carriers. During the event they will share their expertise and predictions for the future through the event's sessions and panels.

Highlights of the event include an exclusive 'fireside chat' with Shai Weiss, CEO of Virgin Atlantic. Weiss will share insights on the future of aviation and leadership in a post-pandemic world, making this a must-attend session for anyone looking to understand industry leadership from the top.

Ekrem Dimbiloglu (Delta Air Lines), Xia Cai (Qatar Airways), Alex Wilcox (JSX), Matt Klein (Spirit Airlines) and Seth Miller (PaxEx.Aero) will explore how enhanced connectivity models can drive net promoter scores and elevate

customer satisfaction in a thought leadership panel.

Meanwhile, Oren Cohen Butansky (EL AL), Mark Muren (United Airlines) and Nick Ewen (The Points Guy) will share insights on maximising in-flight ancillary revenue through personalised passenger experiences and innovative technologies.

With a focus on making air travel more inclusive, Ingo Wuggetzer (Airbus), Tyler Anderson (Delta Flight Products), Jack Kavanagh (National Disability Authority and Centre for Excellence in Universal Design), Jo Rowan (PriestmanGoode) and Rick Salanitri (Delta Flight Products) will share their experiences in developing solutions for air travel for passengers with reduced mobility in a cross-industry session and detailed topical workshop.

Elsewhere, industry experts will discuss modernising airline in-flight entertainment curation. Experts will debate the future of seatback screens versus the Bring Your Own Device (BYOD) trend, examining their impact on passenger experiences. Speakers include Anton Vidgen (Riyadh Air) and Antonio Fernandez (Aeroméxico).

A forward-thinking panel will explore the next-gen digital airline cabin and how technology will reshape the passenger experience. Panelists include Fabien Pelous (Air France), Mustafa Mucahitoglu (Turkish Airlines), Paul Verhagen (SAS) and Robynne Trueman (PAX Tech).

APEX takes place from 28-30 October at Long Beach Convention and Entertainment Centre, Long Beach, California. Co-located with International Flight Services Association (IFSA) and Future Travel Experience (FTE), APEX/IFSA Global EXPO spans end-to-end passenger experience, both in air and on the ground.



CONFIRMED SPEAKERS FOR APEX

Benjamin Smith, chief executive officer, Air France-KLM

Michael Rousseau, president and chief executive officer, Air Canada

Shai Weiss, chief executive officer, Virgin Atlantic

Con Korfiatis, chief executive officer, Oman Air

Andre Viljoen, managing director and CEO, Fiji Airways

Alex Wilcox, chief executive officer and co-founder, JSX

Matthew Klein, executive vice president and chief commercial officer, Spirit Airlines

Fiona Kiesel, chief guest officer, Breeze Airways

Rossen Dimitrov, chief guest experience officer, Saudia

Oren Cohen Butansky, executive vice president and chief customer experience officer, EL AL

Paul Verhagen, executive vice president and chief commercial officer, SAS





2



3

1. The conference offers ample networking opportunities 2. Enjoy thought-provoking panel sessions 3. All speakers are experts from internationally renowned flag carriers

A MUST-ATTEND FOR ANYONE WANTING TO UNDERSTAND INDUSTRY LEADERSHIP

Perry Cantarutti, senior vice president of alliances, Delta Air Lines

Xia Cai, SVP product development & design, Qatar Airways

Patrick Brannelly, senior vice president – retail, IFE, connectivity, Emirates

Fabien Pelous, senior vice president customer experience, Air France

Bobby Schroeter, senior vice president, chief commercial officer, Frontier Airlines

Mustafa Mucahitoglu, vice president – customer experience, Turkish Airlines

Antonio Fernandez, vice president – product and onboard services, Aeroméxico

Anton Vidgen, vice president – guest experience, Riyadh Air

Rick Salanitri, president, Delta Flight Products

Tyler Anderson, product innovation manager, Delta Flight Products

Ingo Wuggetzer, vice president cabin marketing, Airbus

Ekrem Dimbiloglu, managing director – customer experience – deltastudio & wi-fi, Delta Air Lines

Jack Kavanagh, board of directors of the National Disability Authority and Center for Excellence in Universal Design

Jo Rowan, associate director strategy, PriestmanGoode

Joshua Hirschheimer, associate partner, Porsche Consulting

Duncan Jackson, president, FlightPath3D

Mark Muren, managing director – brand identity, product and loyalty, United Airlines

Stephan Schulte, director fleet procurement, Lufthansa Group

Dominic Green, director – inflight entertainment, United Airlines

Blake Rittenberg, manager – inflight entertainment, tech & partnerships, JetBlue

Nick Ewen, senior editorial director, The Points Guy

Maryann Simson, director, Jetway Communications

Robynne Trueman, business editor, PAX Tech

Seth Miller, author, PaxEx.Aero

Michelle Fleury, correspondent & anchor, BBC News

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The event mobile app is your personal event assistant, designed to enhance networking and streamline your experience. Powered by AI, the app provides smart matchmaking, connecting you with relevant leads and potential business partners based on your interests. It also builds a personalised itinerary, recommending sessions and exhibitors tailored to your preferences. With live chat, file sharing and reminders for upcoming meetings, this app ensures you stay organised and maximise your event experience. Inside, you'll find:

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- **Exhibitors and Sponsors** Explore a detailed directory of companies showcasing innovative solutions and services.

- **Speakers** Browse and learn about all the expert speakers, with links to their sessions.

- **Bookings** Manage your personal diary, including your selected sessions and meetings.

- **Airline Attendees** View a list of airlines that are registered. Connect with your peers and schedule meetings to network onsite at dedicated spaces on the show floor.

- **Floorplan** Easily navigate the exhibition hall.

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THE FUTURE OF COMFORT

Cesar Uparela, CCO at Caynova discusses personalised climate control in air travel

In today's aviation world, comfort isn't a bonus – it's a priority. Airlines are no longer simply responsible for getting passengers from A to B, but for ensuring that the journey is as enjoyable and relaxing as possible. Among the latest innovations driving this shift is advanced temperature control technology, particularly crucial for long-haul flights, where maintaining personal comfort can have a significant impact on well-being.

COMFORT YOU CONTROL

At the forefront of this revolution is Caynova, an industry leader in aviation comfort solutions, which has redefined the passenger experience with its seat Heating and Cooling System (HCS). This system allows passengers to customise the temperature of their seat, providing a tailored climate regardless of the broader cabin environment. The need for such innovation is clear: while some passengers prefer a cooler setting, others might feel too cold, and Caynova's solution addresses these preferences in a seamless, user-friendly way.



“
**CAYNOVA HAS
REDEFINED THE
PASSENGER
EXPERIENCE**
”

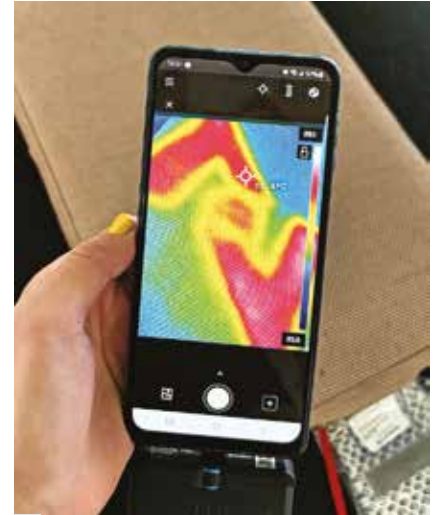
CESAR UPARELA
CCO at Caynova

More than just an upgrade, Caynova's seat HCS represents a major shift in how airlines approach passenger comfort. Offering precise and responsive temperature adjustments, it enhances overall satisfaction by mitigating discomfort, reducing fatigue and even lowering the potential health risks posed by fluctuating cabin temperatures.

LUFTHANSA AND BEYOND

In collaboration with major airlines such as Lufthansa, Caynova's HCS debuted in Business Class on a Munich to Vancouver flight in May 2024. The industry eagerly awaits the next milestone: the launch of Lufthansa's Allegris First Class Suite on the A350, which will feature Caynova's temperature control system and is set to enter service by the end of 2024.

The benefits for airlines go beyond simply meeting passenger expectations.



2

In an increasingly competitive market, providing personalised comfort solutions can be a powerful differentiator. Lufthansa Group has embraced Caynova's technology, recognising its potential to enhance customer loyalty and elevate the in-flight experience. By equipping their long-haul fleets with Caynova's system, they reinforce their position as leaders in luxury travel.

REDEFINING STANDARDS

Caynova's HCS also integrates easily into a wide range of seating designs, making it adaptable across different aircraft and seating configurations. Top seat manufacturers including Airbus Atlantic, Collins Aerospace and Thompson Aero seating have also adopted this technology, acknowledging its ability to redefine premium seating standards and improve the overall passenger journey.

Caynova is not just enhancing air travel; it is reshaping it. As airlines globally consider adopting Caynova's technology, it's evident that the next era of air travel will focus on crafting a uniquely comfortable experience, tailored to everyone's needs. ●

1. Caynova's HCS seats offer heating and cooling on demand
2. Fluctuating cabin temperatures can impact passenger health

 To learn more, visit caynova.com

MAKING CONNECTIONS

Spafax's **Dimitrios Tsirangelos** talks about content services in the modern age

No one questions that in-flight entertainment is now an essential part of a long-haul airline's offering. In fact, a survey by one carrier found that some 86% of passengers indicated that the IFE and connectivity package included would influence their decision over which airline to book.

