

Aircraft

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CABIN

Perfecting the passenger experience

Management



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for the New Year**

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but what standards are lagging?

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Our new project to find the
top employers in aviation

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RING THE CHANGES IN 2024

It's New Year, and besides making predictions about things that might affect life on board in the near future (see page 22), we've also been pondering what the year in space might look like.

I'm talking about the discussion around the different types of satellite communications of course, and the trade-off of cost vs speed vs latency. Our contributor Bernie Baldwin and the experts he spoke to know far more about this subject than I do; I'd stick my neck out to say that it is likely that we might see some airlines fit more than one antenna to work with multiple networks.

This would enable them to offer passengers a choice between 'basic' Wi-Fi (which they could still charge for) and 'best' which might be used for business travellers who need to get some serious work done while on board.

With that said, I'm reminded of how many long-haul planes were expensively fitted with satellite phones in the late 1990s so that these hard-working executives could stay in touch with the ground... but in fact they were not used as much as the airlines had predicted, so we'll see.

Elsewhere, a delegation of world leaders and other interested parties have once again used the COP summit to declare a commitment to sustainable aviation fuel. Ten per cent by 2030 sounds modest, but when you consider that only around 0.1 per cent of jet fuel sold is currently SAF, you'll understand



▲ Will the space race hot up in 2024?

my scepticism on how and if this will be achieved. There's no technical reason why it can't be done though, and if some of the hot air from sustainability conferences can be turned into action, there's no reason why we shouldn't see synthetic fuel production dramatically increase.

Finally, I hope you had an enjoyable holiday period and, whatever part of aviation you are in, I wish you a prosperous New Year.

Greg Whitaker

Greg Whitaker

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P.S. Being reasonably new here, I'd love to get to know you better. Please don't be shy in dropping me a note about what you'd like to see more (or less) of in the magazine. You can reach me at: greg.whitaker@realresponsemedia.com

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Aviation Business News

BUSINESS BRIEFING



INTERIORS

Hi Fly hits the sky with new aircraft

➤ Charter airline and wet lessor Hi Fly has expanded its fleet with the addition of two Airbus A330-200 aircraft registered as 9H-HFJ and 9H-HFK.

The two A330-200 aircraft share identical features, offering a seating capacity of 269 passengers. The cabin configuration is designed to cater to a range of travellers, featuring 18 Business Class and 251 Economy Class seats.

The Business Class is a double seat with a generous 78-inch legroom and flat-bed recline, ensuring a comfortable travel experience. This class features motorised adjustability for headrests, backrests, legrests and seatpans. It has lumbar control, lap safety belt, electrical and mechanical adjustability and electrical massage divided into five zones, each with two motors.

The Economy Class passengers enjoy a pitch of 32-inch, within the available space.

"We are delighted to add these two new Airbus A330-200 to our existing fleet," said Antonios Efthymiou, CEO of Hi Fly. "They are the perfect complement to our portfolio and will allow us to offer an even wider range of options to meet the growing demand for our services from around the world."

With a maximum range of 15,500km, the A330-200 family is well known for its reliability and an operational efficiency of 99.4 per cent. It makes it an ideal choice for airlines looking to reduce their operational costs and improve their environmental performance.

Hi Fly resumed the expansion after the pandemic period and is currently adding a new aircraft every quarter and this rate is expected to be kept until end of 2024.



COMMS

Hughes deploys new IFE satellite

➤ Hughes Network Systems has confirmed its Jupiter 3 ultra-high-density satellite has successfully deployed its solar arrays and antennas and the spacecraft has passed readiness testing by the manufacturer, Maxar Space Systems.

Hughes is now testing the satellite communications with ground equipment, the final step before initiating broadband services for customers such as airlines, corporations, governments and consumers of its HughesNet service. The Jupiter 3 satellite will bring over 500 Gbps of extra broadband capacity across North and South America.

"Reaching this milestone shows the engineering excellence and innovation of our team," said Hamid Akhavan, CEO of Hughes' parent company EchoStar. "As the largest commercial satellite ever built, Jupiter 3 will double the capacity of our fleet, serving more customers who live beyond the reach of cable and fibre internet by providing ubiquitous connectivity throughout the Americas. It is a testament to the strength of our Jupiter System technology, the de facto standard for satellite connectivity."

The increased capacity will enable the use of technology that reduces latency for a more responsive internet experience.



IFE

Cathay signs IFE deal with Disney+



Cathay Pacific has signed a deal with Disney+, the first airline in Asia-Pacific to do so.

In December, more than 100 hours of films, series and documentaries from Disney, Pixar, Marvel, Star Wars and National Geographic were added to the airline's IFE systems.

Vivian Lo from Cathay said: "We are delighted to be the first in Asia-Pacific to bring the original titles and stories from Disney+ to our customers onboard."

The airline has also invested in inflight entertainment technology onboard its aircraft with 4k screens on the A321neo. Meanwhile on the A350, the airline has now introduced a new graphical user interface.

Featuring a dark theme that makes for more comfortable viewing, the interface also introduces new features including interactive maps. The new interface will be progressively introduced to other aircraft types.

INTERIORS

JETMS Completions to overhaul Global's A380 cabin



Aircraft interior refinishing firm JETMS Completions (part of Avia Solutions Group) has been selected to refurbish the existing interiors on UK start-up Global Airlines' A380s.

Work has been planned to commence on the first aircraft in January 2024.

JETMS is best known for providing interior and exterior refurbishment

for a range of small private aircraft. The project with Global will be the first on an A380. JETMS recently acquired Waypoint Aerotec, giving the firm additional approvals and production equipment.

Global has stated that its long-term strategy is to "completely overhaul" the interiors of its fleet of four super jumbos. In the meantime, passengers will be able to enjoy a refurbished version of the interior already fitted.

James Asquith, CEO and founder of Global Airlines, said: "I have no doubt at all that the combination of JETMS working with Factorydesign will bring to life our own onboard product on all of our A380s.

"I'm looking forward to sharing images and videos of the transformation with passengers to demonstrate the progress we are making as we build towards bringing our first aircraft into service."



RETROFIT

Emirates signs \$1bn Safran deal



Emirates has announced a series of contracts awarded to Safran including a US \$1 billion deal for the latest generation Safran seats for Emirates' new fleet of Airbus A350 and Boeing 777X-9 and retrofit for existing Boeing 777-300 aircraft.

The agreement includes Business, Premium Economy and Economy class seats for the Emirates Airbus A350, and Business, Premium Economy and Economy Class seats for the Boeing 777X-9. The new seats will offer a host of enhancements that set a new standard for comfort.

The deal also represents a significant export order for a French company, and is part of Emirates' ongoing investment into France and Europe.

Sir Tim Clark, president of Emirates Airline said: "Safran is a key partner for Emirates and we're working closely to reimagine and elevate our future cabins with smart design and the latest technologies. These have been decisive factors in our selection of seat types which will be customised for Emirates."

"Safran is very proud of our longstanding strategic alliance with Emirates," said Safran CEO Olivier Andriès. "The continuation of our 30-year partnership underscores Safran's commitment to innovative solutions for aircraft interiors, critical aircraft equipment and services to ensure the best possible passenger experience."



48

BAA Training is to acquire many Cessna Skyhawk aircraft on which to train new pilots

20,000

A huge number of dots make up the Flying Art livery on the new QantasLink A220. It is one of 29 new aircraft joining the fleet

\$1.9bn

Hawaiian Airlines has been acquired by Alaska Airlines in a \$1.9bn deal, which includes \$0.9bn net debt



BUSINESS

Green theme for QantasLink

➤ QantasLink's first new Airbus A220 aircraft has rolled out of the paint shop at Airbus' facility in Mirabel, Canada with a striking green Aboriginal-style paint theme.

The aircraft is the first of 29 A220s that will be delivered to the short-haul subsidiary of the Qantas group as part of its domestic fleet renewal programme to replace and grow its narrowbody fleet.

The A220s will gradually replace the Boeing 717s currently operating flights across Australia. With double the range of the B717, the A220 is expected to open up new domestic and short-haul international routes as more aircraft enter the fleet.

Indigenous Australian design agency Balarinji has worked with Qantas to create the fuselage design. The latest

livery features the artwork of senior Pitjantjatjara artist Maringka Baker and tells the dreaming story of two sisters.

Around 100 painters were involved in completing the livery, with the Airbus teams working with 130 stencils to replicate the detailed designs.

Qantas Group CEO Vanessa Hudson said: "These aircraft have the potential to change the way our customers travel across the country."

The A220 (registration VH-X4A) will undergo a series of routine test flights with Airbus as well as being fitted with Qantas-specific equipment before being handed over to the airline by year end.

The aircraft will then ferry from Quebec to Australia and join the QantasLink fleet. Another six A220s are scheduled to be delivered by mid-2025.



BUSINESS

Soisa expands Dubai production

➤ Seat cover manufacturer Soisa Aircraft Interiors is to expand of its facility in the Dubai South airport freezone area in the UAE.

The revamped facility is four times as large as the original site, featuring production lines for dress cover lamination, curtains and cutting areas. A sizable warehouse has also been incorporated to accommodate both raw materials and finished goods. The announcement comes after a successful first year for the manufacturer in Dubai.

Soisa currently provides upholstery and assembly services for around 120 airlines. The new extension will enable the firm to dramatically increase its production capacity, thereby catering to a wider array of client needs.

