

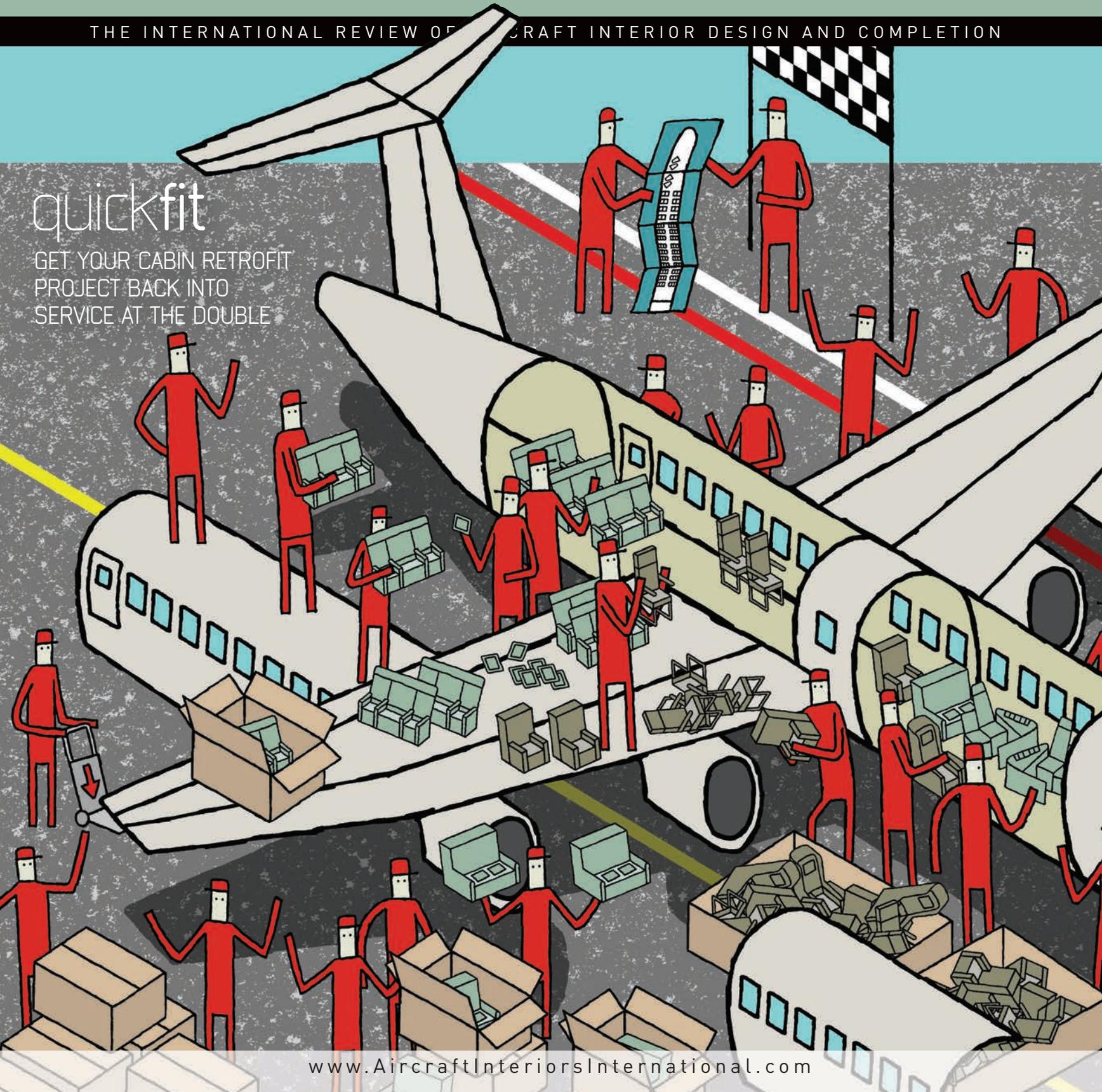
Aircraft *interiors* INTERNATIONAL

NOVEMBER 2012

THE INTERNATIONAL REVIEW OF AIRCRAFT INTERIOR DESIGN AND COMPLETION

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The business class seat which was first shown at the Aircraft Interiors Expo 2012 in Hamburg is now taking off with **Cathay Pacific.**



hangon

As this issue goes to press, a Royal Jordanian A340 has reportedly encountered some severe and unexpected turbulence over the British skies en route from New York JFK to Amman. According to the airline, seven passengers who were not wearing seatbelts were injured during the incident, which might give some pause for thought to the many travellers who say the only reason for seat restraints is for post-crash identification.

A bit of chop is hardly big news, but this event happened just as one of the airline industry's most turbulent characters – Ryanair CEO Michael O'Leary – excelled himself in the customer contempt department. At a press conference in London, O'Leary declared seatbelts to be unnecessary, and went on to label the aviation authorities who require their use as "plonkers". (For non-UK readers unfamiliar with this term, Googling 'Michael O'Leary' may well bring up a few synonyms.)

"If there ever was an aircraft crash, God forbid, a seatbelt won't save you," he told *The Daily Telegraph* newspaper. "Seatbelts don't matter," he added.

This wasn't a random rant, though – it was a precursor to his latest fare-saving idea: a super-economy section at the rear of the cabin where passengers stand, their stability aided by hanging straps similar to those you might find on an underground train.

The safety aspect is alarming, but the fare could be compelling: £1 per strap. Passengers will be unlikely to indulge in the snack selection while standing, so there must be some ancillary revenue somewhere in this idea. The most likely source is from baggage fees, whether in the hold or stowed in the cabin.

O'Leary is not alone in this line of thinking, with several airlines making money from baggage fees. The result of hold baggage fees is of course more bags with more contents being squeezed on board, with stowage bins now at maximum capacity on most flights.

"On a standard single-aisle aircraft, you're just not able to physically offer every passenger that comes on board the ability to store a single roller bag," Kent Craver, regional director of passenger satisfaction and revenue at Boeing Commercial Airplanes told Aubrey Cohen for his stowage feature on page 82. "There just isn't the space."

Various solutions are explored in the feature, including Boeing's Sky Interior and Zodiac's Project Amber. However, with revenue space at such a premium, the most obvious solution is to encourage passengers to check their baggage into the hold. From my recent experiences of immigration queues, it seems that your case will have completed a few laps of the baggage carousel by the time your passport is stamped anyway.

But should the cabin upgrade option appeal, read our MRO feature on page 46, in which experts offer advice on how to refurbish or upgrade an interior and return the aircraft to profitable service as soon as possible. Sadly there is no advice on how to install hanging straps, though.

Adam Gavine, editor

ON A STANDARD SINGLE-AISLE AIRCRAFT, YOU'RE JUST NOT ABLE TO PHYSICALLY OFFER EVERY PASSENGER THAT COMES ON BOARD THE ABILITY TO STOW A SINGLE ROLLER BAG

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Annual subscriptions (5 copies)

Worldwide rate: £42/US\$75

Airfreight and mailing in the USA by agent Air
Business Ltd, c/o Worldnet Shipping USA Inc,
155-11 146th Street, Jamaica, New York 11434.

Periodicals postage paid at Jamaica, New York 11431.

US postmaster: Send address changes to *Aircraft
Interiors International*, c/o Air Business Ltd,
c/o Worldnet Shipping USA Inc, 155-11 146th Street,
Jamaica, New York 11434.

Subscription records are maintained at UKIP
Media & Events Ltd, Abinger House, Church
Street, Dorking, Surrey, RH4 1DF, UK.

Air Business is acting as our mailing agent.