For the most part, passengers are happy to scroll through the catalogue of movies and TV series stored on the aircraft's system, but there are some occasions such as sporting events or major news stories that they want to see live.

However, making this a reality is easier said than done, but Spafax has introduced a proposition that provides live events: 'Spafax One'.

Officially launched at AIX last year, the system had already been deployed to deliver the coronation of King Charles III to thousands of British Airways



“
**LICENSING THE
EURO 2024 FINALS
WAS DIFFICULT, BUT
WE MANAGED IT**
”

DIMITRIOS TSIRANGELOS
VP, Spafax

there is a lot of work to be done in order to make it possible. Quite apart from the technical challenge of distributing a live content stream around the cabin of a fast-moving vehicle, possibly thousands of kilometres out over an ocean, there is also the issue of licensing content outside of a single location.

“Sometimes it's relatively easy to license content – for example, for the coronation,” notes Dimitrios Tsirangelos, the company's vice-president. “Other events are much more complicated. For example, the finals of the FIFA Euro 2024 game between England and Spain was quite a difficult undertaking, but we managed it and were able to stream the finals on board British Airways and Iberia.”

Inside Spafax, there are various teams working on the different aspects of providing the content to the passengers. “We split Spafax One

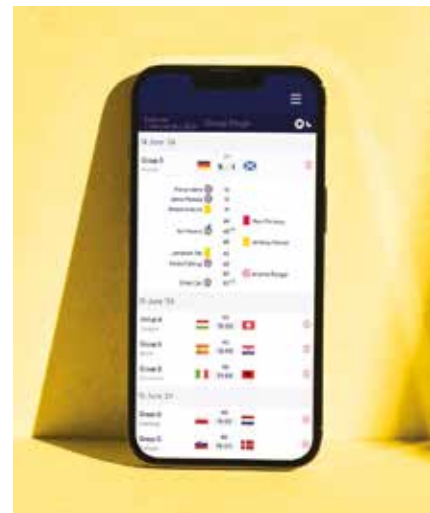
passengers across the airline's entire connected fleet.

Working closely with British Airways, IAG Connect, the BBC and Red Bee Media, Spafax broadcasted the events via live stream to thousands of passengers, allowing them to watch the King's procession, balcony greeting and coronation ceremony at Westminster Abbey – one of the greatest royal celebrations and displays of pageantry in a generation. From broadcaster negotiations to technical solutions, Spafax One was instrumental in passengers seeing history in the making right from their seatback screens.

For the passengers, watching broadcasts like this is as simple as turning on the TV, but behind the scenes



1



2



3

into curation, delivery and experience parts,” Tsirangelos explains. The teams working on the technical side need to have a symbiotic relationship with the content teams to make the system work seamlessly.

“For us, as a CSP, it is very important as both parts are very important, to build up the infrastructure and this is something that we test multiple times, to make sure it is scalable.”

Tsirangelos explains that the quality “is incredibly good”, but redundancy needs to be built into the system in case there is an event that everyone on board wants to see screened.

The airline also needs to be aware that every stream on every passenger’s screen has a cost. However, there are ways to mitigate the cost to the airline, to an extent. “Airlines can pay a

monthly retainer, and we can keep this channel open. If there is an event they want to stream, we can use the same infrastructure,” Tsirangelos says, adding that while a broadcast is not taking place, the channel can be used to show promotional material for the next event that will be available.

“One of the products that we have available is called ‘Profile’, and this is a microsite that we create for all of our customers, where passengers can go and discover what is aboard the aircraft. Meanwhile, Profile has become the vehicle for all of our live streaming events.”

Another product recently introduced by Spafax is the Live Sports and News Ticker. “This is a low-bandwidth solution which is great when you have an airline that doesn’t have a connectivity

solution with a huge bandwidth,” explains Tsirangelos.

The Ticker is a feed that provides real-time data on screen, such as sports scores. More than that, it can provide a blow-by-blow account of events during a match or tournament. Compared with some of the other projects that Spafax is involved with, it is comparatively simple from a technical point of view.

“We turned this around for the client in just four weeks,” Tsirangelos says, explaining that it was originally built for one of the airlines in Lufthansa Group. “We were very nimble to provide what the client wanted, and then in a month

1 Tech on show at the AIX booth

2 The Ticker feed on the mobile app

3 Each customer ‘journey’ starts before the airport



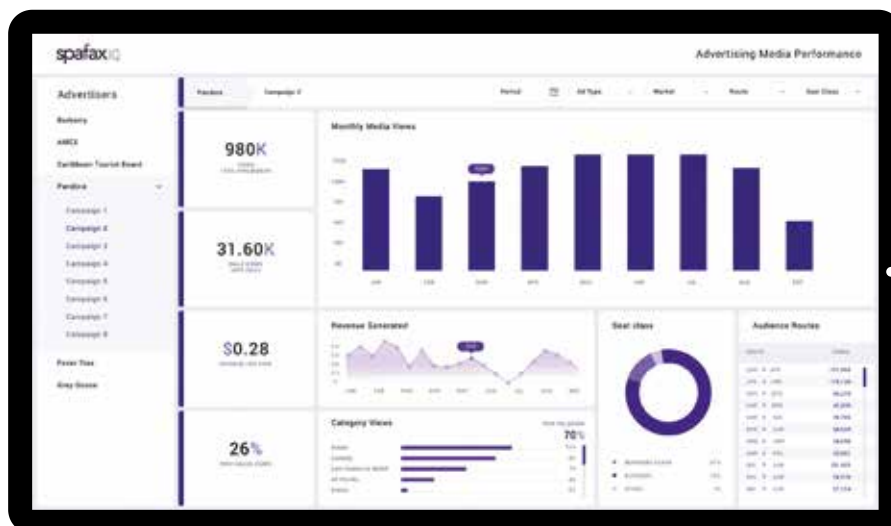
LUFTHANSA GROUP EXTENDS SPAFAX IFE PARTNERSHIP

Lufthansa Group has extended its partnership with IFE provider Spafax. In addition, the scope of the deal will be widened to include advertising sales.

As part of the renewal, Spafax will 'fortify' its established Frankfurt Account Team with new resources to support Lufthansa Group and deliver on its capabilities in this key European market. Future projects will extend across all in-flight entertainment and connectivity (IFEC) touchpoints, as well as streamlining the content selection and delivery process from the cloud.

Also, third-party advertising sales responsibilities have been assigned to Spafax. The partnership will provide passengers with content from the time of booking until after they land.

Henry Gummer, managing director Europe, Spafax, said, "We are excited about the chance to deliver the future of the IFEC experience for one of the most forward-thinking airline groups in the world." The airlines included in the agreement are Lufthansa, Discover Airlines, SWISS, Austrian Airlines and Edelweiss Air.



“THE ‘TRAVEL CYCLE’ STARTS AS SOON AS YOU LEAVE FOR THE AIRPORT”

we had more than 50,000 unique users on the service, and more than a million individual ticker requests.” The group was so happy with the product that it is now looking at introducing it across its entire fleet on four different airlines.

HIGHER IQ

Tsirangelos believes that the customer journey goes beyond simply what's on the seat screen while the aircraft is in the air. “The ‘travel cycle’ starts the moment that you get in the car to go to the airport, until the moment you arrive back home. This cycle has so many touchpoints; on those where we are involved, we collect information.

“For example, Profile, which I mentioned earlier, contains information about everything onboard the aircraft. From that the data is collected by the IFE hardware supplier, but there are airlines that can use up to seven different hardware platforms across the fleet. Imagine multiple systems to collect the data... airlines just don't have the resources.”

Fortunately, this is where Spafax can help. “We created another product, Spafax IQ, which helps airlines by cleaning, consolidating and visualising the data. They can then make better decisions in the future regarding content curation. It helps the customers immensely to create a future content strategy.”

CHALLENGES

The world of content is not an easy one, and for Tsirangelos there are two particularly difficult areas, one technical and one passenger focused.

“One of the biggest challenges is the different stakeholders. You have multiple airline groups, you have multiple IFE hardware providers and there are multiple CSPs. This means the delivery of the assets is sometimes not automated. There are no generic APIs available. There are some steps into this process that happen manually.

“The other challenge is that passengers expect to get the same service that they get at home in regard to all the different streaming services. They are used to a particular user interface and to a specific categorisation within these streaming services. They get on board, and they see graphical user interfaces that are not state of the art, and to keep up with this passenger expectation is extremely difficult.

“By looking at the analytics, and from passenger surveys we then offer a consultancy service to the airlines on how to improve the user experience,” concludes Tsirangelos. ●

▲ Promotional image of analytics dashboard (not actual data)



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1

1 Representatives of the winning companies join ABN's Lee Hayhurst (centre) and 15below's Nicholas Key (right)
2 Networking at the show

BEST OF THE BUNCH

Winners announced in Best Places to Work in Aviation awards

Aviation Business News (ABN) has announced the winners of its first-ever Best Places To Work In Aviation annual awards.

Throughout this year, businesses that operate in the aviation sector were invited to register to take part in the awards and bid to become a best place to work.

The wide-ranging contest was conducted independently by Workforce Research Group, as confidential surveys were carried out to assess how staff members felt about employers.