Jacobo Mesta, CEO of Soisa, said: "We are committed to enhancing the nearshoring experience for our clients around the world. By moving to the heart of Dubai South, Soisa aims to capitalise on its state-of-the-art facility by offering cutting-edge services in dress covers and lamination and speeding our clients' products to market."

de·risk

/dē'risk/

verb

1. To take steps to make something less risky or less likely to involve loss
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AT THE CORE OF THE OPERATION

Sustainability needs to become more than a buzzword, it needs to be at the core of every firm's operation. **Scott Symington** from AJW explains his company's position



“We prioritise the repair, reuse and recycling of aircraft components”



Scott Symington is chief commercial officer at AJW



To learn more, visit:
ajw-group.com

Q: Can you tell us about AJW's commitment to sustainability in the aviation industry?

At AJW Group, sustainability is not just a commitment; it's a core value embedded in our operations. To reinforce this commitment, we've signed up to the United Nations Global Compact (UNGC) and appointed a dedicated sustainability partner to lead our sustainability goals. We've been in the industry for over 90 years, and our dedication to sustainability is an extension of our heritage. We understand the critical role we play in ensuring the continuous and sustainable operation of some of the world's largest airline fleets.

Q: What specific areas are you focusing on in your sustainability efforts?

We're focusing on three key areas. Firstly, we prioritise the repair, reuse, and recycling of aircraft components. Secondly, we're reducing our carbon footprint across our operations with the introduction of solar panels to power our headquarters. Lastly, we're committed to delivering on the four pillars of the UN Global Compact, which include human rights, labour, environment and anti-corruption. These principles deeply permeate our corporate governance.

Q: How does AJW Group address human rights and labour issues within its sustainability initiatives?

Our legal and people teams work diligently to ensure our business aligns



1

100%

SkyLeather is a revolutionary material, crafted from a 100 per cent water-based PU formulation, providing a sustainable and eco-friendly alternative to leather

with the six principles concerning human rights and labour. This involves upholding internationally declared human rights, advocating for freedom of association, eradicating forced and compulsory labour, abolishing child labour and eliminating employment and occupational discrimination.

Q: How are you combating corruption within your operations?

We have a zero-tolerance policy across the business. All staff undergo initial



3

and continued mandatory compliance training every year to ensure we maintain an ethical business environment and the brand reputation of AJW.

Q: How is the company contributing to environmental sustainability in the aviation industry?

Recognising our responsibility, we've prioritised sustainability across our operations. Our procurement team and sustainability partner actively research and source more sustainable methods, including adopting sustainable packaging materials, efficient waste management systems, and localising our supply chain to reduce the carbon footprint of our supply chain. We're also focused on product sustainability, such as developing, SkyLeather, a seat covering using lighter and more environmentally friendly materials that provides a significant fuel burn reduction.



2

“Sustainability is a commitment that involves everyone at AJW Group”

Q: Can you provide more details about SkyLeather and its impact on environmental sustainability?

SkyLeather is a revolutionary material, crafted from a 100 per cent water-based PU formulation, providing a sustainable and eco-friendly alternative to traditional leather. Not only is it 25 per cent lighter than the lightest hide leather in the market, but it also results in significant fuel savings for airlines. By using SkyLeather for interior refurbishments, operators could save nearly 16,000kgs of fuel annually per aircraft, reducing their carbon footprint substantially.

Q: How do you ensure the group's sustainability efforts extend beyond product focus?

Our environmentally conscious headquarters is a prime example of responsible resource management, featuring rainwater harvesting systems and solar panels. We actively report on our Scope 1, 2 and 3 emissions, detailing our yearly energy consumption and

carbon footprint. We're expanding our solar panel initiative, actively reducing CO₂ emissions, and progressing towards powering AJW Technique Europe with solar energy, contributing to a sustainable future.

Q: How does AJW involve its staff and stakeholders in its sustainability initiatives?

Sustainability is a commitment that involves everyone at AJW Group. Our staff are increasingly aware of our sustainability objectives through internal communication and training initiatives. We believe that success in sustainability requires the commitment of all parties involved, from top leadership to our valued customers and suppliers. ©

1. AJW Group's headquarters is environmentally friendly
2. Solar panels play a part in reducing the company's emissions
3. All staff undergo regular training to maintain an ethical business environment

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six most interesting stories from the preceding week.

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William Perrone
president
Perrone Leathers & Textiles

Perrone Leathers & textiles

Keeping it real

We caught up with **William Perrone**, president of Perrone Leathers and Textiles, to talk about common misconceptions about real leather



Visit: perroneco.com for more information



1

Q: As a company that offers both synthetic and natural products, what are the advantages and disadvantages of either?

Well, the manufacturing of leather is the second oldest profession in the world. The leather hides themselves are only a by-product of beef production, so it's the ultimate in upcycling; if you were just to throw them in the garbage, that wouldn't be a very efficient use of the material.

In recent years, we have figured out much cleaner ways to tan. Leather has a higher perceived level of comfort and service life in the aircraft, and people recognise it as a superior product. As

leather gets old, it develops a patina – think of an old leather jacket or pair of shoes that has become more comfortable as they have aged. Whereas when synthetic is worn, it's considered broken.

On the flip side, synthetics offer durability, convenience and weight advantages. They are also easier to store and have a higher cutting yield. The downside to synthetic is that it's typically made of petroleum somehow, so when we talk about being green, it depends on how you analyse the story. While synthetic material can be lighter, saving weight and therefore emissions, it is a product made in the first instance from oil.

Q: So customers find a worn leather look to be desirable, even in a commercial setting?

I don't really know if it's desirable as much as it's mentally acceptable whereas worn synthetic is mentally unacceptable.

Q: You mentioned modernising the processes to tan leather. Can you tell me a bit about reducing the amount of chromium, and have you managed to get rid of it all together?

We use vegetable extract and synthetic tanning agents and we don't need metals anymore at all. The exact tanning process depends on the end use of the leather that we're producing, whether that is tensile strength, flammability or abrasion resistance.

The vast majority of research and development in the leather industry is a by-product of the automotive industry as that's where the money is, and all of the chemical suppliers have to be REACH (registration, evaluation, authorisation and restriction of chemicals) compliant and conform to the reduced energy consumption and recyclable water standards that everyone has to abide to.

Q: The plants have had investment made to achieve high standards. Now that investment is in place, have you noticed any operational efficiency?

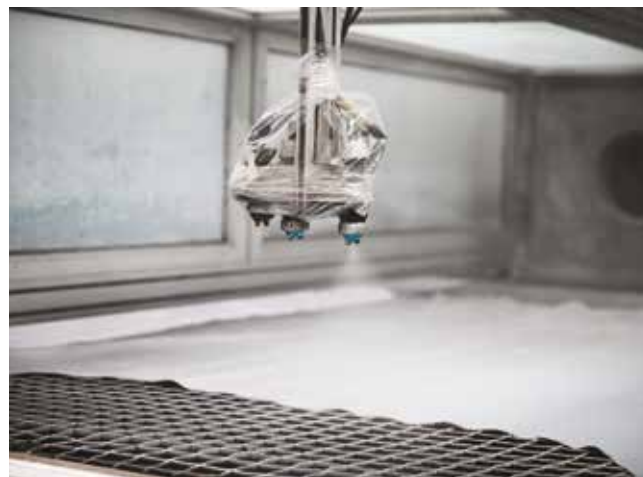
Well, the aerospace industry is very, very small. Approximately 300,000 commercial aircraft seats are produced per year, and each customer wants their own colour, texture, temper, design and



2



3



4

Leather hides are a by-product of the meat industry and are the ultimate form of upcycling

thickness etc, so it's difficult to reach a common unit scale in the aerospace industry. What you must do is set the factory up to be able to be reactive. Time is money and they want what they want, when they want it, so it isn't about mass production, it's about quality, but quality done quickly.

Q: How many hides do you typically process a week across all sectors?

Well, aviation rail transportation is our main business at approximately 2,000 hides per week. And I'd say that it's somewhere in the 97th percentile.

Q: Are you able to find that quantity of raw products locally or do you have to go further afield?

It depends on the market. So, the premium leather that we make is from South German bulls, sourced from Northern Europe. Domestically in the United States, there are almost 700,000 head of cattle slaughtered per week, so there's no lack of raw material there, but if required we can source from around the world.

Q: Is there a secondary market for anything else that comes from the hides, such as gelatine or similar?

Yes, this is all the rage. We have a new product called Sonoma and our Sonoma leather is exactly that. It is only the prime panel, the most desirable piece of leather in the cowhide. We also trim the rawhide and convert to either health and beauty products or protein for gummies and collagen, that kind of thing. What's really nice about that is that none of that material is in the carbon chain of the

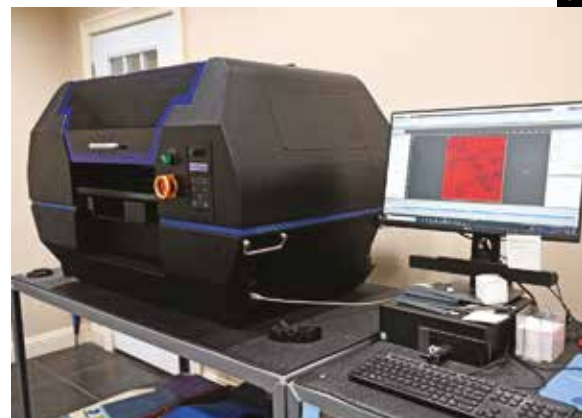
upholstery leather – it is all upcycled to another use, as opposed to historically what has been scrapped.

Q: Is there enough understanding among customers that leather is a by-product, and that animals are not slaughtered just for their hides?