USPS 019-144, ISSN 1463-8932

Aircraft Interiors International November 2012
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The views expressed in the articles and
technical papers are those of the authors
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While every care has been taken during
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Printed by: William Gibbons & Sons Ltd,
PO Box 103, 26 Planetary Road,
Willenhall, West Midlands, WV13 3XT

Cover image: Tim Ellis

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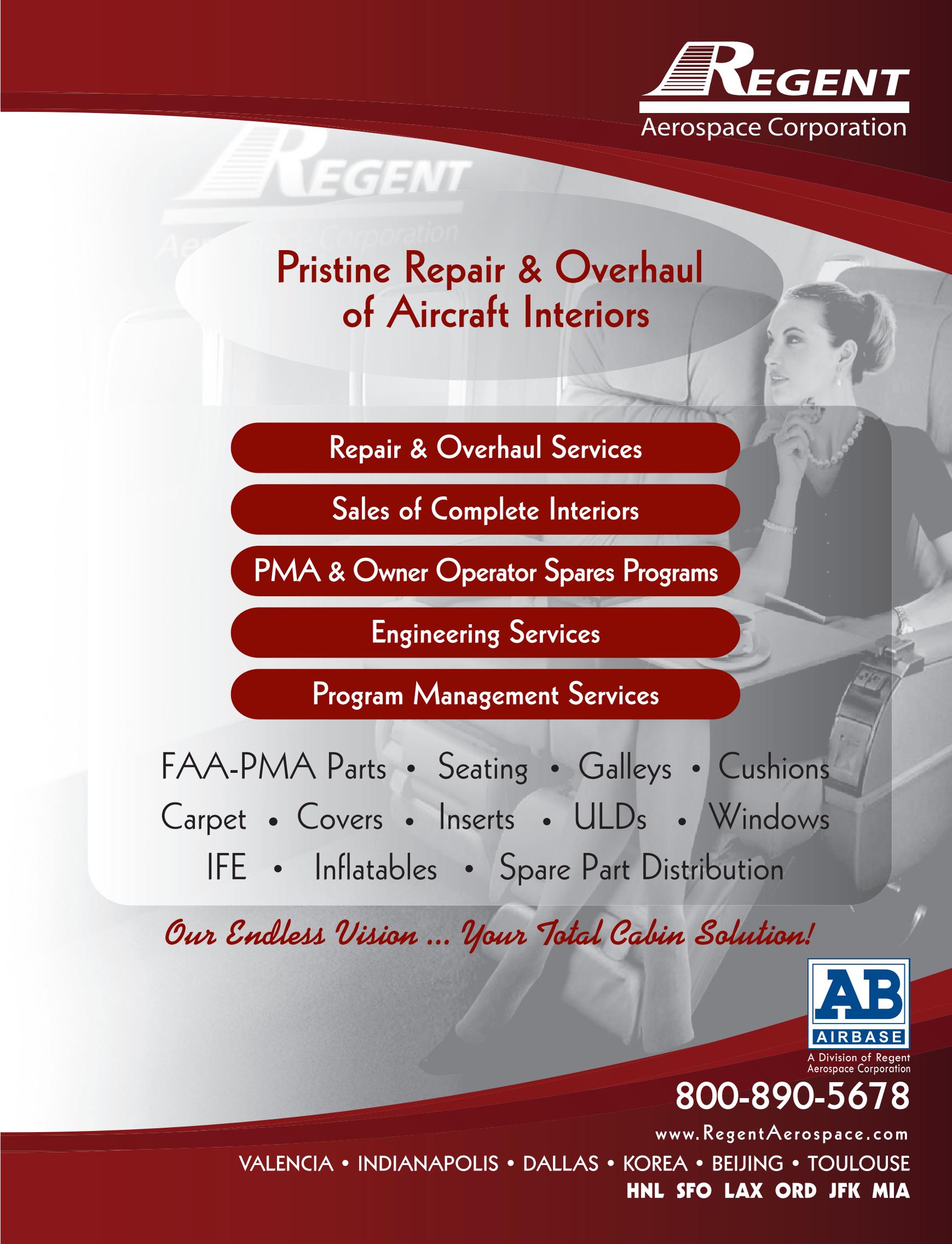
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regulars

010 upfront

2012 in numbers with an IFE research roundup; clever new ways to interact with IFE systems; improved PRM travel experiences; a stunning new first class for TAM; a regional upgrade for Cathay Pacific; and an exclusive look at the Jamco Journey business-class seat for the A350

022 design briefs

A space-efficient seat with no compromise on comfort; a family-friendly travel concept from door to door; and a striking idea for a casino in the air

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Nathan Sparshott, senior designer at Virgin Atlantic, shares some dos and don'ts when working with colours

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cabin MRO 046

Many airlines want to install new seating, IFE and lighting on aircraft, but don't want unprofitable downtime. Experts share views on how to get overhauled and back in the air ASAP

BERNARD FITZSIMONS,
AIRCRAFT INTERIORS INTERNATIONAL



needforspeed

Check out the latest news on the need for speed in aircraft interiors. But don't forget to check out the need for speed in aircraft interiors.



features



humantouch

The IFE interface is the gateway to an airline's content and ancillary services. How can it be designed for maximum passenger appeal?

✉ In your previous work, the authors explored a variety of ways to design an IFE interface that is both functional and appealing. In this article, we explore the design of an IFE interface that is both functional and appealing. We discuss the importance of user experience and how it can be achieved through a combination of visual design and interaction design. We also discuss the importance of accessibility and how it can be achieved through a combination of visual design and interaction design.

030 GUI design

How can good design help airlines provide an IFE interface that is accessible by all, yet provides depth of content?

BEN FRAIN,
AIRCRAFT INTERIORS INTERNATIONAL



jollygood

Creating an entire low-cost airline brand, from catering to uniforms to the look and feel of the aircraft, but Thai Airways achieved just that with a Smile.

✉ In your previous work, the authors explored a variety of ways to design an IFE interface that is both functional and appealing. In this article, we explore the design of an IFE interface that is both functional and appealing. We discuss the importance of user experience and how it can be achieved through a combination of visual design and interaction design. We also discuss the importance of accessibility and how it can be achieved through a combination of visual design and interaction design.

038 Thai Smile

How Thai Airways' low-cost subsidiary went from a conversation over dinner to an airborne reality in less than 12 months

ADAM GAVINE,
AIRCRAFT INTERIORS INTERNATIONAL



shineon

After decades of merely offering 'on' or 'off' cabin lighting, airlines are now exploring the possibilities of creating a mood. How can lighting technology be used to create a mood?

✉ In your previous work, the authors explored a variety of ways to design an IFE interface that is both functional and appealing. In this article, we explore the design of an IFE interface that is both functional and appealing. We discuss the importance of user experience and how it can be achieved through a combination of visual design and interaction design. We also discuss the importance of accessibility and how it can be achieved through a combination of visual design and interaction design.

054 lighting

From creating an overall mood, to an individual experience, cabin lighting technology is becoming more advanced, and drawing on outside influences

GUY BIRD,
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JAL New Sky 060

Japan Airlines is about to launch a revamp of all four of its classes with the aim of pitching them at a class above

ADAM GAVINE,
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textiles, leather and flooring 068

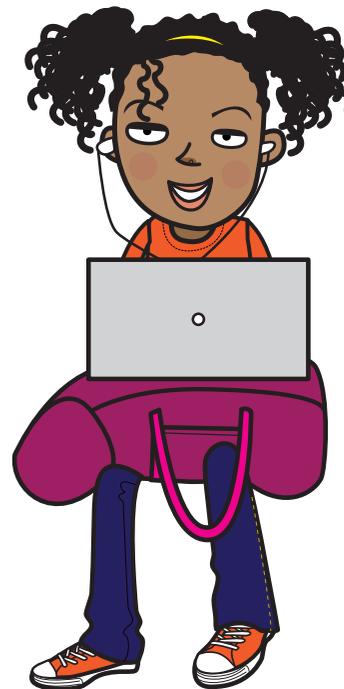
Stay ahead of fashion, as experts from aircraft cabin materials companies share their views on current and future trends



082 storage

As fewer passengers want to check baggage into the hold to save cost and time, how can cabin stowage cope?

AUBREY COHEN,
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briefencounter

The latest investment in Cathay Pacific's product is a new and much-improved regional business-class product

- 01. The IFE screen is 12.1in
- 02. The green of the livery is used for the seat fabrics
- 03. 36° of recline is possible



Coinciding with Cathay Pacific's 66th anniversary, the airline has unveiled its new regional business-class product, the result of an intensive passenger-led design process involving input from the airline's frequent flyers.

The principal feature of the new product is the seat, the Recaro Comfort Line 5510, which was chosen due to its 36° recline, extended leg rest and cradle motion, and fixed-shell design. The seat pitch has been increased from 45in to 47in, while the in-seat width has also been increased, from 20in to 21in. The airline benefits too, as the seat weighs in at less than 95kg per double.

Being a regional product, full-flat functionality is not required, but for comfort, the seat features independent electronic controls for recline and the extendable leg rest, which enable passengers to adjust the seat into a comfortable 'lazy-Z' position. Comfort is further enhanced by a six-way headrest. There is also storage space for small items, a two-piece dining table that

Launched at Aircraft Interiors Expo Europe 2012, this is the first customer use of the CL5510

extends to 11in-deep and 16in-wide, and a large cocktail table in the centre console. For convenience, there is a universal power supply outlet at each seat, a multiport connector including USB, and a connector for Apple devices.