The questionnaire looked at a range of factors including employee retention, benefits, training and culture and each company was given an overall score based on the results.

Only companies that scored above a threshold have been officially named Best Places To Work In Aviation.

The winners were announced on 8 October, the first day of the 2024 World Aviation Festival in Amsterdam, where ABN also hosted a celebratory event to mark their achievements.

The inaugural 2024 ABN Best Places To Work In Aviation Winners (ranked in order) are:

Aviationscouts – a supplier of surplus seats and interiors for aircraft based in Lichtenfels, Germany

Accessory Aero Group – a specialist aircraft maintenance and repair firm based in Griffin, Georgia

Qualitair Aviation Services – a human resources and talent search specialist in aviation and part of UK-based Randstad Solutions

FDH Aero – an aerospace supply chain partner that specialises in delivering high performance parts based in Los Angeles, California

JFK International Air Terminal – an airport operator that runs Terminal 4 at JFK Airport in New York

EirTrade Aviation – A Dublin-based global aviation asset management and trading company that supports MROs, operators and lessors

Asia Pacific Aircraft Component Services (APACS) – a joint venture MRO between SIA Engineering and SR Technics based in Malaysia

Lee Hayhurst, Group Editorial Director at ABN, said: “We’re so excited to be able to unveil the members of a very special and exclusive group – our inaugural Best Places To Work In Aviation.

“We know, because we are having conversations constantly with companies across the sector, how critical it is to attract and retain the right talent and skills, particularly following Covid when the sector lost a lot of experienced people.

“Best Places To Work In Aviation was always about ABN being able to champion the sector to a new generation of workers who will be critical for the future of the industry be celebrating those firms that are doing a great job with their people.

“So, we are delighted to be announcing our first winners and look forward to telling their stories in the weeks and months ahead as we prepare to open registrations for our 2025 intake.”

Best Places In Aviation was sponsored this year by aviation technology specialist SITA, global OTA Trip.com Group and customer communications platform 15below. ●

“WE ARE CELEBRATING FIRMS THAT ARE DOING A GREAT JOB WITH THEIR PEOPLE”



2

The image features a central, oval-shaped porthole window set into a dark, textured surface. The window looks out onto a vibrant sunset scene. The sun is a bright, glowing orb positioned slightly above the center of the frame, casting a warm, golden light across the sky. Below the sun, the sky transitions into a deep orange and red hue, filled with soft, billowing clouds. The overall color palette is dominated by warm tones of red, orange, and yellow, creating a cozy and inviting atmosphere. Overlaid on this scenic view is the text "COLOUR ME GOOD" in a bold, white, sans-serif font. The text is arranged in two lines, with "COLOUR" on the top line and "ME GOOD" on the bottom line, centered horizontally within the porthole's frame.

**COLOUR
ME GOOD**



▲ Light cycles and brightness are fundamental to setting the body clock

Qantas' Project Sunrise has applied circadian science to its smart cabin lighting. Alex Preston looks at evidence-based lighting in practice

Humans are attuned to a solar 24-hour cycle, where light and darkness track a diurnal pattern. Over millennia, our brains have evolved a group of nerve cells (or neurons), found in the forward region of the brain called the hypothalamus, that control our body's circadian rhythm.

The suprachiasmatic nucleus (SNC) might be unpronounceable, but it is very important as it acts as a circadian master clock, regulating our physiology and behaviour, affecting everything from appetite and digestion, body temperature and sleep patterns to when hormones are released.

The SNC lies in a shallow impression of the optic chiasm, where the nerves extending from each eye to the brain cross, and thus it is highly influenced by the input of light.

According to Svetlana Postnova, associate professor of neurophysics and brain dynamics at the Charles Perkins Centre at The University of Sydney, light is the key zeitgeber (time cue) for our master clock in the brain. She says the effects of light on the master clock depend on three factors:

(i) timing of light: depending on the time of light exposure, it can shift the master clock to an earlier or a later time. Typically, light early in the morning will advance the clock, while light later in the evening will delay it.

(ii) intensity of light: higher intensity produces a stronger effect.

(iii) colour composition (or spectral irradiance in scientific terms): short-wavelength light (peaking around -490 nm) has the strongest effect on the central clock.

SYNCHRONOUS APPROACH

The abundance of artificial light has substantially changed the light environment, especially during evening and night hours, causing a misalignment of endogenous circadian rhythms.

Postnova explains the particular effect of cabin lighting: "Aircraft lighting, like lighting in any other environment, will affect your central clock depending on the combinations of its timing, intensity and colour. If used correctly, it can help you adjust to destination time zone and reduce jetlag duration. If timed incorrectly, it can have an opposite effect."

Postnova leads the InSync study, in collaboration with Qantas Airways, to develop and test strategies to mitigate jetlag using biophysical modelling of circadian rhythms as part of the airline's Project Sunrise ultra-long-haul flights.

InSync is an interdisciplinary project involving scientists from the fields of physics, engineering, chronobiology, sleep, nutrition and physical activity, as well as industry collaboration. Other organisations involved are Qantas Airways, Melbourne-based



1

“THE LIGHT CYCLE OF NIGHT AND DAY HAS MORE IMPACT ON OUR CIRCADIAN RHYTHM AND THE EFFECT OF JETLAG THAN ANY OTHER FACTOR”

Monash University and Washington State University.

“The timing of light is the key, and it can be adjusted by airlines. The tricky part is that an optimal schedule depends not only on the origin and destination but also on the flight departure and arrival times, so circadian modelling is needed for the best effect,” says Postnova.

Working alongside representatives from Qantas, Airbus and Caon Design Office – the creative agency behind Qantas’ A350 cabin design – Postnova

and her team created and tested hundreds of lighting patterns and sequences in an Airbus A350 cabin mock-up in the Airbus Customer Definition Centre in Hamburg.

Australian industrial designer David Caon explains that the lighting workshops followed more than five years of cabin design with Qantas to maximise customer wellbeing inflight.

“Aircraft lighting doesn’t cross the mind of most travellers, but the external light cycle of night and day has more impact on our circadian rhythm and the effect of jetlag than any other factor,” he says.

SPECTRAL IRRADIANCE

Based on state-of-the-art modelling of circadian rhythms, the Charles Perkins Centre advised the optimal spectral irradiances for light to promote circadian adaption, sleep and wake using melanopic illuminance.

Regular illuminance is a phenomenon that tells our body how bright light is for our eyes. Melanopic illuminance is the impact of that light on our circadian rhythm. High melanopic illuminance means a lot of light is available to adjust the brain’s central clock.

The researchers found blue-enriched light with high melanopic illuminance helps shift body clocks, and long-wavelength light (such as red) with low melanopic illuminance helps prevent the clock shifting in an undesired direction.

These were implemented and tested throughout the lighting workshops in Hamburg and adjusted for eye comfort and appearance.

The final design is a result of more than 150 hours of testing across several weeks, with different teams contributing, during which time the lighting interactions with various materials were explored, accounting for the light appearance, ambience, safety and hardware requirements on board.

In addition to the A350’s main cabin having Welcome and Farewell lighting scenes for boarding and disembarking, as well as tailored scenes for taxi, take-off, sleep and landing, the Wellbeing Zone will feature soft blue-enriched light creating a daytime sky effect with

1. Jetlag can be reduced with the correct use of lighting
2. Cabins can have a range of mood lighting to aid passenger wellbeing



2

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PROJECT SUNRISE

There are 12 possible lighting scenarios in-flight, developed specifically for the Project Sunrise flights, and inspired by the colours of the Australian landscape. These include:



Awake

Identified by Postnova as the key scenario in promoting circadian adaptation. Broad-spectrum, blue-enriched lighting helps customers adjust to the destination time zone and help them stay awake; a softer version is available for crew to choose based on cabin mood and ambience.



Sunset

An immersive transition from a daytime mode into dark that moves through the colours of a sunset into a night sky with moonlight and slow cloud effect to relax customers and prepare them for sleep.



Sunrise

Dynamic lighting effective for a transition from night to day that replicates an Australian sunrise rolling from the front of the cabin to the rear.

“FROM THE CIRCADIAN POINT OF VIEW, IT IS IMPORTANT TO REMEMBER THAT BIOLOGY IS THE SAME FOR EVERYONE, SO THE PRINCIPLES ARE THE SAME”

slow-moving clouds during ‘the day’ to keep customers awake, and a moonlight inspired scene with reflections of water rippling to relax customers who spend time in the Wellbeing Zone while the rest of the cabin is in a dark period.

In a first for the airline, the six enclosed First Suites will offer a fully customisable lighting sequence for their environment that means customers can choose the time zone they want to be on for the duration of the flight.

“We aim to optimise lighting across all classes, and a lot of work has been done on different lighting sources. From the circadian point of view, it is important to remember that biology is the same for everyone, so the principles we work with are the same,” says Postnova.

Commenting upon the customised lighting schemes, Qantas International CEO Cam Wallace says, “These world-first flights have been an opportunity for us to work with experts and build on our experience of long-haul flying to rethink the inflight experience with a focus on customer wellbeing and combating the effects of jetlag.

“One of the things that was clear from the research is the importance of light cycles and brightness in setting the body clock and that was the basis of this testing.