I think that there's an education that needs to be promoted, that leather use is the ultimate in upcycling product and also that there's a post-consumer use for this leather. Once the leather seat covers have gone through their use of life, we take them back and we convert them into small personal items. So it's not cradle to grave, it's cradle to cradle with leather, unlike synthetic. ©

1. Aviation leathers are bespoke for clients
2. A large, modern drum for leather tanning
3. The factory processes an average of 2,000 hides per week
4. Coatings applied according to specification
5. Modern equipment is used to get a highly engineered and durable product

5





DESTINATION: WELLNESS

Stephanie Taylor takes a holistic look at how wellbeing encompasses the mind, body and soul. As such, airlines and suppliers are coming up with a myriad of ways to keep passengers feeling on top form while flying



◀ The Qantas A350 business class area has been designed with privacy and exceptional comfort in mind

Excitingly, some of these features are set to appear onboard far sooner than 2070. Announced in February 2023, just one month before easyJet's report was published, was Lufthansa's new long-haul travel experience, Allegris. In an airline industry first, the first- and business-class Allegris seating product, which will take flight on Lufthansa's incoming Airbus A350s next year, will offer the ability for passengers to heat or cool their seat using a sliding scale on their in-seat control screen. The temperature control technology is being provided by Swiss firm Caynova.

At the time of the announcement, Lufthansa's CEO Jens Ritter commented, "Every guest has their own understanding of premium, which is why we focus on maximum individuality and exclusivity."

In-flight exercises

As with the introduction of temperature control, seating is becoming "smarter" in other ways, too. In-flight exercise videos provided via the in-flight entertainment (IFE) system have long been available for passengers to follow, but now seat manufacturers are coming up with ways to encourage passengers to stay mobile. At AIX 2023, Recaro unveiled its R Horizon concept created in collaboration with Panasonic Avionics Corporation and others to gamify movement for passengers.

"The system functions by detecting muscle activity and the posture of the passenger through pressure sensors embedded in the seat," explains Mark Hiller, Recaro Aircraft Seating's CEO. "There are two types of programmes: one requires the full attention of the passenger to complete the video game or relaxation exercise, while the other can be completed by the passengers while they are reading a book, working or watching a movie. Instructions are delivered through screen-in-screen, audible or tactile [vibrations within the seat] solutions, according to the passengers' choice."

"While exercising, passengers are receiving feedback. The system is their personal digital coach within the seat," Hiller claims. Importantly, the movement being encouraged is isometric, "which means that a change of the muscle tension is performed while sitting," he says.

Temperature control

In March 2023, easyJet released *easyJet 2070: The Future Travel Report*, which was co-authored by a group of academics, futurologists and business advisors, suggesting what commercial aviation might look like in 50 years' time.

In it, futurist Dr Melissa Sterry explains, "Biomimetic design – copying efficiencies found in nature – will revolutionise aircraft seating and comfort." The report goes on: "Seats will no longer be 'one size fits all', but you will be able to book the kind of seat most appropriate to your body type, accommodating your height and build. Smart materials could cater for your personal temperature preferences, cooling you down or warming you up."



1. Qantas' private A350 first class suites
2. Project Sunrise aims to boost wellbeing
3. The groundbreaking Recaro Horizon seat



2

3

“This means that there are no dynamic movements, but a static contraction, which is low-risk for the passenger and does not disturb others.”

The concept was so well received at AIX that Recaro has decided to further develop it by increasing the functionality and benefits for passengers. “Factors to be considered in future include weight, cost and reliability,” Hiller concludes.

Dedicated spaces

It makes sense that new developments are encouraging passengers to exercise in their seats rather than taking to the galleys to complete a yoga sequence, which can make life difficult for flight crew. But Qantas has taken a different approach and opted to carve out a specific space for in-flight exercise on its upcoming ultra-long-haul Sydney-London and Sydney-New York flights.

The development is part of Project Sunrise, which is a custom-designed flight experience onboard the airlines' 12 Airbus A350-1000s that will enter service from 2025. Aptly named ‘The Wellbeing Zone’, Qantas say the area “has been designed to promote movement for passengers and is a space to stretch, hydrate and get snacks.” Located between the economy and premium economy cabins, it will give passengers the chance to follow specially curated guided movements on large monitors.

100

Qantas' entire A350-1000 cabins will be configured with just 238 seats, which is 100 fewer than the average, to give passengers more space to move around the cabin

It will also be equipped with sculpted surfaces and integrated handles to facilitate stretching.

When asked about whether they thought everybody who wanted to use it would have the opportunity to do so, and whether it would be offered on a first-come, first-served basis or if slots would need to be booked out, a spokesperson for the airline replied, “It's not a bar area where people spend extended periods of time. The space will comfortably fit around six people at a time, and passengers are likely to spend around 5–15 minutes per visit.”

Furthermore, Qantas' entire A350-1000 cabins will be configured with just 238 seats, which is 100 fewer than the average, to give passengers more space to move around the cabin. The cabins, including the Wellbeing Zone, have been designed together by Australian industrial designer David Caon with

movement, sleep and circadian rhythm specialists from the Charles Perkins Centre at the University of Sydney.

Sound mitigation

These types of innovations are undoubtedly the most exciting for passengers, but there are many other less visible transformations going on behind the scenes.

Studies have shown that there's a direct relationship between cabin noise and passenger comfort – the more noise, the less content the passenger – and Collins Aerospace is working on a new solution to address this pain point.

“Noise mitigation is critical to providing complete sensory comfort. It's nearly impossible to fully relax or remain at rest with startling noises or the dull roar of an aircraft,” says Brian St Rock, director of advanced technology & laboratories at Collins Aerospace.

Q-Tech, a 2023 Crystal Cabin Award finalist, is Collins' new sound-absorbing metamaterial, which “has been

1



“STUDIES HAVE SHOWN THERE IS A DIRECT RELATIONSHIP BETWEEN NOISE AND PASSENGER COMFORT”

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1. The easyJet 2070: Future Travel Report has some fascinating projections
2. The Qantas A350 first class cabin features the latest in ergonomic design

In his article, Spence shares a range of possible sensehacking solutions to improve passenger wellbeing that don't require a huge amount of investment from airlines. He refers to biophilic designs, admitting that while the nature-inspired green spaces and water features popping up in airport lounges may not translate as well into an aircraft cabin, "Listening to 30 minutes of nature sounds has recently been shown to improve sleep quality on the ground. Would the same be true for passengers in the air?"

In the future, he foresees the "personalisation of sensory service, given patterns of behaviour known from frequent flyer data," which ties in nicely with the easyJet 2070 report's prediction that "personalisation will be key to [one's] travel experience in the future."

It seems that creating a sense of wellness for passengers goes beyond healthy eating and intelligent cabin lighting. In fact, it could well be more about increasing their sense of control and of freedom, something notoriously difficult to create in a cramped aluminium tube, even with the help of meditation content on the IFE screens. As Spence attests, "It is the more psychological rather than physical dimensions that one is playing with." 🌀

"OUR SENSES ARE CONSTANTLY BEING STIMULATED WHETHER WE REALISE IT OR NOT"

shown to reduce noise transmission by ten times compared to a standard honeycomb sandwich sidewall panel, effectively improving auditory comfort by decreasing sensory overload," St Rock continues.

So, how does it work? "Sound waves enter the Q-Tech bulb arrays, resonate within them and are then dissipated by the unique layout of the bulbs," he explains. "The Q-Tech bulb material can be configured to specific dimensions and sizes to target specific noise spectra, depending on the most pressing problem noise at a particular location within the cabin – for instance, seats near the lavatory where doors might be slammed, areas around crew work areas or spaces in close proximity to increased engine noise."

It's not flying yet, but St Rock confirms that Q-Tech material "is being integrated into several next-generation Collins products, and the team has been conducting voice-of-the-customer sessions to optimise and tailor the solution and gauge market interest."

Lower noise levels in the cabin could also improve passenger wellbeing in other areas. According to Charles Spence, professor of experimental psychology and head of the Crossmodal Research Laboratory at Oxford University, engine noise has a "deleterious impact" on the taste buds.

In research he published on *Frontiers*, an open science platform, Spence noted that "loud noise tends to impair people's sensitivity to sweet and salt".

Could a quieter cabin make in-flight meals taste better? It seems so, with Spence citing noise-cancelling headphones as "an innovative possibility to enhance the taste of airline food" in the research article, titled *Sensehacking Passenger Wellbeing While in the Air*.

Making sense?

To address the idiosyncrasies of wellbeing in the air, Spence is an advocate of 'sensehacking', which he defines as "the use of the senses to improve social, cognitive and emotional wellbeing." Spence elaborates: "Our senses are being constantly stimulated whether or not we realise it. Even unattended, subtle sensory cues, be it ambient scent, background noise, temperature and texture affect our wellbeing and cognitive performance."

"Sensehacking could include everything from changing the ambient scent to improve one's mood and wellbeing when stressed; using particular light/paint colours to make an environment feel warmer while reducing energy costs; or sonically seasoning your food to reduce sugar/salt in foods while maintaining the taste that people like."





While trying to predict the future is littered with shortcomings, some industry experts have been brave enough to discuss what they feel may come to pass in the coming 12 months, as *Alex ‘augur’ Preston* hears

Nina Simone may have been ‘feeling good’ at the prospect of a new day, but with 365 of them to come in 2024, does the aviation industry feel her optimism?

Announcing passenger traffic data for September 2023, IATA director general Willie Walsh commented that “With the end of 2023 fast approaching, we can look back on a year of strong recovery in demand as passengers took full advantage of their freedom to travel. There is every reason to believe that this momentum can be maintained in the New Year, despite economic and political uncertainties in parts of the world.”

“However,” he caveated, “we need the whole value chain to be ready. Supply chain issues in the aircraft manufacturing sector are unacceptable. They have held back the recovery and solutions must be found. The same holds true for infrastructure providers, particularly air navigation service providers. Equipment failures, staffing shortages and labor unrest made it impossible to deliver the flying experience our customers expect. A successful 2024 needs the whole value chain to be fully prepared to handle the demand that is coming.”