Other highlights include the introduction of the StudioCX widescreen on-demand IFE system, which is a new feature for Cathay Pacific's regional fleet that sees each seat equipped with a new and enlarged 12.1in touchscreen monitor.

Toby Smith, general manager of product at Cathay Pacific, explained the choice of seat: "The Recaro seat CL5510 is the ideal business-class solution for our medium-haul flights up to five hours: the seat features great comfort and generous living space, as well as ample stowage room, and is weight-competitive."

The new regional business-class product will be installed on all of Cathay Pacific's regional Boeing 777-200/300 and A330-300 aircraft. The first Boeing 777 aircraft is due to enter service in January 2013, while the first A330-300 will be completed in the fourth quarter of 2013. All of the airline's regional aircraft will be fitted with the new product by the end of 2014.

	Current product	New product
Seat pitch	45in	47in
Seat width	20in	21in
Seat recline	32-35°	36°
Leg-rest recline	38-55°	60°
Screen size	6.5-9in	12.1in
Meal table	17.5-20.3in W 11in D	20.3in W 14.5in D
Headrest movement	4-way	6-way
IFE	Broadcasting system	AVOD
Multiport connector	No	iPhone/iPad/iPod port and USB port
PC power to seat	Some aircraft	All aircraft

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While mainstream systems are influencing IFE, motion sickness issues are holding back 3D, says Thales

biggesture

IFE systems are going through a renaissance, with amazing new control systems in the pipeline

1 New wave system

We enjoyed getting in a flap with Thales recently when we trialed its latest development, Hand Gesture Control Technology, created as part of its fourth-generation Smart Video Display Unit. Designed for premium classes where relaxation is key and stretching to the screen or fumbling for the handset spoils the experience, the GUI can be operated with a mere wave of the hand. Similar in theory to home games consoles such as the Xbox Kinect, at the heart of the system is a high-resolution depth camera mounted within the screen surround. The camera features infrared technology that uses algorithms to calculate the depth of the hand movement versus the rest of the body. In short, hand movements can swipe through menus, select items and adjust the volume. Push the heel of your hand towards the screen to activate the system and you can then sweep through the menus. When you find what you want, another 'push' for two seconds activates your choice.

2 Seeing is believing

Find waving a little unseemly? Panasonic thinks so, and is developing a system that can be operated using just eye movement. Simply look at what you want to select, and an infrared eye-tracking system will monitor what has caught your attention. A blink would be a neat way to select the item, but there is a lot of room for error, so instead you point a finger at your choice and the infrared system correlates the two and activates your selection.

If you like to be a little more hands-on, a projection system is also in the prototype stage. All the UI choices are projected from above onto your tray table, and you use your hands to scroll and select. Airlines will surely appreciate that no heavy hands or sticky fingers will be prodding their precious IFE hardware.

3 Good vibrations

With first-class cabins drawing more from domestic and hotel design, the latest IFE concept from Thales is following suit. You wouldn't watch home cinema while wearing headphones, and soon you may not have to do so on board while watching an HD screen. The prototype, a clear plastic dome mounted above the seat, combines surround-sound speakers with noise cancellation, so your neighbours can relax in peace as you enjoy explosions from the latest blockbuster.

And it gets even better. The prototype is hooked up to the Relaxor massage seat from In Seat Solutions. The seat can soothe you during a flight, but when you're in a movie mood the low-frequency audio signals are translated into vibrations, so you can feel the bangs as well as see and hear them. This setup can also enhance music and games.

4 Big name, new game

There's a newcomer in the IFE world, but it's a name you'll be familiar with. Digital media giant Samsung Electronics has teamed up with Boeing to explore working together to research and develop technologies that improve IFEC.

5 Gap in the market

Going rather lower-tech, the X1 from Smart Tray is beautiful in its simplicity. With so many passengers bringing their own tablet devices on board, there was an obvious gap in the market.

Passengers typically have to either hold their device, or use a stand to view the device. The solution? A groove. Yes, a simple groove in the tray table that holds a tablet at the correct angle.

dignified progress

New innovations mean that all passengers, including the disabled and persons with reduced mobility (PRMs), can enjoy the same quality of passenger experience



According to the World Health Organisation, over one billion, or 15% of the population, has some disability

1
Space comes of age
 We have covered the brilliant Airbus Space-Flex PRM lavatory in previous issues, and love that it fits in a single-aisle aircraft. However, it's worth showing again, now that it is set to become a flying reality following confirmation that LATAM's 2013-delivery A320s will be equipped with them. The rear of the cabin is cleverly rearranged, with the full-width galley condensed to enable it to fit alongside both WCs. With the WCs adjacent to each other, rather than separated by the aisle in typical A320 fashion, the dividing wall can be folded away to convert them into a single PRM-friendly enclosure. This comfort feature is great for PRM passengers, and indeed for an airline's public perception, but it has one more trick up its sleeve: the space freed up by the new layout is big enough for a further three revenue-generating seats.

2
Airline approach
 With its PRM and disabled passengers approaching 400,000 per year, Air France has come up with a series of measures to improve their travel experience. The first step is that disabled and PRM passengers can call SAPHIR, a free reservation and information service, staffed by a team of over 20 people, all trained by a doctor specialised in disabilities. In addition to their regular baggage allowance, qualifying passengers can also check in two personal mobility devices and an additional piece of baggage in the hold. On board, all Air France aircraft are fitted with seats with armrests that can be raised, facilitating access for onboard transfer from wheelchairs. On the most recent aircraft, seat numbers are indicated in Braille, as are the safety instructions, and the entire fleet is equipped with PRM-accessible toilets.

3
Child chair
 The latest version of the TravelChair, developed by UK charity MERU (Medical Engineering Resource Unit), is intended to make air travel easier for disabled children aged between three and 11 years. The chair, approved by EASA, with FAA approval pending, fits into a standard airline seat and gives firm, postural support. Even severely disabled children can use the chair, as its design incorporates an adjustable headrest, footrest and body harness. Fitting is quick and simple for cabin crew members, as the seat uses the aircraft seatbelt as part of its design, and when not in use, the chair fits into the overhead stowage bin. Virgin Atlantic, which used the previous version of the chair, has become the first airline to fit the latest model, having purchased 25 of the £2,500 (US\$4,000) chairs. They are available to passengers when requested on booking.

4
787 gets a grip
 Boeing took the clean-sheet design opportunity of the 787 to address onboard PRM requirements in partnership with the National Center for Accessible Transportation at Oregon State University. The result is that all the lavatory door handles are more intuitive and enable easier access for passengers with limited hand agility, and the assist handles are easy to grip and offer passengers better stability through improved design and location. Non-PRM passengers will also appreciate the touchless infrared tap, flush and waste flap activation. In addition, two wheelchair-accessible WCs are on the options list. The 56in longitudinal lavatory repositions the entryway door and toilet to provide additional usable space. The 56in by 57in convertible lavatory includes a movable centre wall that enables two separate WCs to become one large, wheelchair-accessible facility.

5
Load and lock
 Air Access, a concept by Priestmangoode, is intended to ease the transition from gate to aircraft for PRMs. The design consists of two elements: a detachable wheelchair by which PRMs can be transported on and off the aircraft, and a fixed-frame aisle seat, into which the wheelchair is mated to create a regular airline seat. Ground staff assist the passenger into the wheelchair in the terminal, and then wheel him or her onto the aircraft. The pivoting wheels allow the chair to be slid sideways into the fixed-frame aisle seat and locked. On arrival, ground staff unlock the chair and wheel the passenger to the gate. Priestmangoode's vision is for the seats to be installed in every aisle seat of every type of aircraft. In a widebody aircraft this would mean four seats per row. No revenue is lost if there are no PRMs travelling, as all travellers can use the seat.



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The full RGB LED cabin illumination allows limitless lighting scenarios, enhancing the airline's personality and the passengers' boarding experience for their journey. Comfortably seated and relaxed, each passenger will take time to appreciate their own, generous personal space, individually illuminated by revolutionary, row-by-row overhead luminaires.

Break with convention and carry on with ease. Experience the ISIS revolution — the most innovative single aisle interior ever. For more information, contact isis@zodiac aerospace.com.



ISIS holds eight bags per bin. Three more than the current A320 interior.