“Combined with the design of the cabins, specialised meal planning and the movement programme, this unique lighting sequence will help improve

our customers’ comfort in the air and minimise their jetlag when they arrive at their destination.”

THE LIGHT AHEAD

“Because of how long they are, ultra-long-haul flights offer an opportunity to start circadian adaptation to the destination while in the air,” observes Postnova.

“There are many laboratory studies on the role of light, but more field studies are needed.” Her team is running such a field study with Qantas, following a 2022 AUS \$702 million grant from the Australian Research Council to aim to develop strategies to mitigate jetlag using biophysical modelling of circadian rhythms. The project aims to quantify the speed of adaptation after transmeridian travel and optimise the timing of light exposure amongst other factors.

Postnova admits it’s hard to predict what impact this research will have on future cabin lighting programmes but says, “It would be good to see circadian science applied to lighting design more broadly and not only in cabin lighting. There are many sources of light in our everyday lives that either promote or disrupt circadian health. Optimising those could help promote long-term health and wellbeing.” ●

1. The ‘Sunset’ setting in Project Sunrise

2. The Wellbeing Zone promotes passenger movement, stretching and hydration

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THE LION'S SHARE

For US operators, LEO offers an upgrade over legacy ATG networks, but can installation costs be justified with increased loyalty and revenue?

“A LOT OF AIRLINES WILL WANT TO SEE WHAT HAPPENS AT AIRBALTIC FIRST”

Cabins in North America have predominately been serviced by air to ground (ATG) networks and one of the key reasons for this was due to the available satcom terminal technology in terms of size, weight and cost.

The bulk of mechanically steered antenna arrays used on many widebody and narrowbody aircraft types simply weren't suitable for smaller commuter aircraft types. Even those mechanical array types that could be accommodated on smaller regional airframes often didn't have suitable antenna mounting systems and although many business and smaller VVIP-type aircraft have operated L band, Ku band or Ka band satcom services for years, they have not been suitable for regional aircraft services either.

Weight and aerodynamic drag which equates to increased fuel burn will prevail as a key consideration for any equipment considered by a commercial aircraft operator so, in a marketplace that was initially focused on charging passengers for inflight connectivity services, the overall business case of revenue versus cost rarely stacked up.

“The latter also has to be viewed from a historical viewpoint where available bandwidth was low – sub 5 Mbps to the aircraft – and higher in price compared to current per megabyte equivalent prices,” says avionics engineer Paul Bedward. “Given that, most aviation satellite connectivity providers focused their attention on the larger narrowbody and widebody airline fleets.”

The advent of Low Earth Orbit (LEO) satellite connectivity services has, however, driven the development of the Electronically Scanned Array (ESA) based antenna terminals. ESA technology for Ku/Ka band aviation connectivity satellite services has been in development for some time although, until recently, the cost of such antenna systems made them prohibitive for anything other than government/military applications.

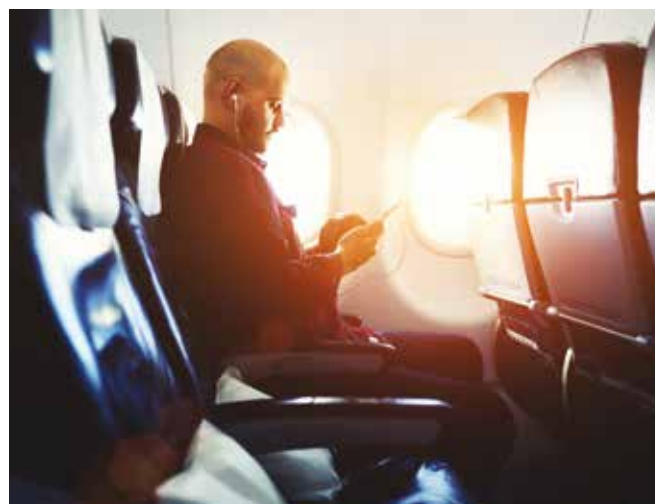
The latest design aspects mean that transmitted power can now be reduced, meaning that issues such as excessive heat generation are far less of an issue when operating on a LEO satellite constellation. Although issues still remain, for example poor satellite viewing angle at higher latitudes and break-before-make beam switching, the advent of the lighter and smaller ESA-type antenna is set to become the critical enabler for regional passenger satellite-based connectivity.

A Passenger Experience Survey by Inmarsat Aviation found that 82% of passengers worldwide are more likely to rebook with an airline offering good quality inflight Wi-Fi – and this fact has not escaped regional airlines. The vast majority (97%) of passengers now use their digital devices when travelling, so it's no surprise that inflight connectivity has become a must-have, rather than a nice-to-have, even for regional travellers. What was once just a short flight is now an opportunity to catch up on work, your favourite TV show, or the day's news – all from 30,000 feet.

Dave Whelan from the Valour Consultancy says the emergence of these new LEO networks, accompanied by small or aerodynamic antennas and domes coming on to the market, means that a significant number of ATG contracts up for renewal heralds a war for the hearts and minds of regional aircraft operators.

“For providers, you're talking about potentially up to 2,000 aircraft as an addressable market. Some operators of regional aircraft may stay on ATG contracts and here, one of the dependencies is where they sit in terms of their overall fleet. A big driver is that particularly North American Airlines

▼ Connectivity and customer loyalty is the main battle of our age





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600

OneWeb has been developing a constellation of over 600 satellites into Low Earth Orbit which will offer high-speed and low-latency broadband connectivity

want a uniform and consistent experience across the fleet.”

ThinKom’s phased arrays have connected over 100 million passengers and have clocked up more than 33 million operating hours under their collective belt. CTO and chairman Bill Milroy says, “The big three US carriers each have fleets of over 400 regional jets so, as you can imagine, this market segment is very attractive for would-be IFC provider and antenna solution providers like ThinKom.” He adds that a multi-constellation strategy to support regional fleets is paramount to provide competition, enhanced service, improved availability and redundancy, all of which will offer a much more resilient customer experience.

Milroy says it is important to select antenna technologies that are capable and mature enough to support outfitting hundreds of regional fleets by the end of 2024. “There are many types of antenna technologies on the market which fall into various classes of phased arrays and ESAs,” he explains. “While many people are rightly excited about the future of ESAs, it’s important to consider reliability. They just haven’t been flying long enough for us to really know how well they perform over time, how often they will fail, or how much maintenance they’re going to need.”

CONSTELLATION

Nick Maynard is market development director at OneWeb. The company is developing a LEO constellation that has acted as a catalyst for advances in ESA technology. Maynard agrees about the brand equity at stake: “Airlines can now realistically and consistently offer the same level of connectivity across their fleet from regional aircraft to single aisle and widebody aircraft – creating a seamless network-wide connected experience for passengers.”

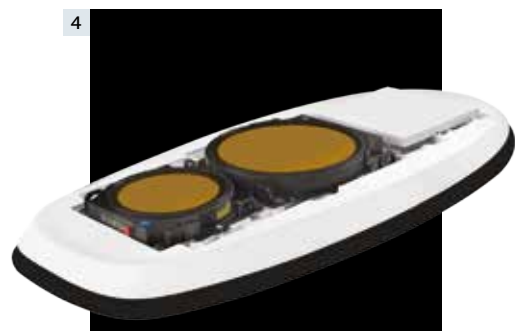
OneWeb has been developing a constellation of over 600 satellites into Low Earth Orbit which

will offer high-speed and low-latency broadband connectivity and will, he explains, represent a watershed moment for inflight connectivity especially for smaller regional jets that to date have remained largely unconnected. Maynard says one of the benefits is that LEO connectivity opens up new revenue opportunities for airlines, including inflight connectivity subscription packages that passengers can purchase or sign up to as part of a loyalty programme.

DOUBTS

Job Heimerikx, CEO at AirFi, which has created AirFi LEO together with partners Iridium and Skytrac, has his doubts as to whether regional aircraft connectivity represents such a gold mine however. He insists that, while it is a huge opportunity for airlines of every size and type to increase ancillary revenues and improve passenger experience with inflight connectivity, it’s incredibly difficult to prove a business case for equipping small regional jets.

“Regional carry far fewer passengers than their mainline counterparts, and they generally fly such short routes that no passenger onboard is willing to pay for Wi-Fi,” he warns, adding, “even if they did want to pay, the aircraft would be landed again by the time they got through the payment process and finally accessed the service.”



4

1. Satellite technology is key to inflight connectivity (Credit: Shutterstock)
2. IFE systems must harness the latest technology
3. AirBaltic will use SpaceX’s Starlink internet system
4. ThinKom’s phased-array antenna technology

AirFi's USP is that its LEO connectivity solution doesn't alter the airframe and can be installed in as little as six hours per aircraft and costs a fraction of other satcom offerings on the market. "There's no doubt that ESAs, being lighter and flatter and smaller than mechanically steered arrays will open up the regional jet market for IFC," Heimerikx says, "but the fact remains that even the smallest ESA requires a hole to be drilled into the airframe. This is fine for operator-owned aircraft, but it's bad news for airline who lease their aircraft and must return them to the lessor in the same condition received. Also, any protrusion from the airframe will create drag and increase fuel burn."

Dave Whelan notes that all eyes will be on the success of new LEO connectivity entrant Starlink. Developed by SpaceX, Starlink aims to serve commercial aircraft with in-flight high-speed low-latency broadband internet with speeds of up to 350 Mbps to aircraft, and with latency as low as 20ms.