So, what will the passenger experience look like in the coming twelve months?

Amadeus’ latest Travel Trends 2024 attempts to answer this. As Daniel Batchelor, vice president, global corporate marketing & communications at Amadeus, says, “After a period of recalibration and reassessment over the past few years, we are beginning to see a host of new ideas bear fruit across our industry.”

Batchelor highlights that airlines continue to reshape their offering to respond to changing tastes. One development identified by Amadeus is the opportunity to offer more affordable and accessible “unbundled” business class fares, as more passengers want to fly at the front of the plane.

During the coming year, Air New Zealand will be adding either four or eight rows of a debut Business Premier Luxe product, while Lufthansa will offer seven types of Allegris business class at varying prices with varying perks.

Chris Brady, CEO and Founder of Unum Aircraft Seating, says we’re likely to see a continued shift toward comfort as a focus for business class seating. “Firstly, for example, more sophistication in seat mechanisms, with design centred around the passenger comfort experience rather than features. This could be as simple as allowing micro adjustments to relieve fatigue.

“Another development in comfort will be the rise of single aisle lie flat seats for single aisle long haul aircraft – not a new

concept, but something we expect to see significant increases in.”

“Secondly,” says Brady, “we will see a ‘less is more’ design approach to aircraft seating. Not only will this mark a move away from a features-first approach towards ‘comfort is found in the spaces’, it will also allow carriers to minimise weight and therefore be a step closer to meeting sustainability targets. In fact, efficiency in general is going to be high on the 2024 agenda with many airlines continuing the quest to add more seats for the same carbon footprint. This is something that’s already being achieved in other cabins, and on virtually every airframe.”

▼ Will doors on suites be big in 2024?






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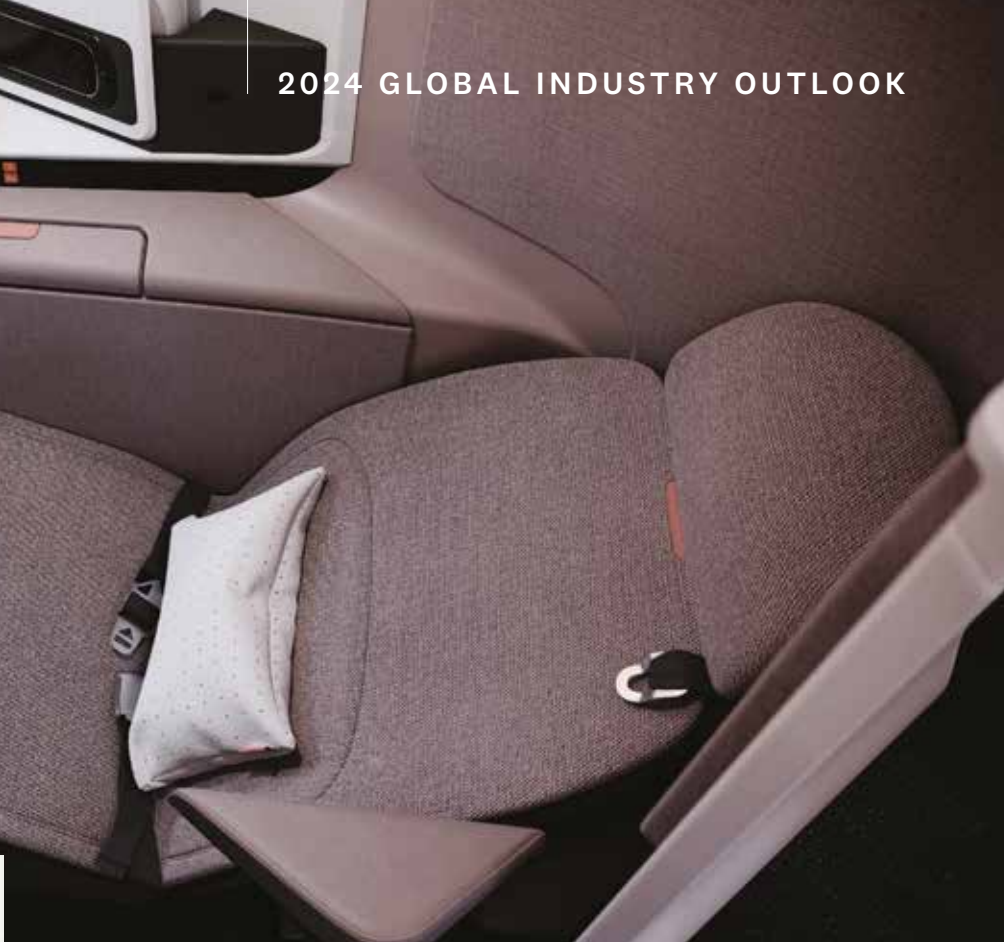
1

Sustainability Demand

Nico Den Ouden, chief commercial officer at Gen Phoenix, says his company is also seeing increased demand to incorporate sustainable materials, such as our recycled leather, into a range of cabin elements.

“For example,” Den Ouden says, “Gen Phoenix recently worked with our airline partner Aeromexico to develop a more sustainable amenity kit that features our sustainable recycled leather on the exterior of the kits, underscoring the rising demand to provide travellers with a sustainable travel experience.”

“Beyond an increased emphasis on eco-friendly materials, our airline partners are eager to explore new finishes and colour trends,” he continues. “In response, this year we’re launching three new finishes within our aviation collection



2

“OUR AIRLINE PARTNERS ARE EAGER TO EXPLORE NEW FINISHES AND COLOUR TRENDS”

to diversify the traditional leather grains used in aviation seating: Gaia, Saffiano and Twill. Gaia offers a soft, silky touch with a large, yet shallow grain, while Saffiano presents a contemporary pattern perfect for luxury amenity kits and is the ideal accent to any cabin interior. Twill provides a fine weave, denim-like texture that makes for ultra-comfortable, premium dress covers.”

Door or no door?

For Brady, “the debate around whether to include or not include doors within business class seats will continue to roll, but with potentially alternative options. At Unum, in situations where airlines and their passengers do want doors – normally, this is for privacy – we’re looking at creating a ‘Door 2.0’. Our goal here is to answer the question of how to solve the weight and complexity issues created by the mechanisms needed to meet the certification requirements.”

With passengers being made more comfortable and their wellbeing addressed, how will we be entertained?

For Valour Consultancy senior research analyst David Whelan and research analyst Summer Staninski, the most noticeable trend in the era of post-Covid recovery is the increase in diversity of IFE content.

“Hollywood content has become less important and keeping up with on-the-ground media consumption trends such as streaming platforms, short-form content and TV has become the focus,” the pair contend.

“Content service providers are partnering with content creators such as YouTubers, influencers, podcasters and others to bring short-form social media style content and podcasts/vlogs/interviews to seatback screens and PEDs. Examples of this include Spafax partnering with the wellness podcast *Feel Better, Live More* and Anuvu’s partnership with Complex Networks.”

1. IATA director general Willie Walsh

2. Unum forecasts a continued shift toward comfort as a focus for business class seating



1

“A BOOM IN CONCERTS AND FESTIVALS HAS TAPPED INTO A DESIRE FOR CONNECTION”

Dance party

After the social isolation of the pandemic, when bands and musical artists were grounded for months, a boom in concerts and festivals this year has tapped into a desire for connection. The trend is expected to accelerate as we look toward 2024, says Amadeus' Travel Trends.

In November, Cyprus Airways chose to include AirFi's Dance24 channel as part of its entertainment offering. With a special focus on electronic dance music, the channel is well suited to a considerable demographic of the airline's market, who will be travelling to and from the country's music festivals and party resorts, such as Ayia Napa.

AirFi recently reintroduced Dance24 content back into its catalogue, giving passengers access to an exclusive collection of 100 hours of music video content recorded live by Clarity Control

B.V. at the biggest electronic music (EDM) festivals around the world, such as Ultra Miami, Mysteryland in the Netherlands and Germany's Parookaville.

Valour's analysts also point to how airlines are working directly with streaming platforms, highlighting the recent Air Canada/Disney+ collaboration to use original Disney+ content onboard. "The rise in streaming platforms has also resulted in higher-budget TV productions and binge-watching. As such, TV is becoming a much more important part of the IFE content offering - Latam and Touch partnered together to get the popular US comedy drama *And Just Like That* on air the day after it premiered and also offered cupcakes to promote the show and the Max platform," they say.

This trend is not exclusive to episodic TV, the analysts state, pointing to how live TV is also growing as in-flight connectivity (IFC) becomes more widespread. On the sporting front, since 2022, Emirates, Qatar and Air New Zealand have adopted IMG's Sport24 to bring huge events such as the FIFA World Cup, Formula One and the Rugby World Cup to the cabin.

Earlier this year, IMG secured the in-ship and in-flight rights to broadcast Formula 1 on its Sport 24 and Sport 24 Extra channels for the next three seasons. Ahead of the Rugby World Cup, held over September and October, Air New Zealand trialled live TV on its 777 and 787 aircraft.

1. How will aircraft interiors evolve in 2024?
2. The new, more sustainable Aeromexico amenity kit created by Gen Phoenix

Connectivity demand

While IFC is bringing opportunities to onboard live TV, and to do so beyond the traditional palette of sports and news, the roll-out of connectivity is bringing other benefits to passengers and airlines alike.

Job Heimerikx, CEO, AirFi, says: "We are seeing very strong demand for our LEO connectivity solution, with its weight advantages, non-invasive install and immediate ROI by way of cost savings on ACARS over IP and payment verification.