SETTLE IN

Another highlight of the redesigned TAM cabins is the new IFE service. Passengers can choose between films from several genres, with detailed information and the option to watch them with subtitles or dubbing. There is also music, sitcoms and games; TAM Tips travel applications; phone calls between seats in business class; an eReader (with editorial from Brazilian weekly magazines); and duty-free sales. Through specially produced content, children can also have fun during flights with the characters from TAM Kids.

TAM has also created a "home to home" feel in its new VIP lounge at São Paulo International Airport

domesticbliss

A bold domestic-influenced first-class cabin marks the beginning of a new chapter for TAM

It is a golden period for Brazilian carrier TAM Airlines, as the official merger with LAN in June created LATAM, a South American aviation superpower and, reportedly, the world's second-largest airline by market value.

It is a double celebration though, as the first product of TAM's three-year contract with Priestmangoode for redesigned interiors across its new fleet, including 777s and A350s, could be one of the most coveted first-class cabins in the sky.

The London-based design firm is redesigning all seats in all classes for TAM, as well as galleys, stowages and lavatories – and cabin architecture where possible. Priestmangoode will also be involved in the redesign of TAM's staff uniforms and all inflight service provision, including the meal service. In addition, all the airline's existing aircraft will be retrofitted in parallel.

"Our experience of flying with TAM is that its service is exceptional. But its brand presentation currently just doesn't match it," stated Luke Hawes, director at Priestmangoode. "The designs we will roll out across its entire fleet will present it as an important international player and give it the tools it needs to compete with the world's other major international carriers."

The first-class cabin designs have been fitted aboard four of TAM's new 777s, due for delivery later this year. The design draws on domestic design with its 'From Home to Home' ethos, which aims to create a homely environment with a focus on comfort, entertainment and well-being.

"We want to offer international customers, who often fly long-haul, a warm and more human travel experience that makes the quality of service a priority," explained Ricardo Cruz, TAM Airlines' brand manager.

The four-seat cabin presents the idea of a living room, providing privacy and interaction, with a new sleeper seat and entertainment system. There is also a couch, individual closets, a lamp, a dining table, cushions, a Nespresso service, and a library with books, Wallpaper travel guides and a range of magazines.

Improvements have also been made in the other cabins, with a new premium economy product named 'TAM Space +', as well as new economy-class seats, which have a differentiated finish in green, red and blue.

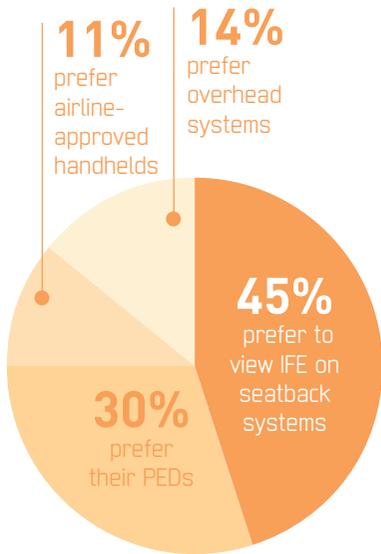
In addition, passengers in all classes can now enjoy toilets that have a flooring pattern that is similar to the famous Copacabana sidewalks in Rio de Janeiro.

01. The new lime green shade extends into the door pocket linings of the wardrobes
02. Even the seat controls resemble high-end audio equipment
03. Make yourself at home in an upright, lounge or bed position
04. Seatbelts on the couch mean a guest can join you for a meal

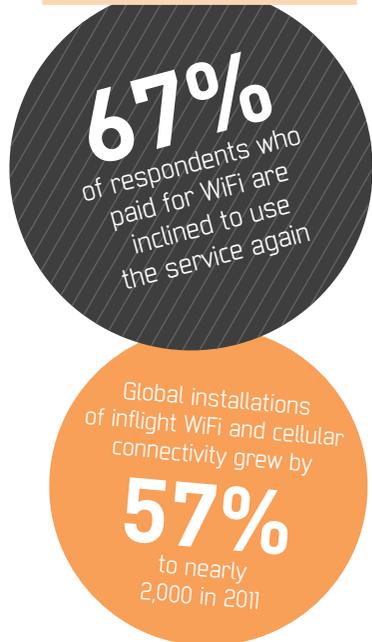
gofigure

There is so much talk about the surge of WiFi and personal devices on board, but are they really that popular? We round up some statistics gathered in the USA during 2012

Source: digEcor



Source: IMS Research



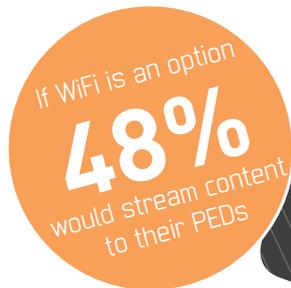
Global installations of inflight WiFi and cellular connectivity grew by 57% to nearly 2,000 in 2011, and are set to increase by a further 60% by the end of 2012, reaching 3,194 aircraft by the end of the year, according to statistics published by electronics market research consultancy IMS Research. It was found that, with greater availability of inflight WiFi in the USA, more than 40% of respondents who have flown in the past year have used the service, either as part of a promotion or by paying for it.

The survey also found that 67% of respondents who paid for WiFi are inclined to use the service again; only 12% indicated they would be unlikely to pay again. However, for those who have yet to try inflight internet, only 20% of respondents would consider themselves likely to use it on a future flight.

Meanwhile, digital entertainment and handheld IFE specialist digEcor released its 2011 Passenger Survey Results, which surveyed 542 passengers and found that 45% preferred to view IFE on seatback systems, 30% preferred their PEDs, 11% preferred airline-approved handhelds, and 14% still prefer overhead systems. Younger and middle-aged passengers were found to favour handheld devices, while older passengers prefer embedded systems, with that preference increasing with age. The vast majority of respondents stated that they favoured touchscreen navigation, although many older travellers prefer to have the controls next to the screen. Wired controllers were not deemed popular.

The Chaddick Institute of Metropolitan Development at DePaul University in Chicago found that one in 12 airline passengers in the USA uses a tablet or e-reader device when up in the air, with iPads, Kindles and Nooks accounting for nearly 30% of technology used on all commercial flights. The institute's research found that technology use on airlines increased 23.2% between 2010 and 2011, and accounts for 29.6% of the technology used in economy class. Unsurprisingly, technology usage is higher on business-orientated flights (29.9%), than on pleasure-orientated trips (25%).

Source: Skyscanner



Meanwhile, when Skyscanner researched IFE preference, out of 1,000 respondents, only 37% said they would rather use embedded IFE if WiFi was available. If WiFi is an option, 48% said they would stream content to PEDs, while 15% said they would use it for work. Around 60% wish to access social media, while only 38% would like to use a mobile phone on board.

Resource Systems Group (RSG) also released results from its 2012 survey of business and leisure travellers in the USA. The study found that satisfaction with fare, services and amenities has decreased since 2008, and that some services such as food and IFE do not influence overall flight satisfaction, but convenience-related aspects such as schedules and inflight service do. Also, passengers on flights where WiFi is available are "significantly" more satisfied with their flight, even if they don't use it. Passengers expect to pay for WiFi, found RSG.

Finally, demand for mobile services has reached an all-time high, found FlightView, a provider of day-of-travel information. Feedback was gained from more than 2,600 business and leisure travellers, revealing "incredibly high" expectations for mobile communication and self-service capabilities. More than 80% said they use a smartphone during flight, and more than 35% said they use a tablet and/or a laptop. As a result, travellers expect mobile access to day-of-travel updates. Nearly 75% of respondents want a mobile alert when their flight is boarding, and 57% want mobile alerts on seat upgrade options.



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THAT'S ENTERTAINMENT

The IFE systems available for fitment on the Journey are also eagerly awaited. Panasonic's next-generation eX3 IFEC system has already found a launch customer with Singapore Airlines for its fleet of 20 A350s on order and due for delivery in 2014. This will also be the first aircraft to feature Panasonic's Global Communications Suite, which offers Ku-band internet, inflight mobile phone calls, and global live TV. Further eX3 customers for A350 linefits include Etihad Airways and TAM.

Meanwhile, Qatar Airways has chosen the next-generation Thales TopSeries AVANT system for its 80 A350s, with the first expected to roll out in Q3 2013. This system adds HD video, solid-state hard drives, and faster processors to the current-generation TopSeries systems. Thales is also working to add its TopConnect Ka-band connectivity solution to the A350 catalogue.



journey'send

After nine months of anticipation, we exclusively reveal Jamco's first seating product: the Journey

- 01. A divider slides across to give privacy
- 02. The space for a Thales TouchPMU can be seen under the armrest

Since it was announced in March that not only had Jamco entered the aircraft seating market but it had also become an A350 XWB Airbus contracted supplier for premium seating products, there has been a lot of anticipation for the product. Here we can exclusively reveal the long-awaited seat – the Journey long-haul business-class seat.