Latvian regional airline airBaltic announced in early 2023 that it is to equip its entire Airbus A220-300 fleet with SpaceX's Starlink internet

connectivity system. While the system rollout has been delayed due to testing and certification, it is planned to start installing the hardware on the fleet before the end of 2024.

SpaceX's pitch from a business model standpoint is encouraging, says Whelan. "Airlines with regional jets or regional airlines specifically would perhaps have struggled to make the business model make sense with a standard GEO operation. Although there will arguably be a lot of add-ons for airlines, there's nothing additional around it that you might get from a traditional connectivity provider."

There are still a lot of unknowns there, he cautions, which is why he thinks there will be some hesitancy. "A lot of airlines will want to see what happens at airBaltic for a year or two to see if there is good service at a reasonable rate," he says. "If successful, it might completely change the way some of these deals are structured because the GEO operators might have to adapt."

"Still," he continues, "SpaceX might be able to blow the others out of the water. But by virtue of getting there first, they might get things wrong, because there will be difficulties with it," he concludes. ●

82%

A survey has found that 82% of passengers are more likely to rebook on an airline that offers good quality connectivity



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CATS IN THE CABIN

With so few of the latest and fastest ethernet cables available to the aviation industry, **Alex Preston** asks
is CAT8 a clawless kitten?

Today's modern airliners are equipped with more electronics than ever before. From dynamic in-flight entertainment (IFE) displays and servers, electronic flight bags, smart galley solutions and more advanced avionics, cabin and cockpit equipment has evolved from the very simple to quite sophisticated systems.

Such devices rely on the muscle provided by cables and, in the case of commercial aircraft, this can run into hundreds of miles of cabling, hidden out of sight and out of mind from passengers and crew. For example, the A380 carries approximately 320 miles of cables.

As the cabin network becomes smarter and more connected, these cables need to be capable of providing the necessary data capacity and response times with low latency and at lower weight.

In its 2020 white paper, *Advancing Aircraft Connectivity with a Single Pair Ethernet Solution*, TE Connectivity declared that: "The starting point for current and future connectivity options is the ethernet network protocol. Thanks to its versatility, affordability, and universally accepted open standards, ethernet is evolving at the physical layer to support the SWaP (size, weight and power) and performance needs of modern aircraft cabin networks."

Cat8 is the newest addition to the Cat (Category) family of ethernet cables. It was first introduced in the early 1970s as 10BASE5. At that time, its thick copper coaxial-type cables supported a data rate of 2.94 Mbps, but with the introduction of ethernet version 2 in 1982, speeds ramped up to 10 Mbps.

Cable design has subsequently evolved from Cat 3 (a now defunct cable capable of handling data speeds of up to 10 Mbp in an unshielded twisted pair) to Cat 7 and 7A (a shielded twisted pair cable intended to support much higher frequencies of signals than the Cat5e and Cat6 cables) and beyond.

“OUR CABLE CONTINUED TO DELIVER RELIABLE SIGNAL INTEGRITY RIGHT OUT OF THE BOX UP TO 2,000 MHZ”

The Category 8 standard was developed by the ANSI/TIA-568 standards body – more specifically, the TR42.7 committee. The document that details Category 8 cabling is ANSI/TIA-568-C.2-1, and was published in November 2016 as a standard.

Responding to the needs of aviation, engineers have continued to improve the performance of Cat cables. And while Cat8 is still to penetrate the aviation market in any significant manner, a couple of companies have introduced their own Cat8 ethernet cables for aerospace use.

In 2023, US-based PIC Wire & Cable – A Division of The Angelus Corporation – introduced its PICMates Cat8 Ethernet cable (E84824), while WL Gore & Associates announced its own new Cat8 ethernet cable.

One of the most significant differences between Cat8 ethernet cables and their predecessors is the speed and bandwidth available. For example, PIC's E84824 offers a bandwidth capacity of up to 40 Gbps, a significant enhancement over the 4-Pair, 10G Base-T E74824 Cat 7 cable, which is suitable for airborne 10G Base-T CAT7 local area network applications such as cabin management systems (CMS), IFE and ethernet backbones.

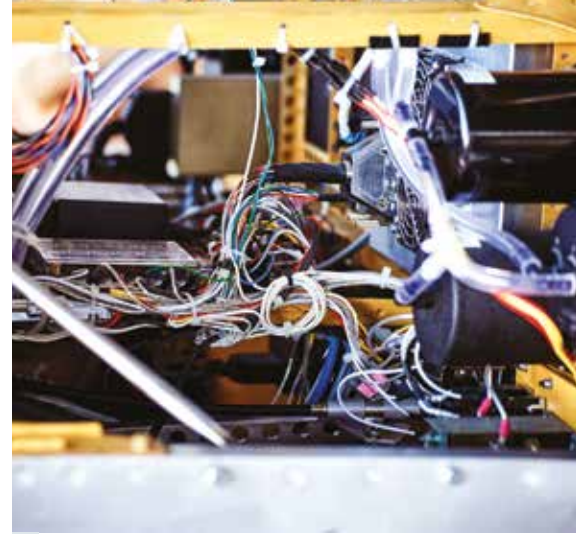
According to company literature, Gore says its Cat8 version “reliably transfers data and video up to 40G BASE-T at lengths up to 22 m (72 ft) without compromising system robustness or adding weight.”

PROPERTIES

Such properties are crucial to delivering an uninterrupted superior experience, promised by the latest generation of high-definition IFE screens, such as the 4K OLED Astrova from Panasonic, Thales' 4K QLED HDR Optiq displays and Safran Passenger Innovations' 4K ultra high-definition (UHD) displays utilising MiniLED technology of its RAVE Ultra plus platform.

Wireless-IFE, where content is streamed direct to a passenger's personal electronic device will be offered next year by United Airlines, following its recent agreement with Starlink's Wi-Fi service.

Such a service demands a network infrastructure that can handle large video files without buffering or degradation in quality. Here again, Cat8 cables can help such bandwidth-intensive operations, as well as supporting applications such as virtual reality, online gaming and inflight retail, all of which require low latency and high data



2

transfer rates to create immersive and responsive experiences.

The dual-layer shielding in Cat8 cables provides excellent protection against electromagnetic and radio frequency interference. PIC says its Cat8 cable incorporates advanced shielding technology, including individually shielded pairs and an overall braid shield which effectively minimises electromagnetic interference (EMI) and crosstalk. It claims it ensures uncompromised signal integrity, safeguarding data accuracy and reliability in complex aerospace systems.

PROTOCOL

Similarly, Gore says a test to meet Cat8 protocol “proved that our cable continued to deliver reliable signal integrity with lower insertion loss right out of the box up to 2,000 MHz”. When field-testing Category 8 solutions, the installation is tested from 1MHz to 2000MHz, whereas Category 6A balanced twisted pair copper cabling is only field tested from 1MHz to 500MHz.

In technical documents, the company also states that to meet higher frequencies, replacing four leading alternative Cat6A cables with a single Gore Cat8 cable at 22 m (72 ft) could save installed weight up to 82 kg/km (180 lb/1000 ft). These reduced cable diameters also allow for greater flexibility and a tighter bend radius making routing easier and faster for maintainers.

By their very nature, aviation cables have to maintain reliable signals in all types of operating conditions such as fluctuating temperatures, changing weather, repeated vibration,

1 Passengers increasingly require cables that can support bandwidth-intensive operations 2 Commercial aircraft carry hundreds of miles of cabling



2

high abrasion and hazardous chemicals. PIC's E84824 cable features a ruggedised construction to ensure durability, resistance to vibration, shock and electromagnetic disturbances, guaranteeing uninterrupted performance in the harshest conditions.

With an adherence to industry standards, including Cat6, Cat6a and Cat7, both PIC and Gore promote Cat8 cables as a secure and future-ready solution for aerospace networks, thanks to their backward compatibility. They are compatible with the huge installed base of cabling and equipment using RJ45 connectors for categories 6A, 6 and 5e as specified in ISO/IEC 11801 and EN 50173.

With so few Cat8 cables debuting for aviation applications, manufacturers have continued to enhance their Cat7 portfolios. In 2019, PIC Wire & Cable released its CAT7 ethernet DataMATES cables, capable of delivering 10G performance at 600MHz, the highest frequency available for 10G ethernet speeds.

Commenting at the time, Eric Witkowski, product specialist, said, "CAT7 cables are engineered to perform at higher frequencies, while still providing 10G data speeds. Our cables

are designed with individually shielded pairs to greatly reduce the amount of pair-to-pair signal interference and protect the 10G performance."

More recently, Carlisle Interconnect Technologies added a new lightweight, high-speed, digital data cable MX10G-24-ALW to its gigabit-plus line of ethernet cables.

In place of the standard copper-based shield, the 100 Ω 1-10 G Base-T ethernet cable features an aluminum round shield which allows substantial weight savings without sacrificing temperature rating or electrical performance.

Able to support gigabit data up to 250 MHz, MX10G-24-ALW is 10% lighter than standard gigabit cables and suitable for use in high-temp applications up to 150°C.