"This tells us that 2024 is likely to see a massive chunk of the expected IFC market growth steering toward lightweight, low-cost connectivity solutions. This applies especially to single aisle operators and new airlines launching with innovative digital models and aim to maximise in-flight retail."

Heimerikx also believes that the payments world is turning its attention to ways to eliminate the huge burden of in-flight sales fraud. "Solutions like our LEO will be at the forefront of enabling airlines of all sizes to benefit from online inflight payment processing," he adds.

With Cyprus Airways and Transavia selecting AirFi's Mall in the Sky concept, in-seat ordering is likely to gain even more traction in the coming year. "We are seeing an average uptick of 25 per cent in onboard sales with our in-seat ordering trials and deployments. What airline wouldn't jump on that?" asks Heimerikx.

"When the shop is open for the duration of the flight, passengers can't miss the trolley or be shy to press the call button and ask for things. This freedom for passengers to order what they want, when they want it, is proving to be a massive boon for in-flight sales.

"The benefit of in-seat ordering is clear in every product category and can be measured consistently in various KPIs. Spend per head, quantity per head, and conversion metrics all get a boost. That's not just a trend for 2024, that is a game-changer." ☺



2

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Persuading the most frequent flyers to stick with one airline has an obvious benefit, but loyalty goes both ways...

In 2021, American Airlines celebrated the 40th anniversary of its AAdvantage loyalty programme, which is credited as being one of the industry's first. In the four decades since its inception, much has changed in terms of how frequent flyer programmes (FFPs) operate. Notably, there's

been a move away from the traditional approach that rewarded passengers based on the number of miles they flew in favour of revenue-based models that increase rewards in line with passenger spending. We've also seen the introduction of co-branded credit cards, which allow members to accrue points on everyday purchases.

In recent years, there has also been a shift in the type of airlines investing heavily in their loyalty programmes, with low-cost carriers now leading the charge. Spirit Airlines overhauled its Free Spirit FFP in January 2021, with a focus on the needs of its audience. For example, it now allows a group of up to eight friends and family members to pool Free Spirit points, meaning infrequent flyers can earn rewards faster. The carrier also dishes out double points for any extras purchased by passengers on top of their fares – a smart move for Spirit, which operates a business model that relies on unbundled fees.

More recently, Norwegian Reward has announced a revamp that will see the introduction of new perks for its most frequent flyers, including a free overhead

cabin bag, as well as free coffee and tea, priority boarding, no expiry date on their CashPoints and priority customer service. Members can choose one new perk each time they take eight flights within a 12-month period. They receive all available benefits if they fly 32 times in a year.

So, what's led to this growing attentiveness to FFPs among the LCC community, however they choose to manifest the concept? The numbers speak for themselves: The 2022 CarTrawler Yearbook of Ancillary Revenue by IdeaWorksCompany revealed that Norwegian Reward generated almost US\$39m in revenue from its frequent flyers in 2021. It also stated that "35 per cent of bookings are made by [Norwegian] Reward members".



1. InterLnkd curates fashion and cosmetic products for travellers based on their booking
2. StatusMatch CEO Mark Ross-Smith helps users make the most of their loyalty programmes

Price trend

This industry trend is reducing the need for LCCs to compete on price alone. When customers see value in loyalty programme benefits – and clearly they do, given the revenue being driven by programmes worldwide – airlines can offer a slightly higher price than a competitor and still maintain and/or grow market share. During the Covid-19 pandemic, loyalty programmes proved to be invaluable resources of liquidity. In the US, American, Delta, Spirit and United were able to shore up their airline operations by using their FFPs as collateral to the tune of billions of dollars.

Luckily, LCCs are well placed to offer perks to their most loyal customers. Since most LCCs charge for everything outside of the exact fare, they have more options in terms of what they can offer as a loyalty perk or a redemption, such as luggage, onboard snacks or the ability to bid for seat upgrades using their loyalty currency. These items have a high perceived value to the customer but are usually a low cost for the airline.

Mark Ross-Smith, CEO at StatusMatch, which helps users switch their loyalty tier status to a new airline or hotel, adds: “The benefit that LCCs have over legacy carriers is that LCCs are not bound by alliance rules and governance when it comes to how elite status can be given to a loyalty member. Imagine if a large global airline gave out 50 million gold cards for free tomorrow. It would flood their alliance partners with elite members and the other airlines wouldn’t

LOYALTY PROGRAMME BENEFITS ALLOW AIRLINES TO RAISE THEIR PRICES

be able to service those customers to the high degree of standards elite members expect. There is such a thing as too many elites when it comes to legacy carriers, but with LCCs, it’s in their financial interest to ramp up the number of elites they have.”

Ross-Smith argues that elite loyalty programme members, who typically have to meet certain criteria both with regards to spending and miles flown, are an airline’s most under-monetised customers because there tends to be a disconnect between ancillary revenue and loyalty teams, with the former typically focusing on the non-elite passengers that make up approximately 80 per cent of passengers on any given flight.

“Some ancillary revenue departments view the ‘freebies’ that loyalty give away as revenue displacement [and] are still trying to sell them things like seat selection and extra bags,” he says. “Once airlines figure out that the next US\$100bn of ancillary revenue will come from monetising its elite customers – who spend more, more often and aren’t price-conscious – with products they actually want to buy, I think we’ll see a radical change in how airlines treat their top

customers, which is good for airlines and frequent flyers.”

StatusMatch, which shares the revenue from its fees with its partner airlines, has helped its partner airlines generate approximately almost US\$1bn in new customer value since 2020, according to Ross-Smith. “Status-matching is the fastest, most effective way airlines can acquire new customers who are active, ready and willing to spend/fly. When we work with an airline on StatusMatch, it results in four to five times more new bookings, and five to ten times more customers versus the airline trying to run an offer themselves.”

There’s also a cost-avoidance element to the platform for airlines. Ross-Smith divulges that up to 50 per cent of status matches are illegitimate, but StatusMatch’s secure platform can help to “weed out junk customers”.

Ross-Smith believes that airlines should make their ancillary revenue departments a sub-division underneath the loyalty programme. And regardless whether they agree with this particular statement, it appears other companies are keen to create more of a symbiotic relationship between the two divisions. Take Plusgrade, for example, which acquired loyalty commerce experts Points – now





BRANDS WILL BE KEEN TO OFFER DISCOUNTS TO MEMBERS TO GAIN ACCESS TO MILLIONS OF CUSTOMERS

known as Points, a Plusgrade company – in June 2022 for US\$385m to produce what Plusgrade calls “a new global ancillary revenue powerhouse for the travel industry”.

By combining ancillary revenue and loyalty expertise under one roof, Plusgrade is uniquely positioned to offer consumers the ability to use cash, points or miles as currency to purchase novel and exciting ancillary services, paving the way for the combined future of loyalty and ancillaries.

Start-up ancillary revenue companies are also thinking about how they can introduce a loyalty play, if not now, then in the future. InterLnkd uses a matching engine that curates fashion and cosmetics products from over 1,000 brands based on a customer's booking and relays them to the traveller in the post-sale, pre-trip phase via personalised emails that link to a white-labeled marketplace. For every product purchased, the commission is split between the travel provider and InterLnkd, providing the travel industry with what InterLnkd's CEO Barry Klipp defines as “a free stream of revenue”.

Cash from clothes

The idea was born out of the knowledge that the average person spends €270 on clothes and other products ahead of a holiday, but airlines have hitherto had no way of earning ancillary revenue from

86%

StatusMatch surveyed tens of thousands of high-value frequent flyers and 86 per cent said they would move some or all of their future business if downgraded

these purchases in the same way they do from car hire and travel insurance partnerships. “You're essentially monetising consumer behaviour that's already there,” Klipp says. “We're taking something that's already been done and applying it to a new niche market.”

When asked about whether there's a loyalty angle to the service, Klipp replies, “Yes, we've already sized it. Our technology can handle the ability to support loyalty points or value. And I think, to be honest, I think it has to be done. In today's world, loyalty drives everything, and I think that's what will overcome yield dilution in the airline space.” Klipp feels brands would be very keen to offer a larger discount on their products to FFP members, because they'd potentially gain access to a

targeted audience made up of millions of potential customers.

At the time of writing, InterLnkd was about to sign up its first major OTA.

It appears that as well as providing a steady stream of income through long-established means, like the sale of miles to financial partners, loyalty programmes continue to offer a wealth of new opportunities to generate ancillary revenue for those willing to appeal to frequent flyers' needs. And LCCs may just be presented with the chance to do so on a large scale in the near future.

StatusMatch estimates that over 15 million ‘elite’ members will have their status downgraded or cancelled during the first half of 2023 as the free extensions granted during Covid-19 come to an end. “StatusMatch surveyed tens of thousands of high-value frequent flyers and 86 per cent of them said they would move some or all of their future business if downgraded. Many indicated they would choose LCCs. As LCCs are generally better at monetising passengers than full-service carriers, the logical conclusion is that LCCs will benefit the most from the tsunami of elite downgrades.”