The forward-facing Journey, due for inclusion in the revised A350 catalogue by the year's end, is offered in 2-2-2 or 2-3-2 configuration. As you would expect, the seat goes fully flat, with a specially designed kinematic system ensuring smooth transitions between TTL and bed positions. To minimise weight, this conversion is done by a single actuator.

The high strength-to-weight ratio, which is in keeping with the high composite content of the aircraft, is also enhanced by the use of 'advanced materials'. As Shawn Raybell, executive director of aircraft seat products at Jamco America, stated, "Since Journey is offered as a catalogue product, it was important early on that we were able to produce a lightweight product that met the wide range of customer requirements and passenger expectations."

Full details about the Journey will follow, but we can confirm that features include a full-height privacy divider, a newly designed personal LED reading light, and numerous stowage options for personal belongings, including an ottoman with stowage areas for larger items.

The seat is also designed with IFE provisions in mind, for both Panasonic's eX3 and Thales' TopSeries AVANT systems. In addition, USB and video ports, and an AC power socket, are available for each seat.

The Journey joins EADS Sogerma's Equinox model in the A350 business-class seating line-up, with Zodiac's long-haul Cirrus and regional Arcus models also recently added following successful technical studies. However, Jamco says the Journey will have the widest bed of all the options.

The Journey will not just be limited to A350 use, as it was developed with cross-platform implementation in mind to ease its installation on other Airbus and Boeing aircraft, according to the company.

"The feedback that we have received during the development process has been positive. We're very optimistic about the success of Journey," said Raybell.

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happy families

BRIEF: Many passengers groan when they see a family sit nearby with young children, but don't pause to think how stressed that family might be. Not only have they noticed the withering glances, they have just had a stressful journey to and through the airport, and are wishing as much as anyone else that the youngster will be quiet during the flight. How about a cohesive approach to making travel more pleasant for the family, from the moment they leave the house?

DESCRIPTION: California design studio RKS has identified an opportunity for the flying family with cAir. The concept is intended to inspire the air travel industry to change how services are delivered to families, with ideas including a special shuttle and family-friendly lounges.

For the inflight experience the team identified some improvements. Configurable seats can be adjusted to accommodate children of all sizes and to face each other, while aisle partitions create a mini-playzone for toddlers. To keep young ones occupied, a toy rental service is available, with the toy returned upon arrival, and interactive IFE screens are fitted to every seat. 'Sound curtains' can be pulled down from overhead and clipped into the seat to offer instant privacy when soothing or breastfeeding an infant, and USB-powered bottle warmers and a personal fridge also ease feeding times. The nappy-friendly lavatories are large enough to fit a parent and children, and a special sink is positioned for a child's height. Finally, layered storage provides easy-to-reach compartments overhead and underneath the seat.



VERDICT: It's a lovely idea, and raises many interesting points for airlines to consider. However, there are several major areas that make this concept impractical. First, it will of course appeal only to families, so an airline employing the cAir model will struggle to fill seats outside school holidays. Also, having a family facing each other with a personal play area sounds marvellous, but it takes up a lot of space and the resultant higher ticket prices may not appeal to young families. Even the rent-a-toy scheme could cause some drama when the time comes to return the toys at the destination. Perhaps a dedicated cabin, available at a small premium, would be a more realistic proposition for implementing some of these ideas.



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independence day

BRIEF: It's the same old problem: economy class is cramped, seat reclining creates further discomfort and tension, and bag stowage is an issue. Can a solution be found that not only addresses these issues, but raises comfort levels to a class above, while remaining efficient in terms of space, weight and cost?

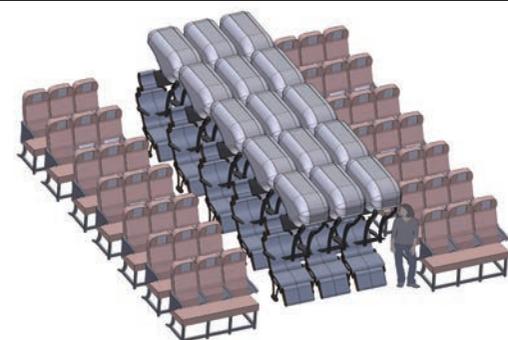
DESCRIPTION: University of Malaya student Alireza Yaghoubi noted that ergonomic features in economy-class seats are limited to a mere recline function, which does not solve long-haul discomfort. And it only gets worse when the person in front reclines their seat.

Thus Yaghoubi devised AirGo, with the notion of giving passengers a consistent experience, unaffected by the movements of the passenger in front. The AirGo economy seat, available at a 16% premium over a regular economy-class ticket, gives each passenger an independent space, as well as an independent overhead pod with integrated IFE and room for a carry-on bag.

The nylon mesh back support shapes to the body and controls body heat, while three motors enable adjustment to avoid neck and back pain and, in line with the self-contained philosophy, the footrest is integrated, rather than mounted in the seat in front. The touchscreen IFE, when pulled down from overhead – again independent of the seat in front – dominates the view and can be tilted to maintain a good viewing angle. The tray table is pulled down in a similar way, on a double-hinged arm.



VERDICT: One element of the concept has been ignored in this piece: its claim to bring first-class comfort to the masses. In reality, this is more of a premium-economy design as it only reclines rather than lying flat. So, as a premium-economy concept, its design, while rather stark-looking with its exposed metal, must be praised for the way it removes the ability of the passenger in front to affect your comfort, as well as its durability and ease of cleaning. However, while the personal overhead stowage is a nice touch, it looks rather space-inefficient and an impractical shape, with no provision for an air outlet. Passengers would also have to stand up to lower or stow the tray or IFE arms. And of course Zodiac might have something to say about the name...



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anteestablishment

BRIEF: If you want to grab headlines – and passengers – install a bar on board. It certainly worked for Virgin, Korean and Emirates. But what if you want to raise the bar? The Casino Jet Lounge could be the answer. This entertainment and social space features a blackjack table that gives premium guests the ability to stretch out, gamble and socialise during their flight. How better to fly to Vegas or Macau?

DESCRIPTION: The lounge aims to create a commercial airline experience that is closer to private aviation. The VIP-type concept was co-developed by Designescence (founded by an ex-Airbus cabin trim and colour expert) and AirJet Designs, which specialises in bespoke VIP and business cabins.

The lounge, shown here in the forward section of a B777-200, is designed around two central elements: a casino blackjack table and a bar counter with an interactive surface for ordering drinks. The blackjack table can be used as a revenue generator based on commission from the gaming, or it can provide co-branding or sponsorship opportunities. For example, passengers could play with frequent flyer points and win a hotel stay, sponsored by a partner.

The concept is apparently not just a pretty picture, though: the partners consulted with EASA/FAA certification experts with a view to minimising certification costs. Thus they have established that guests will leave the lounge during turbulence, take-off and landing, and all the proposed technologies and materials are compliant with EASA/FAA certification.



VERDICT: The big problem is inflight gambling regulations. The design would be great for a Caesars Palace high-rollers jet, but in many parts of the world, including US airspace, inflight gambling is prohibited on commercial airlines. There is the option to gamble stakes (such as flyer points) rather than money, but this makes the concept, which takes up a lot of cabin space, much less financially viable – but on the plus side, the chances of gambling losses causing air rage are reduced. That said, a compact combined bar and blackjack table could be popular, even if the stakes are low.



CONTACT

Designescence

Web: www.designescence.com

AirJet Designs

Web: www.airjet-designs.com

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humantouch

The IFE interface is the gateway to an airline's content and ancillary services. How can it be designed for maximum passenger appeal?