Offering more bandwidth than is currently needed, only time will tell if Cat8 will take-off with commercial aircraft operators. However, with Power over Ethernet (PoE) cables an up-and-coming physical layer for cabin management systems on aircraft, giving users the maximum performance in a lightweight, flexible cable, Cat8 has the potential to deliver the future inflight experience for crew and passengers alike. ●

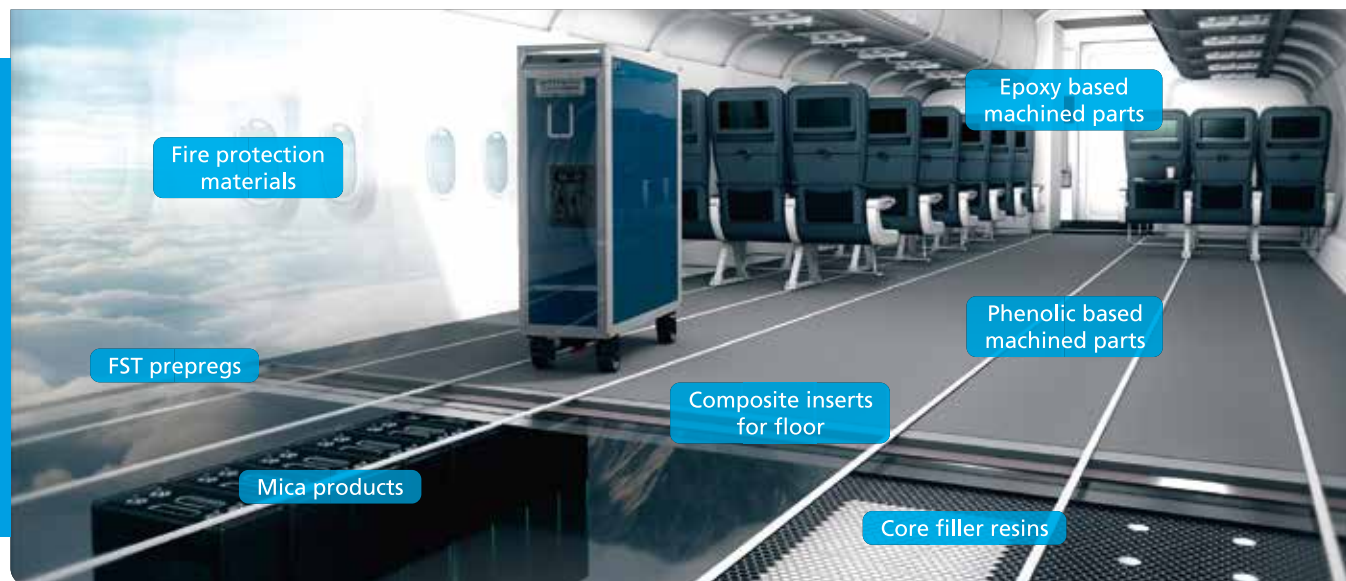


Able to support gigabit data up to 250 MHz, MX10G-24-ALW is 10% lighter than standard Gigabit cables and suitable for use in high-temp applications up to 150°C



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▲ Ideas for cabin design continue to evolve, such as the Airbus Airspace 2030 concept

BEHIND THE FLIGHT

Bernie Baldwin receives a tutorial on cabin management system developments from leading providers

Despite the fact that there is so much magnificent engineering surrounding it – making the aeroplane fly – the hub of activity in a commercial aircraft is arguably the cabin. Here is where passengers are expecting a safe and comfortable flight and where an airline's cabin crew perform their duties to ensure that expectation is achieved.

For the latter to carry out their role smoothly, a cabin management system is a valuable tool, capable of dealing with the many elements that create the

optimum passenger experience. These include controls for the lighting, the temperature, inflight entertainment and connectivity systems (including interaction with passengers for food and beverages and duty-free purchases), catering, aiding the boarding and disembarking processes, as well as fault reporting and potential fixes.

One of the leading providers of such systems is Diehl Aviation, which has developed CANSAS (Cabin Area Network Systems and Services). This, according to company technology specialist, Marcel Schmedes, not

only scales well across different platform types – from eVTOLs to widebody aircraft – it also scales across functionality. “It is therefore possible to add just a few functions or provide a complete cabin control solution. In the latter case, CANSAS, as a line-fit cabin management system, offers a variety of on-board functions,” he explains.

“A few of the more prominent functions include cabin illumination, passenger address, cabin interphone and galley and lavatory controls. With its integrated Wi-Fi capability, CANSAS can also cooperate with distributed



1. Cabin design is constantly changing 2. Marcel Schmedes from Diehl 3. The CANSAS system was on show at this year's AIX

“WHERE PASSENGER NUMBERS ARE LIMITED IT CAN ALSO PROVIDE DIGITAL SERVICES DIRECTLY TO PASSENGERS”

sensors and control elements, or provide interoperability with crew and maintenance personal electronic devices. Where passenger numbers are limited – think small jets or eVTOLs – it can also provide digital services directly to passengers,” he adds.

DIFFERENCE

Schmedes is also quick to point out the features that differentiate the Diehl system from its competitors. “We believe that there are at least two capabilities that make our system unique. The first is its scalability; there is no server. Our core system consists of the CANSAS HPC (high performance controller), with each of the units providing all general capabilities of the system with a multitude of aircraft interfaces,” he remarks.

“Each HPC also has the potential to drive a full graphical human machine interface, such as flight attendant panel (FAP), or to process video data and complex neural networks for artificial intelligence. A single HPC (for example, in an eVTOL application) is therefore sufficient to provide passenger services, control cabin elements and host third party software in our ‘user modifiable software’ framework. The HPC is a

full cybersecurity managed, trusted computing platform that meets the highest security requirements, enabling additional use cases.

“The second major capability making CANSAS unique is our mission to embrace open standards wherever possible, where we believe this will add value to the customer; taking into account potential lock-in scenarios and interoperability,” Schmedes reports.

SECURE STANDARDS

“One of the efforts worth mentioning is the standardisation of the ARINC CSMIM (cabin secure media-independent messaging) cabin communication standard, which we have driven forward with many cabin equipment suppliers and the major OEMs,” he elaborates. “These standards form the basis of what we call the cabin data integration layer – a digital representation of the operational status and usage of cabin equipment.”

In explaining the value of this, Schmedes introduces another user group for whom a cabin management system is important, the MRO and catering providers who help to ensure that everything is ready to operate.

“This layer provides valuable data for further digital processes that think about usage and equipment health data to optimise maintenance processes, like an integrated electronic technical logbook, or estimate remaining useful life to avoid unexpected failures,” he notes. After all, there is a vast amount of hi-tech engineering in the cabin, too.

“A good example is the area of the galley, where CANSAS can integrate all data such as water and waste management, power consumption, and with, for example, AI-based video sensor analytics, the general usage and the flow of goods. With this data layer, an operator can understand much better the health status of equipment and the management of consumables. This can then lead to optimised supply chains to reduce cabin waste or fresh water supply. In addition



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“DIEHL IS LOOKING TO FURTHER THE USE OF AI TO CREATE EVEN GREATER INTEGRATION THROUGHOUT THE CABIN”

to these operational optimisation factors, CANSAS can support various onboard scenarios with its digital assistance, where bin fill-level detection, mood lighting scenarios, seat path indication and various other supportive means can provide crew and passengers with an optimised turnaround process,” Schmedes states.

As is normal for any company developing systems such as this, Diehl has not stood still since the introduction of CANSAS. Schmedes therefore outlines the new features introduced over the past year and what enhancements are likely in the near future.

“One of our new features is the ‘On Board Cloud’, which allows the operator to manage their own applications and optionally use our provided cloud service to remotely manage the software for the aircraft and/or their fleet over the air,” he begins. “Even more recent is our ‘Flying Edge’ software capability, which integrates the aforementioned cabin data integration layer into larger ecosystems in the cloud-based management architectures of OEMs and airlines alike.

“Using ‘Flying Edge’, the CANSAS HPC is integrated into cloud ecosystems

as a remote and secure edge node. With this data integration layer available on the ground, the door is open for holistic optimisation processes around aircraft operations. ‘Flying Edge’ is in its preliminary stages of development and will be further developed within our research project Advantage/IPCEI-CIS – now ‘Sra’, which is funded by the European Commission and the German Federal Ministry for Economic Affairs and Climate Action, with our Advantage project,” Schmedes comments.

The technology specialist also reports that, in addition to seamless software and protocol integration, Diehl is currently working with its partner SkyFive on a new physical air-to-ground communication capability. “This will allow an enhanced CANSAS HPC to connect directly to ground infrastructures via an integrated, reliable hybrid communication link, without relying on other systems,” he says.

Schmedes has already mentioned one function of CANSAS involving the use of artificial intelligence, and admits the company is looking ahead to further the use of AI to enhance the functionality of the system and create even greater integration throughout the cabin.

1. The cabin is the hub of activity in a commercial aircraft cabin. Credit: Shutterstock 2. Diehl's high performance controller

OUTLINE

“As an outline, CANSAS can provide the necessary data integration layer for data stream processing, where, of course, machine learning is a feasible option. Furthermore, we are exploring different means to efficiently process the data on board where it makes sense,” he confirms.

“Here we see the topic of neural network-based complex sensors as very interesting and have developed several prototypes to show a robust feasibility. We are also working to clarify the regulatory requirements for flightworthy AI components. All these factors should pave the way for powerful onboard implications to support various processes, ultimately providing a great user experience and leading to more deterministic and sustainable solutions,” Schmedes concludes.