1. Norwegian Reward generated almost US\$39m in revenue from its frequent flyers in 2021 **2.** Recent years have seen a shift in the type of airlines investing heavily in their loyalty programmes

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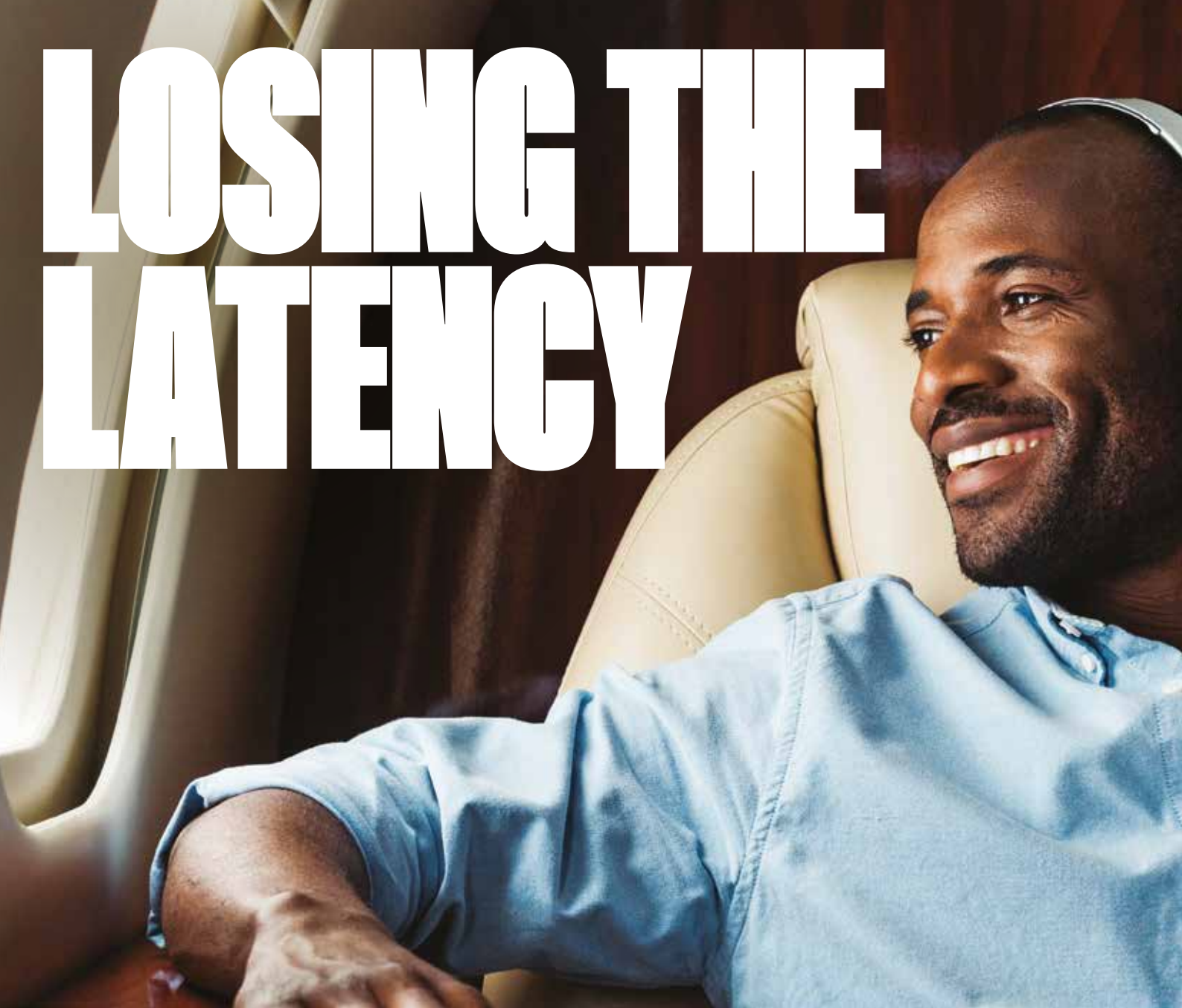
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LOSING THE LATENCY



1

There are various ways to deliver increasingly important connectivity solutions for airlines. *Bernie Baldwin* learns about the options from some key stakeholders

It began as a premium service, but has become a ‘must-have’ for the vast majority of airlines. ‘It’, of course, is connectivity, providing the capability for passengers to be online in flight to use the plethora of functions of telephony and the worldwide web.

The task faced by connectivity providers is to make the service as near as possible to that which customers get in their offices or at home. In particular, this means low latency. This attribute

is defined by Cisco as “the time that elapses between a user request and the completion of that request”. Users, naturally, want that time to be as short as possible.

Peter Lemme, a thought leader at the Seamless Air Alliance (SAA) – a co-operative founded by Airbus, Delta, OneWeb, Sprint and Airtel and now including other big names in technology, communications and aerospace – has been looking at the latest technologies helping to deliver low latency.

Latency

“Round-trip latency results from a combination of factors relating to the time to retrieve information, the time to communicate information and the time to process information,” Lemme notes. “The time to retrieve and process information is somewhat independent to the time to communicate the information. Another factor with communication relates to the transmission path. While good engineering can be applied to protocols, fundamentally the



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“LEO IS A STEP CHANGE FOR IN-FLIGHT CONNECTIVITY”

transmission line itself is limited by physics. The longer the path, the longer the latency.”

Understandably, a level becomes established as to what is and what isn't deemed acceptable latency, and processes initiated to reduce what is considered too high. “Latency impact has to be considered in the context of a specific application,” Lemme indicates. “Streaming video applications do not profoundly suffer from extended latency. Voice applications can degrade as latency increases, because humans start to talk over one another. Gaming applications or high frequency stock trading are commonly used as examples where latency has a high impact. What may not be fully appreciated is that browsing is also impacted by high latency.

“The Seamless Air Alliance Tech Forum has developed a laboratory setup specifically to assess performance of specific applications under varying network conditions,” he reports. “The testing is being utilised to establish application-specific quality of experience (QoE) measurement thresholds that relate to great, good, okay, poor and bad.”

According to John Wade, VP inflight connectivity at Panasonic Avionics, the most effective method to reduce latency is “without a doubt” the introduction of LEO (low earth orbit) satellites. “In the demonstrations we've done with our partner OneWeb, we've been able to show airlines the dramatic effects low latency – less than 100 milliseconds – has on the passenger experience. It's a step change for inflight connectivity,” he confirms.

“All of the airlines that we've engaged since we announced the addition of LEO into our network are excited by the performance advantages these satellites bring. I've had several discussions with airline executives who may have once believed the narrative that spending a lot of capital to throw capacity at their aircraft was the single most important factor for inflight connectivity, but now realise that latency is the real game changer,” Wade declares.

LEO and GEO

Martin Cunnison, business development director, LEO for AirFi, agrees with Wade, highlighting that LEO satellites have considerably less latency than geostationary (GEO) satellites because they are less than 500 miles above the earth and not 23,000 miles away. “The network latency of Iridium LEO satellites is less than 1 second (40-50 milliseconds). Any latency below 100ms is considered good, and below 50ms is very good. The average round-trip latency for LEO satellites is about 10 times lower than GEO satellites,” he emphasises. “Low latency is critical to online onboard payment processing (inflight POS device-to-bank server), reducing the risk of servers timing out during a payment with the obvious impact on inflight sales and passenger experience.”

NetForecast is a company that “measures and assesses the real end-to-end internet user experience”. Its CEO, Rebecca Wetzel, is another convinced that low system latency is increasing

1. AirFi says low latency is critical to onboard payment processing and passenger experience

2. Panasonic has demonstrated how LEO satellites reduce latency dramatically



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in importance. “How quickly an online application responds can dramatically affect a user’s satisfaction,” she declares. “The effect of latency on a user’s Quality of Experience (QoE) is at least as important as speed – and in many cases more important – because high latency slows application response times. This is especially true for interactive applications like web surfing, online shopping and email, as well as for cloud services,” Wetzel continues. “Other factors that affect satisfaction include service interruptions, bandwidth to the passenger, domain name lookup times and packet loss – all of which we measure to provide an overall QoE score.

“Our technology enables airlines to understand what QoE the connectivity systems deliver, and then work with vendors to improve the IFC passenger experience. For example, we have

measured and compared the actual passenger experience for LEO as well as GEO satellites.

“We also scored the overall QoE for passengers of both service types based on the applications that passengers might be using. This included all the network performance parameters we measure (bandwidth, DNS lookup times, loss and service interruptions), but latency played the most important role in determining the outcomes,” says Wetzel.

Acceptable limits

David Whelan, senior research analyst at Valour Consultancy, agrees that LEO networks are facilitating a shift in the market. “It’s a key selling point for what Starlink can offer airlines, and what OneWeb will be able to offer once the network is commercially available for aviation,” he observes. “It is not so much technological advancement, but simply the positioning of satellites that makes the difference and hence there is only so much GEO satellite operators can do.”

Regarding the acceptable latency limits, Whelan points to Starlink

offering latency as low as 20ms. “This would essentially be indeterminable to passengers and so helps ensure the smoothest possible connection,” he states. “GEO operators would argue that the volume of latency-sensitive usage on the aircraft is low, and that a passenger would not perceive much of a difference between Starlink’s LEO service and a strong GEO option.”

ThinKom’s chief technology officer Bill Milroy adds the reminder that there are medium earth orbit (MEO) satellites too, and compares the latency of all three types. “Due to their relative proximity to Earth, MEO (3,000-7,000 miles) and LEO (500-1,000 miles) satellites provide lower latency than GEO (22,000 miles). MEO and LEO networks often exhibit a delay of the order of 150ms and 50ms, respectively, whereas GEO is closer to 500ms,” he notes.

“The best way to benchmark what travellers might consider acceptable is to look at the applications they are trying to use, then understand the level of latency at which they might experience some kind of frustration,” Milroy explains. “For



1. Panasonic's John Wade
2. More customers want to connect their own devices on board
3. Panasonic's In-Seat product
4. AirFi's window antenna

passengers who just want to browse the internet, GEO network latency rates are usually fine. However, latency-sensitive activities like gaming won't tolerate high latency, especially if competing with players on ground-based 5G networks."

Online holdup

Milroy continues: "Nobody likes a holdup online, so it's critical to develop solutions continuously to improve both speed and latency. The best way to achieve a seamless user experience is to have low latency and lots of capacity. Offering LEO or hybrid LEO-GEO services are both good ways to reduce latency. Our ThinAir Plus hybrid antenna architecture was designed to enable just this."