BEN FRAIN, AIRCRAFT INTERIORS INTERNATIONAL

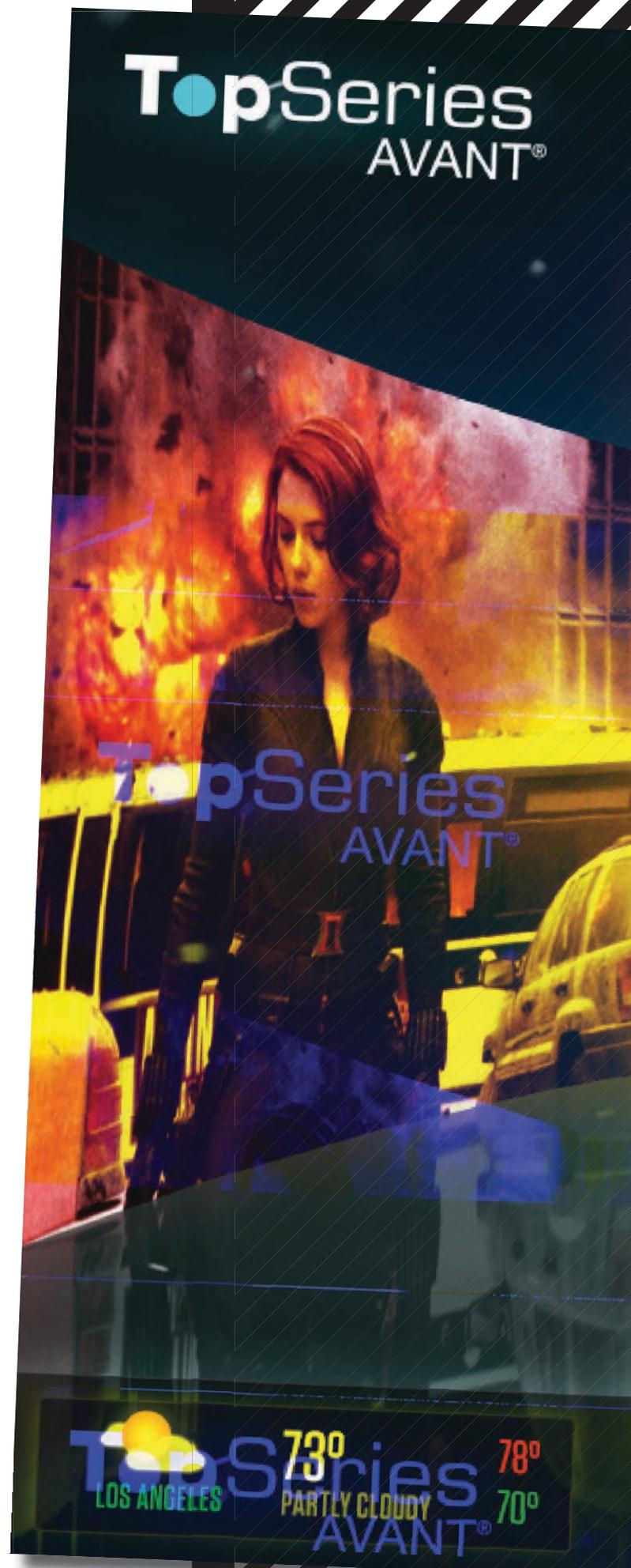


In some premium seats, the seatback monitor is now reaching sizes of 23in – a statement in itself of how central the graphical user interface (GUI) of an IFE system is to the passenger experience. Besides being the central information hub for a passenger journey, it also has to keep passengers entertained and provide access to any ancillary revenue-making services, all without confusing or frustrating the user.

“The trick is to achieve a balance between simplicity, so a technophobe can find a movie quickly; and depth so that you include all the features the most demanding passenger requires. You then need to wrap that up in a presentational style that works for everyone first time – no mean feat,” states Michael F. Earley, senior manager of the development and design department at Virgin Atlantic Airways.

So how do airlines and designers set about designing a GUI that both fills the growing digital canvas and also fulfils all these disparate passenger needs? “If your content isn't great, no amount of great GUI design is going to get your passengers excited about using your IFE,” argues Bradley Grinlinton, UK managing director at digital agency Reactive, which was responsible for the award-winning IFE design for British Airways' Boeing 747-300ER fleet.

There are also the considerations of how IFE integrates with the look and feel of the passenger experience as a whole, as Virgin's Earley explains: “You need to be in harmony with both corporate branding and the aircraft



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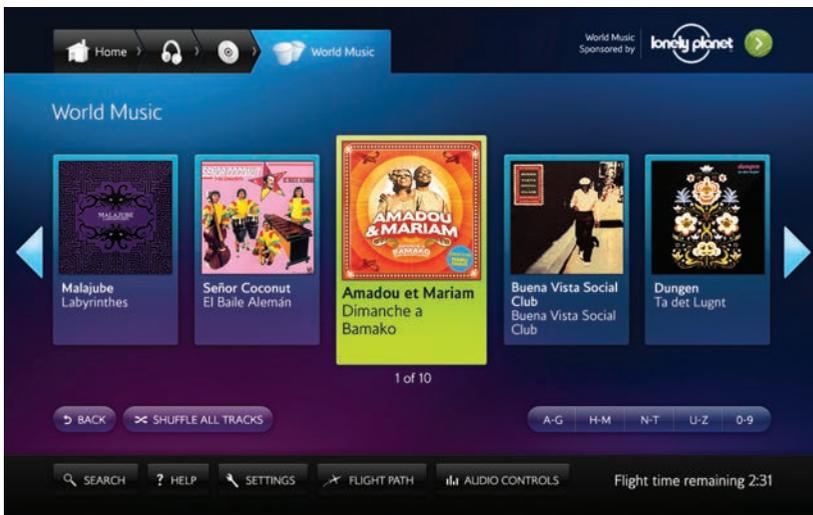
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YOUR PALETTE SHOULD TAKE NOTE OF THE COLOURS, TEXTURES AND MOODS YOU ARE PRESENTING ELSEWHERE IN THE CABIN



interior. Therefore your palette should take note of the colours, textures and moods you are presenting elsewhere in the cabin, and make your GUI part of the whole effect.”

Attention to detail when designing an IFE interface seems imperative in getting airlines the greatest return on investment. “A bespoke GUI is capable of conveying a real sense of the airline’s personality, one that connects with the brand offering of the airline and immerses the passenger in a brand experience unique to that airline,” says Derek Ellis, chief creative officer at Massive Interactive, which designed the GUI for the Qantas A380.

Luke Hawes, director at design group Priestmangoode, concurs with that viewpoint: “The branding should be less ‘slapping on a logo’ and more of a multilayered experience, with every detail of the GUI – radius, hue, icon, shadow, pattern – being a digital counterpart of the physical space.”

EXTENDING THE BRAND Michael Reilly, COO for in-flight entertainment content and technical services provider Stellar Inflight, believes a custom GUI offers further possibilities. He says, “Often the IFE platform is where an airline has employed a sub-brand as well as the master



brand. For example: Cathay Pacific and StudioCX; Singapore Airlines and Krisworld; or Emirates and ICE. A GUI is the perfect opportunity for an airline to enhance its master brand, its sub-brand (if one exists) and the related logos, colours and experience associated with the airline. The exterior of an aircraft and its livery are what distinguish most airlines, so the GUI offers an opportunity to enhance the brand inside the aircraft.”

TESTING Creating wire-frame or high-fidelity mock-ups of user interface designs is standard practice. However, even great-looking, high-fidelity designs are no measure of an interface’s likely success or usefulness in the field. “We learned pretty quickly that there’s no point in testing prototypes of an IFE GUI on a computer as no one has fingers as small or accurate as a mouse pointer,” says Reactive’s Grinlinton.

While it’s easy to appreciate that user testing makes sense in relation to the design language used (iconography, typography and interaction), there are many scenarios that are difficult to test for. “The biggest challenge with testing an IFE is replicating cabin conditions, especially on long-