The move towards aircraft having one central point of control for aircraft cabin functions is well and truly under way. Whatever their fleet, airlines will be able to implement such systems thanks to varying levels of scalability. And with increased AI content, the functions offered are only going to get better. ●



2



GETTING A HEADS UP ON NEW ENHANCEMENTS

Just as the technology from Formula 1 motor racing cars often makes its way into everyday automobiles, so business aviation is often regarded as the proving ground for technology which eventually makes its way onto airliners.

The companies providing cabin management systems for business aircraft are continuing to forge ahead with enhancements to well-established systems.

Head Up Technologies is a company offering a full range of lights, switches and cabin management solutions to the business aviation industry.

Its subsidiary, Alto Aviation, is a leader in premium cabin sound, whose in-house team designs, manufactures and distributes cabin audio systems and cabin management for all aircraft types in this field.

Kate Williams, global marketing manager at Alto Aviation/Heads

Up Technologies Group explains the value the company's Cadence CMS (cabin management system) portfolio brings to the market.

"Cadence is designed to solve obsolescence and upgrade the cabin control of all functionalities: lighting, IFE, power, galley appliances, attendant call, shades, climate and system settings," she confirms.

As for the use of AI, Williams admits that it is still early days for Heads Up. "It isn't particularly impacting our CMS services just yet, but we are keeping a close eye on the evolving technology to understand how it may be helpful for us in the future," she concludes.



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UNIVERSAL APPEAL

Simon Cook, CEO of Universal Air, talks about switching from charter to scheduled operations

In March of this year, Malta-based Universal Air took the bold decision to move away from charter flights and in to the regular, scheduled airline business.

While this was a big step, the airline also took the decision to replace its sole aircraft, an elderly DHC-8-100, with a pair of much newer DHC-8-400 (and a third is on its way). With that, the airline made its first scheduled flight on 26 March (from Malta to Pécs in Hungary) and dozens of other destinations in southern Europe thereafter.

There's never a good time to start a regional airline, but for CEO Simon Cook there was an opportunity to be taken.

"At the time we took the decision to switch (from charter to scheduled flights), the rumours were swirling that Air Malta's collapse was on the horizon," he explains.

Air Malta was the 50-year-old flag carrier. Like something out of a Shakespearian tragedy, after 18 years in the red, it returned to profit in 2019, but its finances were scuppered once and for all

by a combination of the Covid-19 pandemic and the subsequent EU refusal to allow the Maltese government to grant it state aid. The airline flew its last flight on 30 March. That same week, Universal Air took to the skies.

ADVERSITY

From this adversity came opportunity. While the government had incorporated much of the former flag-carrier's operations into a new airline known as KM Malta Airlines, the team at Universal Air identified a gap in the market for a nimble regional airline that neither KM Malta or the LCCs serving the island could fill.

"We knew that, in whatever form, a new airline would not be as big," says Cook, explaining that the LCCs were interested in flying point-to-point from their main hubs, but in his view connections around the shorter hops were missing. The airline also had the chance to acquire a brace of DHC-8-400s around the same time.

"It was one of those things where everything kind of aligned, and there was opportunity,"



▲ CEO Simon Cook

▲ The DHC-8-400 offers greater flexibility



1

“WE KNEW THAT IN WHATEVER FORM, A NEW AIRLINE WOULD NOT BE AS BIG”

Simon Cook, CEO Universal Air



2

notes Cook. “We thought that as we were investing in new aircraft, we should be a little bit bolder and look at growing more quickly than our original plan.”

The Q400 aircraft allows for what Cook describes as a more ‘intimate’ flying experience. “The cabin crew can spend a bit more time with the passengers, so the customer experience is a lot better than you expect on some of the larger aircraft. Plus, you have the advantage of being guaranteed either a window or an aisle seat,” he adds, adding that the pitch of the seats on the regional turboprops are more generous than the LCC rivals.

Destinations that might be a stretch for LCCs to get the load factor needed are in Cook’s sights because, as he points out, when there are only 70 seats to fill, the smaller airports start to look a lot more appealing. Other than the Pécs, destinations including Tripoli, Salerno and Casablanca are served, as well as the more widely recognised holiday hotspots such as Corfu, Ibiza and Nice.

ROUTES AND ISSUES

The airline also flies to Munich and Palermo. The latter was served by Air Malta, but it had never been much of a profitable route for the airline. “Their aircraft like to fly on routes that are three hours plus, so a quick 40-minute hop

from Malta doesn’t really do them justice,” asserts Cook. “This is another one where we can look at putting in our smaller aircraft and operating a higher frequency.”

If there’s one issue that has affected all of Europe’s aviation in 2024, it is strikes and inefficiency on the ground, particularly in air traffic control.

“It is an issue, and I think there are two sides to it,” comments Cook. “Being a small airline, we are a bit more flexible. Even with the problems in Munich recently, even if there’s a five-hour delay, we can generally get passengers to their destinations on the same day, whereas the LCCs have schedules that are so tightly packed, the knock-on effect could be felt for days.”

Cook cites a Lufthansa report that found the majority of passenger dissatisfaction with airlines stems from how customers are treated on the ground. While there’s nothing that can be done about delays outside of the airline’s control, providing staff with the ability to advise and assist passengers is an area where Universal can easily make a welcome point of difference.

“You shouldn’t just be a number on the ticket sale. We want you to feel part of the experience. Hopefully then we can get repeat business from passengers who haven’t been as satisfied with some of the other European carriers,” Cook concludes. ●

70 SEATS

Destinations that might be a stretch for LCCs to get the load factor needed are in Cook’s sights because, as he points out, when there are only 70 seats to fill, the smaller airports start to look a lot more appealing

1. Malta to Salerno is one of the many routes offered by Universal Air

2. Universal Air’s inaugural landing was greeted with a traditional water salute



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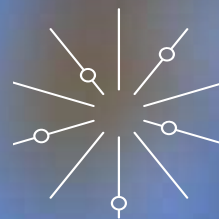
**Electrical
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Power



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Mechanics**



Controls



**Cabin
Networks**



Who: Thompson Aero Seating

What: Vantage Nova seating

Web: thompsonaero.com

First spied on the firm's stand at AIX, Thompson's clean-sheet Vantage Nova premium class seat is back in the news as it has been ordered by an as-yet-unnamed airline. The seat is available for twin-aisle aircraft in either a herringbone or reverse herringbone configuration, and as it's offered from only a 40" pitch upwards, it means the airline can make use of available space. The seat can be configured with pivoting monitors, wireless charging and a bi-fold table.

SKYTED 320 ENABLES USERS TO CONVERSE WITHOUT EXTERNAL DISTURBANCES



Who: Skyted

What: Skyted 320

Web: skyted.io

Making the APEX Crystal Cabin shortlist, this noise-cancelling muzzle was dreamt up by engineers who were posed a question by Airbus: "What if 100 passengers took a call at the same time?" With backing from Airbus and the European Space Agency, Skyted continues to develop privacy and silence in communication without impacting cabin quietness. The acoustic technology, developed in collaboration with the French Aerospace Lab (ONERA), enables users to enjoy conversations without external disturbances or the risk of being overheard.

JUST LANDED

Upcoming products
and technology from
around the industry



Who: Spafax

What: Connected

Content Stream

Web: spafax.com/content-technologies

We've talked about this elsewhere in the issue, but it is worth mentioning here that the Spafax Connected Content Stream is also a finalist for the Crystal Cabin special award. The product allows passengers to stream content across their entire journey. Meanwhile, its low bandwidth addresses airline concerns over high data costs associated with live streaming.





Who: Safran
What: Euphony
Web: safrangroup.com

It's been around for a little while, but in terms of comfort Safran's headphone-free Euphony headrest speaker system deserves a mention. The product has been developed in partnership with acoustic engineering Devialet and creates a sort of 'sound bubble', which is heard by the person in the seat while being practically imperceptible to others around them.



Who: Thales
What: IFE Accessibility Suite
Web: thalesgroup.com/en/aerospace

Shortlisted for Crystal Cabin's special 'Best Customer Journey' award at APEX, Thales' suite of accessibility solutions has an animated 'Signing Avatar' that will sign to complement closed captions. The Avatar can sign in multiple languages and is fully customisable according to the airline's requirements. Secondly, the 'Accessibility UI' features a familiar structure and flow with gesture controls mirroring what passengers will use on their devices.



Who: Bucher Leichtbau
What: SkyBassinnet
Web: bucher-group.com

At AIX earlier this year, we saw the new SkyBassinnet from Bucher which has been described by the company as both functional and reliable as well as well as stylish and comfortable. The unit has a patented folding mechanism for easy and space-saving storage and transportation as well as a lightweight construction for easy handling by flight attendants.



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CRADLE TO GRAVE

The safe disposal of products should be part of their design, explains **Dan Rust**, head of design at Cobalt Aerospace

It's no secret that waste is a challenge for the aviation industry. Whether maintenance related, like disposal of obsolete aircraft and parts, or onboard waste from passengers, there are a whole host of issues operators need to address daily to ensure a fleet meets sustainability targets.