This hybrid approach is one that Cedric Rhoads, VP strategy and business development for Thales, also advocates. "Low latency, and the passenger experience it can enhance, is only one key ingredient of a satisfactory WiFi service for commercial aviation," he argues. "In 2018, Thales demonstrated the first hybrid MEO-GEO solution, which led to a platform that can operate on GEO or non-GEO (MEO) and demonstrated dramatic improvements in latency."

"Thales has provided millions of passengers with an exceptional internet experience for over a decade from a GEO solution. Internet accelerators are used so GEO service's 'look and feel' can be enhanced without a change to the satellite network. Our customers and their passengers rarely notice the effect



of latency, especially with a highly stable network in place," says Rhoads.

Mike Pigott, EVP connectivity for Anuvu, is of a similar mind. "The use of a hybrid network comprising of high-capacity broadband satellites, both in LEO and GEO orbits, allows for low latency, high data throughput and maximum coverage, all to serve both densely concentrated users and thinly utilised areas," he states.

Capacity increase

As can be seen, companies have invested in different technologies to differing extents, which could lead to one of those technologies moving forward as a clear winner. "With technology evolving rapidly, it's challenging to predict which system will do that, as both technologies are at very different stages of their development," Pigott observes. "The right answer is to build hardware and network systems that can adapt to changing needs of customers over time."

"We've solved this challenge by investing in hybrid networks. We are currently preparing to launch our first two MicroGEO satellites, which will form the Anuvu Constellation. Our investment in MicroGEO is part of our 'Bridge to LEO' strategy, which involves investing in GEO now, while at the same time giving customers options for the future, as LEO continues to develop. This hybrid approach offers customers the benefits of GEO today, while also preparing for the increasing importance of LEO in the future," the Anuvu EVP says.

NetForecast's Wetzel provides a more holistic overview. "Given that our data shows the passenger satisfaction scores for LEO service are much higher than for GEO systems, we can surmise that passengers for whom quality IFC service is important will be more likely to choose an airline that offers a better experience. We do not, however, have 'take rate' data, as we are not in that business. We measure and score the passenger experience," she acknowledges.

Standards question

Peter Lemme at Seamless Air Alliance reports that airlines have been "moving cautiously to include LEO services either as LEO-only or as hybrid LEO-GEO which provides the opportunity to take advantage of both networks". He adds that the Alliance's Architecture and Interoperability Expert Group is developing standards for an aero IFC hybrid terminal.



2

“ONE DEBATE IS WHETHER GEO WILL BE CHEAPER THAN LEO. RIGHT NOW, THE JURY IS STILL OUT”

Similarly, Valour's Whelan notes that almost all IFC currently being experienced is GEO. “Only Starlink has really come to market with a LEO option so far. It has signed up five airlines at last count, but most are not active yet. Take-up rates on board are most influenced by whether the service is free or not. The expectation is that Starlink's inflight WiFi will be free to all passengers, which will likely result in a take up rate of 40-50 per cent if marketed properly. For paid services, take up is typically 5-10 per cent,” he remarks.

At Thales, Rhoads believes that as the company has a solution that works with GEO, MEO and LEO, it is already on a

‘winner’. “These hybrid or multi-satellite/ multi-network solutions have a distinct advantage in redundancy over single solution systems,” he stresses.

John Wade points out that the Panasonic approach is also to offer both LEO and GEO. “A multi-orbit network with LEO and GEO satellites gives airlines access to low-latency global coverage, including in polar and remote oceanic regions, and a high-performance service,” he says.

“As to whether there is a clear winner, throughout my career, discussions have always focused on the ‘three Cs’ of inflight connectivity – coverage, capacity and cost. One of the debates we’re seeing from satellite operators is whether GEO service will be cheaper than LEO. Right now, the jury is still out,” Wade states. “However, if GEO does end up being more cost effective, we will use that portion of our network for things like streaming and other applications, and use LEO for services such as enterprise applications that require a low-latency connection to be used effectively during flight.”

Winning post

While accepting that GEO systems account for around 80 per cent of the installed market with the remainder connected through ATG (air-to-ground),

AirFi's Cunnison argues that high-speed internet on aircraft has consistently under-delivered for passengers. With his company invested in LEO, he is convinced the technology will be a clear winner. “Simply put, it enables every airline with an onboard retail offer to eliminate payment fraud. Today's unconnected single-aisle operators cannot, and will not, take aircraft out of service to install heavy, expensive satcom equipment to take a punt on the benefits of providing free high-speed internet to passengers on board. So perhaps the GEO-satcom market is coming to its full saturation point,” he posits.

ThinKom takes a more ‘horses for courses’ approach, according to Milroy. “We believe that in business aviation, LEO has the potential to dominate because the number of passengers is fewer and smaller airport hubs are much less congested,” he elaborates. “Until there is a clear winner, LEO-GEO, and even LEO-MEO-GEO, interoperability is key to ensure success,” Milroy concludes. This, it seems, is the immediate pathway to deliver the ‘must-have’ connectivity that airlines are seeking. 



1

1. The iridium antenna
2. Low latency keeps everyone happy



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STEAMY SUBJECT

Peter Landquist from CTT Systems spoke to us about the benefits of managing humidity levels on an aircraft

Keeping humidity under control 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 kilogram to the aircraft's weight. This means that 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, and thus weight, from that layer of insulation, 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, says 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 benefit, especially for a low-cost carrier (LCC) aiming 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? Landquist explains: "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.

Additionally, dried-out nasal membranes are 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 there means that the atmosphere there can be drier than in the Sahara or the Arctic.

Until recently, this would not have been a problem for LCCs which have generally shunned premium cabins, or



for regional carriers, which have short sectors and any 'business class' is likely to be no more than a little extra legroom in the main cabin.

However, the advent of long-haul, low-cost carriers, which are often keen to establish premium cabins to improve overall yield, means that they, too, may have to start considering the problem of the lack of humidity.

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."



“IMPROVED HUMIDITY CONDITIONS MEAN PASSENGERS FEEL BETTER ON REACHING THEIR DESTINATIONS”

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.

CTT can point to both scientific research and customer feedback that improved humidity conditions result in passengers feeling better on reaching their destinations.

The company argues that it enhances other improvements such as new seats and dining options that carriers have made in their premium cabins.

For example, improved sense of taste and smell in a more moist atmosphere means that airlines do not have to dose their in-flight meals with sugar or salt to boost passengers' perception of flavours.

These are individually small factors but, when combined, can create a differentiator between airlines. If passengers, especially those in the high-paying premium cabins, start to realise that they get off a flight feeling better and more ready to go straight into a business meeting, for example, they are more likely to use that airline in future.

Meanwhile, one possible financial benefit from an airline's point of view is that a more humid atmosphere in premium cabins, says CTT, lessens the risk of static discharge, which can damage electrical components.

Intangibles such as noise, temperature, draughts and pressurisation levels are all important in a cabin, especially a premium one, and have largely been addressed, Landquist confirms. "The last step now is humidity."

So far, CTT has installed its systems in around 2,000 aircraft. Landquist and his colleagues hope that number will rise as more carriers become aware of both the financial and passenger comfort benefits. 

A version of this feature previously appeared in Low Cost & Regional Airline Business

1. Excess water adds weight and reduces efficiency 2. A full cabin will generate moisture

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The Best Places to Work

Peter Burke, president of Workforce Research Group and partner of Aviation Business News' Best Places To Work In Aviation awards explains why firms should aspire for the accolade

Tells us about Workforce Research Group

We run around 28 to 30 best employer programmes globally. We have city-wide programmes such as Best Places To Work in Los Angeles and San Diego as well as state-wide versions like Best Places in Illinois or Louisiana.

We also have sector-based programmes like Best Places To Work in Healthcare or auto dealerships. In the UK, we've run several programmes in PR and marketing and the broadcast sector.

How does the Best Places programme work?

It's a two-part process. First, we ask what you do for employees such as benefits, things you do for fun and perks – the things employees love about where they work. That's worth 20 per cent of the evaluation.

The bigger part is the employee engagement survey which is more complicated. We get businesses to securely submit their employee email addresses and then we send out survey links.

The survey takes about 10 minutes. We get the answers back, crunch the numbers, determine who's good enough to make the list and then we rank them.

Why should aviation companies consider becoming a best place to work?

There are two main reasons organisations participate in our programmes.

If you make the list that's fantastic; being able to use the Best Places To Work logo gives your company a real boost



especially in sectors and regions where the battle for talent is really tough.

To have that distinguishing factor really means something.

However, even if you don't make the list organisations want this information – they want to know what their employees are thinking and feeling so they can get better. And of course they can compare their results to the benchmarks of those who made the lists.

“THIS IS A MEANINGFUL AWARD TO WIN AND SOMETHING YOU ABSOLUTELY WANT TO BRAG ABOUT”

Is there a charge to become a Best Place To Work? The process is free to find out if you make the list, but a lot of employees invest in the employee feedback. We have a data dashboard that you can purchase access to.

It's relatively inexpensive – less than £1,000 – but it will give you all the results of your survey which you can break down into different demographics, length of tenure or departments, so it becomes a management tool.

Tell us a little more about the employee survey The survey has been rigorously tested. All questions have been assessed by experts who know what they are doing in terms of how best to ask them.

It was engineered to be used in any sector, any region. You can go online and look at it. We are fully transparent about what we are going to be putting to the employees and employers.

There are about 70 questions and employees respond from a range of 'strongly agree' to 'strongly disagree' to the statements in front of them.

There are a few open-ended questions, which we don't use for scoring, but are in the data dashboard. The survey remains in the field for two weeks and we send five reminders to participants.