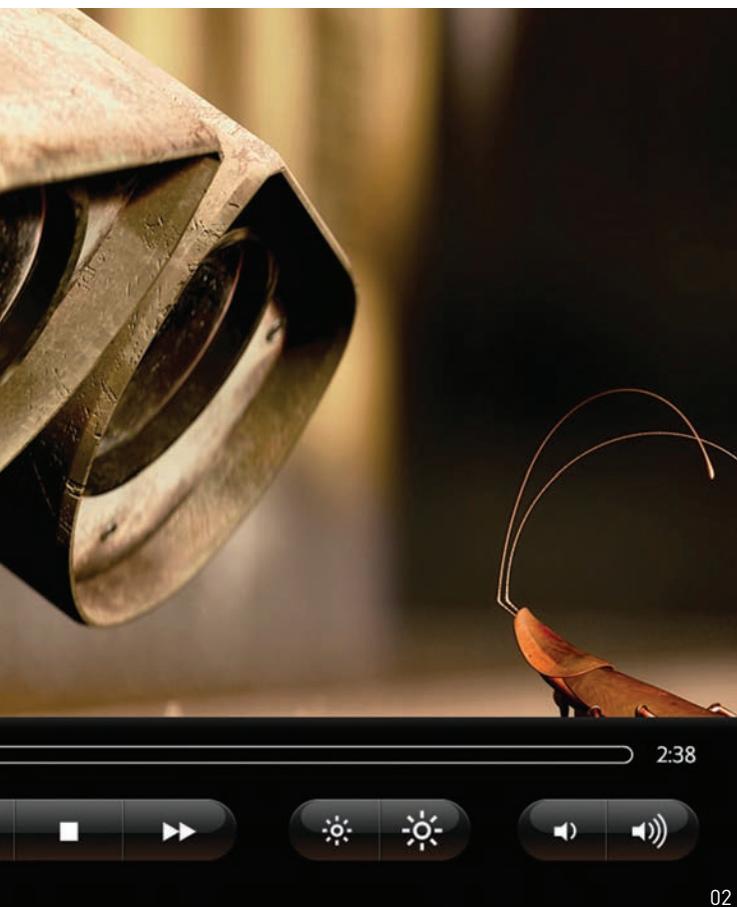
haul flights where a passenger’s behaviour isn’t going to be the same as it is when they’ve been in a testing suite for an hour,” says Grinlinton, “We spent a lot of time working with user testing agencies to try and replicate as closely as possible the cabin environment, mimicking things like distance from screen, lighting, and more.”

Once GUI designs are at the prototype stage, they are put through their paces. “We do a lot of one-on-one, task-based testing with a little bit of A/B split testing on specific parts of the GUI we think could be problematic. We want to make sure that it’s intuitive and easy for passengers to find content and, just as importantly, to see what they don’t use so we can remove it. We don’t want to clutter the interface with unnecessary functions,” says Grinlinton.

“We’re definitely big on A/B split testing,” adds Harry Gray, vice president of marketing at IMS, maker of the RAVE IFE solution. “Once we enter the conceptual stage of development, it is common for us to have two completely different UI directions that ultimately reach the same goal.”

Gray also notes that it is important not to rely on eye-tracking alone to measure performance: “We prefer watching passengers’ overall behaviour when interacting

01. Reactive’s GUI design for BA becomes more detailed as you progress further through the options
02. The BA GUI also offers a set of simple touchscreen video controls



02

think outside the box

The unusual GUI you see on the previous spread is a new type of design, in which a 3D cube, with a different option on each facet, can be rotated and selected. The design is the work of David Pook, who is director of system applications marketing at Thales Avionics, having gained experience in his role as director of product development.

The design is still a concept, designed with the TopSeries AVANT IFE system in mind, and while it is a pleasure to use, it has an obvious limitation in that only six options are available. Adding more facets would make the interface too difficult to operate.

“It has its limitations, but I think it’s very good at highlighting the capabilities of our systems and that we can take them another step forward, being very responsive, three-dimensional, and fully interactive,” explains Pook.

“We didn’t design it for the intuitive aspects,” he adds, “we designed it for demonstration purposes. I can think of three or four designs we’re working on that are better from a simplicity and intuitiveness standpoint.”

The problem, in Pook’s eyes, is that if you view the cube face-on, it is not immediately apparent that there are other facets with further options. However, as a new idea, and an alternative to the familiar swipe and pinch interfaces, it could well have potential.

Pook has a lot of knowledge and ideas in the IFE GUI arena. To find out his interface insights, visit the web exclusives section of www.aircraftinteriorsinternational.com.




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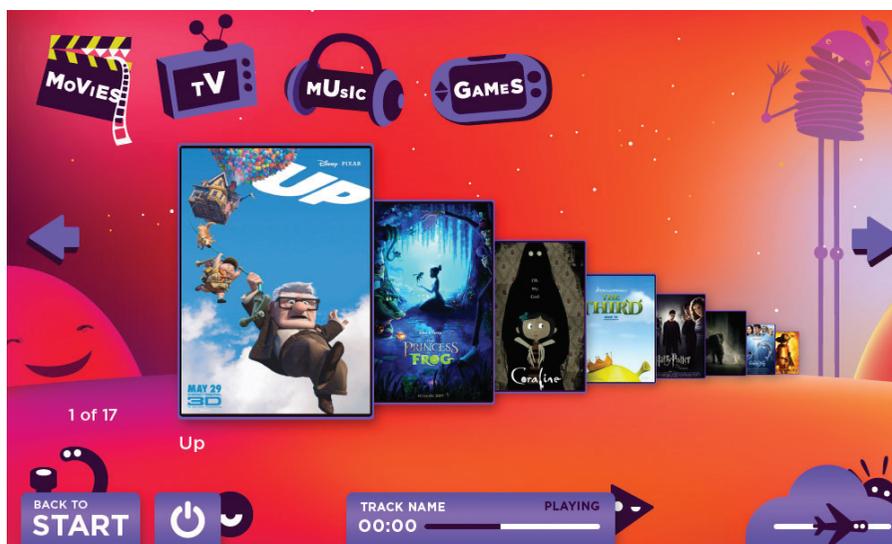
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03



with RAVE instead of just their eyes. We have a unique scenario with IFE where the user is seated directly in front of our UI at eye level, and due to the size of the average IFE screen, we prefer to observe hand movements.”

Virgin’s Earley explains that they see testing and perfecting as an iterative process: “We make sure that we iron out any bugs or inconsistencies well in advance. We test, correct, and then test again until it’s right.”

LARGE SCREENS While seatback screens were once limited in size, the rate and breadth of change is resulting in an ever-moving target for IFE GUI designers. “We need to consider things like the relative size and placement of elements to avoid it simply looking like a ‘blown up’ version of the small-screen experience,” explains Grinlinton.

Priestmangoode’s Hawes also adds that it’s important to remember that in most cases “the GUI has to be adaptable to both dumb monitors with handsets and touchscreen monitors”.

Ellis from Massive explains that, when working with larger screens, rather than simply enlarging existing onscreen elements, they have identified an opportunity to include additional, tangentially related items. “Some of the screens are reaching a point where there is an opportunity to utilise screen real estate for additional functions or information,” he says.

IMS’s Gray cautions against size being used as the principal metric for likely passenger satisfaction: “Even our largest monitor supports HD resolution. However, we are more interested in ensuring that the overall touch and controller ergonomics aren’t strenuous to the passenger during extended use when a larger monitor is required. A large and attractive screen always delivers the initial ‘wow’ factor, but the usability is what will leave the lasting impression.”

LIMITATIONS While screen size may be increasing, there are still considerable hardware and software limitations to consider when designing for IFE, as Grinlinton explains:

“The IFE software we’ve experienced to date has been pretty backwards, technology-wise, and this has definitely limited what we’ve wanted to achieve from a motion and interaction standpoint. Support for the latest versions of CSS, HTML and even Flash have been pretty poor.”

Hawes relates a similar experience: “Development seems to be limited to the in-house team, and always appears to lag behind what is possible today with tablets and mobiles. Perhaps an open-source approach to development could really drive this area.”

“From a hardware perspective, it’s much the same story,” says Grinlinton. “Processing power and touch capability are a big problem. When you consider that passengers’ experience of touch is through using iPads and iPhones, the touch experience offered by most IFEs is lacking as a result of these hardware restrictions.”

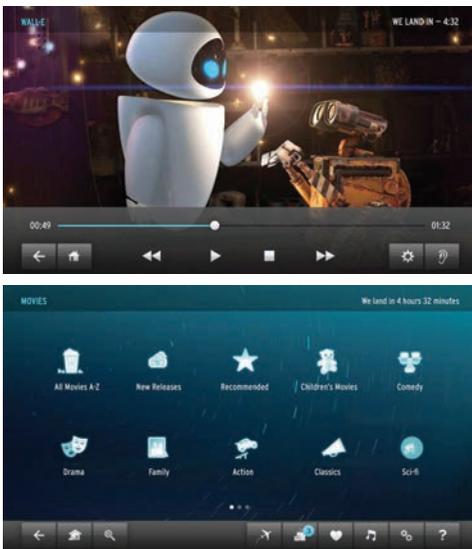
“There are always going to be challenges,” adds IMS’s Gray. “We feel that passengers have the same expectations of IFE as they would of today’s popular devices. However, there’s a challenge when trying to deliver that experience on an aircraft. For starters, the RAVE touchscreen is viewed at eye level. Most touchscreen devices passengers use are viewed at a downward angle, typically on a table, or in the hand. There’s also the topic of touchscreen sensitivity. RAVE has just the right amount of touch sensitivity, which our passengers adapt to very quickly. This enables the use of inflight games without the fear that

03. When designing the GUI for Virgin Atlantic, Massive Interactive decided on a sophisticated look for the Virgin Loves content, and something a little more fun for kids’ content

“

A LARGE AND ATTRACTIVE SCREEN ALWAYS DELIVERS THE INITIAL ‘WOW’ FACTOR, BUT THE USABILITY IS WHAT WILL LEAVE THE LASTING IMPRESSION”

”



04



I LONG FOR THE DAY THAT SEES THE END OF THE CRAZY LEAD TIMES FOR CONTENT THAT STILL EXIST WITHIN THE INDUSTRY



04. The design that Reactive created for Aura focuses on ease of use, and also features a landing time countdown

you'll need to touch the screen in a manner that would disrupt the passenger in front of you."