Some of the obstacles which operators currently face can be seen as the products of progress. Aircraft that were manufactured a significant number of years ago have now aged and are being decommissioned, ready to be replaced by newer, more efficient designs. These older models were not necessarily created with sustainability in mind, meaning that, for example, they may have been built with materials which are hazardous, or cannot be easily recycled. The same can be said for many other parts of older cabins; interior products were not always designed to be disposed of in a way that minimises the impact on our planet.

But we know better now. Thinking about the end of a product's life during the design process may sound like a strange concept but, for both designers and operators, crucial practicalities such as easy and safe disposal must be a consideration. In the conversation around sustainability, building these practicalities into a design is perhaps of equal importance to ensuring that a product is long-lived.

FLUORESCENT PROBLEMS

One very real example of how the aviation industry is continuing to be encouraged to confront issues around safe and sustainable disposal of waste products is the European Union's recent ban on fluorescent lighting.

Fluorescent lighting has been a staple in aircraft interiors for decades. However, the environmental implications of using fluorescent tubes – particularly in the context of commercial aviation – have become increasingly concerning.

Earlier this year, the EU imposed a ban on the sale, supply and import of fluorescent lamps into the region. The decision, rooted in justifiable environmental concerns, ends previous exemptions for the use of the toxin mercury in lighting units. This landmark part of the RoHS (Restriction of Hazardous Substances) directive now forces European aircraft operators still using fluorescent lighting to closely examine future plans for their cabins, with operators in other regions wise to do the same.

As well as housing mercury – a toxic chemical which threatens environmental risk in the case of damage or disposal – fluorescent lights sometimes contain other hazardous materials such as phosphor coatings, which increase disposal challenges for operators. Safe handling and careful discarding or recycling (where possible) are essential to prevent these materials from entering and damaging our ecosystems – no easy



uof



▲ Dan Rust,
Cobalt Aerospace

2

“FLUORESCENT SYSTEMS HAVE A MUCH SHORTER LIFESPAN THAN MORE EFFICIENT LEDS”

feat for maintenance teams working with restricted time and resources. Mercury is not only a risk to the environment; exposure can also cause serious health problems. The World Health Organisation lists mercury as one of the top ten chemicals of major public health concern and has recommended the phasing out of non-essential mercury-containing products, like fluorescent lamps, for some time.

And it's not just the challenges around decommissioning fluorescent tubes safely which make the units decidedly environmentally unfriendly. Fluorescent systems have a much shorter lifespan than the far more efficient LED interior lighting products available today.

Our own LED lighting product, Cobalt Spectrum, is one such example. Our system has been flying for nearly a decade and, in that time, we've experienced first-hand the efficiencies LED systems offer over fluorescent units. It's one of the reasons we developed Cobalt Spectrum in the first place.

BRIGHT IDEAS

Perhaps the most obvious advantages of opting for LED over fluorescent bulbs are their physical attributes: they are smaller and far lighter. This not only helps operators to save on the total weight of the aircraft, but also to burn less fuel, which makes for a more economical and sustainable flight. LEDs also produce much less heat than fluorescent lights, making them far more efficient.

In general, retrofit solutions are an excellent way to sustainably revamp an existing aircraft whilst minimising the resources used. For these solutions to be a legitimate option for operators, particularly airlines, they need to be easy and quick to install. We tackled this by making our system a true drop-in, plug and play product: operators need only remove the existing lighting units and swap them with our LED units. There is no change to the aircraft wiring, meaning a short installation time and no training required for cabin crew to use the system effectively.

The EU's RoHS directive cites the wide availability of “safe, mercury-free alternatives”, such as LED systems, as a factor in the decision to ban fluorescent lamps for members of the EU. The UK also enforced the directive this year. With the negative environmental and health effects of mercury well documented, alongside the clear benefits of LED lighting systems, it is essential that operators in all regions now look to the future and plan the change to illuminating their aircraft interiors with LED. ●

1 & 2. LED cabin installations can create ambient lighting while reducing overall aircraft weight



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PUTTING GREENWASHING OUT TO DRY

There's a plan to act against 20 airlines for unsubstantiated environmental claims, but will it work?

Read some of the major airlines' 'net zero' statements and you might be forgiven for thinking that they, and they alone, can single handedly solve the climate emergency. The documents are full of clichéd buzzwords like 'sustainability', 'pathway to net zero' and 'navigating the green transition'. Newer engine designs are more efficient but, the way that some of them talk, it is as if nothing more harmful than wild geraniums are produced from the exhaust.

The reality is a little different. SAF production worldwide is not currently enough to fuel just one of the major carriers, and regular jet fuel consumption in the coming year is likely to reach the highest level that it's ever been.

All 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.

The Consumer Protection Cooperation panel inside the European Commission (EC) focused on claims made by some airlines that the CO₂ emissions caused by a flight could be offset by climate projects or through the use of sustainable fuels, to which the consumers could contribute by paying additional fees. The authorities are concerned that the identified practices can be considered as 'misleading' actions or omissions.

**"CONSUMERS
DESERVE ACCURATE
AND SCIENTIFIC
ANSWERS"**



The issues include claiming that the airline is moving towards net-zero greenhouse gas emissions without stating targets or providing an independent monitoring system. CO₂ 'calculators' provided on some airline 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.

Airlines had just 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 EC. What is clear, though, is the need for consistent definitions of words that hopefully will put an end to airlines marking their own homework. ●

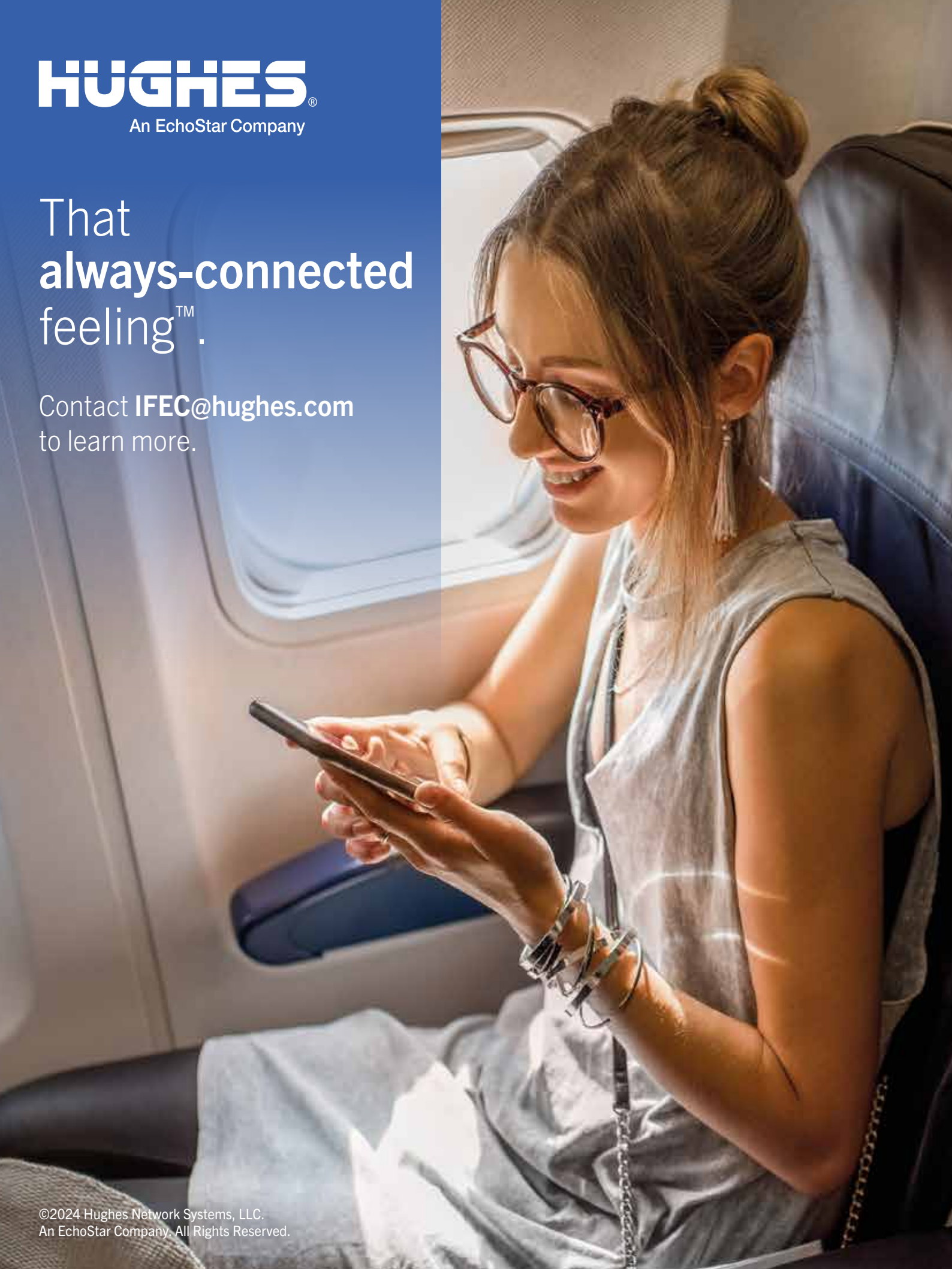
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In May, European officials sent letters to 20 airlines identifying several types of potentially misleading green claims and telling them to bring their practices in line with EU consumer law within 30 days or face sanctions



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