Is it all about recruitment? Our mission is to have the most credible lists we can get, not just a fly-by-night moniker we have bought.

This is a meaningful award to win and something you absolutely want to brag about, not only for potential employees but for the people who already work for you.

Retention is a huge issue, and our research shows when you make one of these lists, employee turnover goes down because people realise they do have a great place to work. 



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FLIGHT

FUNDING

Lee Woodward started Skyborne, one of the most modern and best equipped flight schools in the UK. But he dreams of the day when he can extend pilot training to even more people

Lee Woodward is in a good mood. This is hardly surprising as Skyborne, the pilot training academy that he co-founded and is CEO of, has just received the news that it has been selected by BA to be its partner for the airline's 'Speedbird' training programme, where talented candidates are given the opportunity to begin a rewarding career in the cockpit with the airline, regardless of their background.

Following a joint selection process, students lucky enough to get on the training school's UK CAA Integrated ATPL programme have their £99,500 of tuition costs covered in full.

The sponsored programme is the first that BA has run since the mid-1990s and it is hoped that under-represented groups in aviation, including people from Black, Asian and Minority Ethnic backgrounds and women will take part.

Finding a way to train promising candidates has been a lifelong passion

for Woodward. Originally a pilot, he later set up a training academy. This was later sold in the 2000s, but Woodward banked the knowledge gleaned from the experience and considered how he might do better in the future.

There's no question that the industry needs to attract new talent. Following the pandemic, demand has outstripped the supply of suitably qualified flight crew around the world.

The demand for travel from the public took the aviation industry by surprise. "I think it's fair to say the United States is recovering at a faster rate than probably any other region on the planet right now, and I think the UK and Europe is somewhere in the region of 9-12 months behind what we're seeing in the US," said Woodward, adding that other regions, notably the Middle East and India, were also experiencing strong growth.

Funding

Despite the shortage of commercial pilots globally, there is one sticking point for would-be highflyers.

"The single biggest barrier in the UK is finance," clarifies Woodward. "The market in this country is just so far behind. In the US there are six or seven lenders that will loan the money, no problems. In Europe, there's ABN Amro and in France you can borrow from Credit Agricole."

It wasn't always this way. "In the early days [of his previous business] we had HSBC extending what was known as their professional studies loan, and it worked well, with 93 per cent of entrants taking that loan, but then the global financial crisis hit and HSBC got out of that entire market. That loan covered doctors, dentists, vets, lawyers. You name it – and pilots!"

"THE SINGLE BIGGEST BARRIER IN THE UK IS FINANCE... THE MARKET IN THIS COUNTRY IS JUST SO FAR BEHIND"

50

TONNE

Trainees can use a sim that replicates the Boeing 737Max, as flying a 50 tonne passenger aircraft is somewhat different to training in a two-seater Diamond DA42



2

“SIMULATORS MEAN A VARIETY OF FLIGHT SCENARIOS AND WEATHER CONDITIONS CAN BE TRIED”

Following the withdrawal of this product, for a time it was possible to get a loan secured on a valuable asset, usually property. This, of course, seriously narrowed the pool of applicants. However, at the time of writing, even this loan isn't available. “Now, it is principally the Bank of Mum and Dad,” says Woodward, mournfully.

It is a real problem. Woodward estimates that the number of serious, eligible candidates is slashed by up to 95 per cent when there is no obvious way to fund the training, and those that can still train will naturally come from the wealthiest backgrounds. Projects like the Speedbird programme are welcomed with open arms, but there is only a set number of places available, so the number of people able to train is still somewhat limited.

The lack of funding for training isn't for want of Skyborne trying to get a package made available: Woodward says, “I've

championed it and worked so hard to get a package available over the past four or five years,” he said. “We took it all the way to the CEOs of NatWest and RBS. We've shown and demonstrated what the risk looks like and how low it is.”

Woodward explains that the organisation had established dialogues with secondary and tertiary lending platforms to provide a funding package for trainees. While no definitive agreement on a financial product has yet been reached, “some headway” has been made, although he is clear that even getting to this stage has been “labour intensive” and a “slow burner”.

He continues: “What we're looking at now is an organisation that has the

FCO (UK financial regulator) approvals, and has the banking platform, but does not have capital. We can then put a prospectus out to investor groups to provide the funding to power the loans. That's where we're at right now.”

Courses

Another financial pressure comes as at Skyborne (as with other training academies), working during the course duration is discouraged.

“Frankly if you've made that kind of investment, you want to have the odds in your favour of passing the training as much as possible,” says Woodward.

Effort has been made to reduce as many distractions as possible. The course is residential and things like uniform and equipment is provided. There's a money-back guarantee should would-be pilots turn out to not have a head for heights after all, though Woodward says that this is very rarely claimed, as anyone who has managed to raise funds and start the course knows what the job will entail.

“The guarantee does go quite a long way to remove some of the anxiety associated with the consequences of failure,” Woodward explains.

Training itself takes part in the classroom, on a variety of small aircraft and on flight simulators. Interestingly, the pilots will fly on the light planes before they are let loose on the simulators.



1

1. Some training is classroom based...
2. ...While some takes place in the sky



2

"We use light aircraft simulators as the pilots are beginning to learn their instrument flying and that's really where the simulator comes into its own," says Woodward, "because at that stage, the pilot doesn't really require visual reference, as they're very much learning instrument procedures and instrument procedures."

Simulators also mean that a variety of flight scenarios and weather conditions can be tried (where being able to fly by instruments alone is particularly important). Trainees also use a sim of the Boeing 737Max, as flying a 50 tonne passenger aircraft is rather different to training in a two-seater Diamond DA42.



3

"First and foremost, you know, they're really honing their skills on how to apply an accurate instrument departure. But equally we can explore, particularly on the more complex multi-engine aircraft that we operate, based on various scenarios," says Woodward.

"Then when we get to the jet simulators, you're obviously teaching the pilot how to operate in the multi-crew environment on an aircraft that weighs approximately 50 tonnes and a swept wing jet with all the characteristics that are radically different from light piston engine aircraft.

"We also begin to introduce more complex failures where the non-technical skills are really developed, such as teamwork and all of the crew resource management aspects."

No time like the present

For all the barriers to overcome in acquiring the funding in the UK, Woodward still recommends it as an excellent career.

"You know, it's a really exciting world going to fly with an airline," he says. "For the first three to five years, you're just getting to grips with it, but after that there's a whole plethora of options that most airlines will offer."

"I'm biased, but I still think it's the best job in the world. I mean, I'm 57 years old, and I've been in this now for 30 years. I still get excited. I love it. I love being around the whole environment. It's partly why I started Skyborne because I really am passionate about it.

"Personally I find it extremely rewarding to see a young man or woman about to embark on their career when I know what's ahead of them. It sounds a bit poetic, I know!"

Poetic or not, while there is commercial demand for pilots, a way will surely be found to get more of them from dreaming to being on the flight deck soon. ☺



1

1. A trainee gets to grips with the controls in a simulator 2. Would-be pilots get a feel for flying in a variety of light aircraft 3. Skyborne's Lee Woodward



SPINDLETOP MOMENT

The environmental movement needs a movement like the early 20th century to gain traction, argues **Greg Whitaker**

COP 28 isn't the only environmental meeting to be held in the UAE in November. In an industry where there's a lot of talk, it is fitting that there has been an event called the Conference on Aviation Alternative Fuels, held in Dubai.

During the conference, Haldane Dodd, the executive director of the cross-industry Air Transport Action Group declared that the "SAF scale-up has begun", adding that SAF levels are now ten times higher than in 2019.

Now hang on a minute. While it is true that SAF production has increased in the

last couple of years, I feel it is a bit of a stretch to call it a 'scale-up' as ten times nothing is still nothing. OK, the amount of the new jet fuel being produced is not nothing, but 99.9 per cent of fuel being used is traditional fossil fuel.

On the sidelines of a different aviation sustainability event, I spoke to a senior figure from a fuel provider who privately told me that the UK's desire to have 10 per cent SAF use by 2030 was going to be a challenge, although that shouldn't stop the ambition.

Feedstocks, infrastructure and the willingness of the industry to pay more for fuel all need to change if any headway is going to be made towards this goal – and the truth is that intervention by international governments will be required.

If the doomsayers are to be believed, it never will happen. They

9%

If emissions continue based on current projections, then far from making the 40 per cent cut in greenhouse gas, which was the target for 2030 set at the previous COP, we are instead on course for a 9 per cent rise

say that if emissions continue based on current projections, then far from making the 40 per cent cut in greenhouse gas, which was the target for 2030 set at the previous COP, we are instead on course for a nine per cent rise.

The aviation industry itself must do more than talk. At the risk of looking like a cartel, airlines will need to make a pact with each other to commit to buy volumes of SAF, and there should be an independent body set up to make sure that each company is playing its part.

Does this sound impossible? It's worth remembering that at the turn of the last century, self-propelled cars and trucks made up around 0.1 per cent of traffic even in wealthy nations and there was very little use for oil, no refineries and certainly no infrastructure for distribution. Naysayers were full of how animals for pulling vehicles were polluting cities and water courses and how there was very little chance of this changing anytime soon.

But in 1901, the Spindletop oil gusher was struck and Ransom Olds stepped up production of the first mass-produced 'Oldsmobile' car. Investors piled in to support a network of fuel pumps and the means of filling them and governments around the world started upgrading roads. Within a decade, motorised vehicles were everywhere, powered aircraft had taken to the sky and horse-drawn traffic looked distinctly old hat.

Perhaps if the industry took a lead on modernisation, the next ten years could see something just as exciting happening in aviation. 

"Airlines will need to make a pact to commit to buy volumes of SAF"

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