ON THE HORIZON There's a growing feeling that a convergence of technologies would be of huge benefit to the airlines, possibly resulting in IFE solutions that are more location and device agnostic.

Massive's Ellis describes his vision: "The concept of a fixed IFE system needs to evolve to be more akin to a 'journey companion' – something I can begin interacting with at home as I prepare for my trip, then it can help me through checking in, getting to the gate, keeping me occupied at the gate, and then, once on board, assist me to relax or work, and take advantage of the investment the airline has made in the onboard environment, including the suite, the large screen and, of course, great service. Post-flight, the experience could continue, helping me with the onward journey. What screen does this appear on? Whichever one I want. The experience should be adapted appropriately to the strengths of the device. This would focus passengers on enjoying the whole travel experience, not just part of it, and provide a continuous branded engagement outside the onboard environment."

Priestmangoode's Hawes has a similar point of view, with IFE systems able to synch with a consumer PED app. He says, "In pre-boarding, the passenger could perhaps shortlist movies they would like to watch on the flight, or pre-order dinner. For regular flyers, there could be a 'saved settings' mode, where their favourite seat position and lighting preset is saved on the app. Once on board, the IFE

could sync with the app so the passenger doesn't have to spend time fiddling with the system, and instead will have all their presets ready to go."

"With airlines looking to reduce weight, and many passengers already carrying one or more devices, it's surprising that more airlines and IFE vendors aren't pushing towards this kind of solution," adds Grinlinton.

IMS's Gray is also keen to see the scope of materials change. "We're interested in seeing some of the materials we're unable to use today (due to restrictions related to burn requirements and such) make their way onto aircraft. Corning's Gorilla Glass is a great example," he says.

FUTURE TECH What other possibilities are just over the horizon? "Eye movement recognition as we are seeing in the most advanced smartphones today would be amazing," says Reilly. "The ability of the system to scan eye movement, not just for reviewing, but actually executing content assets and system commands, would bring so many advancements in terms of system complexity, weight, cost and functionality."

However, as exciting as such possibilities are, when it comes to IFE system wish-lists, there are more fundamental issues that irk the experts. "In an IFE fantasy land, I would somehow wave a magic wand and remove the certification obstacles we all face, so that IFE software and hardware could be as easy and as cheap for us to upgrade as our personal phones are," says Earley.

For Stellar's Reilly, it's the content loading speed that's most problematic. "We need wireless that is fast and able to update content easily and quickly whenever there's weight on wheels, or even during the flight. I long for the day that sees the end of the crazy lead times for content that still exist within our industry," he concludes. ☒

CONTACTS

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jollygood

Creating an entire low-cost airline brand, from concept to delivery, in less than a year is a serious challenge, but Thai Airways achieved just that with a Smile

ADAM GAVINE, AIRCRAFT INTERIORS INTERNATIONAL



When Captain Woranate Laprabang, managing director of Thai Smile, was deciding what image to convey through his new lower-cost airline, intended to serve short-haul destinations, he stipulated, “The main aim for the cabin design is to develop a cabin that provides an impressive look and feel with a fun, vibrant image to represent our ‘trendy, friendly’ brand character.” Sounds simple, but what if the design house had only six weeks to create the concept, from name, to livery, to baggage tags, to palette, to textiles, to website?

That is exactly what design house Priestmangoode was faced with when it was offered the job. Director Luke Hawes explains, “I was having dinner with the president of Thai Airways in late August 2011 when he mentioned they were starting a low-cost airline and asked if we would like to design it. He then said he needed to send the drawings to Airbus in four weeks. We stretched that to six weeks for the whole concept, which had to include parts numbers for trim and finish, naming, livery, etc. We then had another three months after critical design freeze with Airbus. From the August dinner with the president, we delivered the product in June, so that was less than 12 months from concept to actual supply. Sometimes when you have less time and have to make things happen, some of your best work comes out, because you have to go with your gut feeling.”

WHAT'S IN A NAME? So where to begin? Well, a name for the airline would be a good start. With no time to launch a competition via social media to find a suitable name for the airline, as is popular nowadays, finding a name became part of the design brief. The Priestmangoode team, which comprised between six and eight people during the project, brainstormed for a week, and came up with the winner

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01

within two weeks, to replace the management's working title of Thai Wings. More than 75 names were considered and dismissed in the process, including My Thai, Thai Thai, Thai Orchid, Thai Local, Thai Together, and Thai Spice, before the winning Thai Smile was selected – actually one of Hawes' ideas, inspired by the friendly cabin crew. "Some of these things you have to explore to reject," he says.

All the names have two things in common. The first is that they are all English words. "Thai wanted global appeal from all corners of the world," explains Hawes. "It was important that the name is related to something like service rather than a random name."

Laprabang further explains the English choice as the need for a common tongue: "Thai Smile is positioned as a 'regional air service', not just a domestic service. According to our long-term plan, 70% of our capacity will cover short-haul international destinations around two or three hours from Thailand, focusing in three main areas: China, India and ASEAN."

LIVELY LIVERY The second thing that all the names had in common was that they contained the word 'Thai'. This was to ensure that customers know that the airline is part of the larger Thai Airways brand – indeed Smile is completely integrated within its parent, with no separate offices. The relationship is also made clear as the full logo is incorporated into the Smile livery on the fleet of A320-200s.

There is a strong contrast between the two airlines in the livery, though. With the name selected, a whole new project began, to choose between hundreds of fonts and colours for the logo. In the end, the word Smile looks like it was drawn using a marker pen, which is exactly how it came about. The playful script, complete with a happy dot



02



in the 'i', beams alongside the more serious Thai Airways logo. Thai Airways mainly uses purple, gold and magenta in its branding, and for Smile the purple and magenta were retained, while orange was introduced for vibrancy, and the gold was changed to a more youthful yellow. If required, the logo can be run in monotone, in pink, purple or yellow.

Aside from the logo, the livery includes the heritage Thai Airways empenage design, with a ribbon in the Smile colours extending from it, again showing the link between the two airlines.

A brightly coloured fuselage was also considered, but as Hawes explains, "The darker the colour you use on the livery, the hotter the aircraft gets, which means the air conditioning has to work harder, which raises fuel costs. Lots of things come into play in livery design."

GROUND RULES The critical aspects of creating a brand personality for Thai Smile centred around five key concepts created by Thai's top management: speedy, vibrant, friendly, fun and trendy. With only those words, and the stipulation

01. The purple headrests and seatbelts let you know you are flying with Thai, but the striped fabric hints at fun times ahead
02. Smile's short-haul routes do not call for IFE, so a high magazine pocket was specified for greater kneeroom

“

THE CRITICAL ASPECTS OF CREATING A BRAND PERSONALITY FOR SMILE CENTRED AROUND FIVE KEY CONCEPTS: SPEEDY, VIBRANT, FRIENDLY, FUN AND TRENDY”

”



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03



04

“WHILE THE AIRLINE IS LOW-COST, THAI DID NOT WANT A BUDGET EXPERIENCE IN THE CABIN”

that the Thai logo was to be incorporated in the livery, Priestmangoode was free to explore the five key elements of the brief.

The friendly and fun aspects are already covered by the name, the playful font and ribbons, and the crew, while vibrancy was introduced through the new, brighter and bolder shades in the corporate colours.

Mood boards were created, with blues reflecting the islands, greens the jungles, oranges the sunsets and temples that are part of Thai culture, and pinks reflecting the flowers and silks of the country.

The trendy aspect of the brief is addressed, fittingly, by easily replaceable items such as cabin accessories and crew uniforms, while the speediness is addressed by the stripes in the logo, and the trim and finish, which reflect the fast-moving lights of Bangkok.

ON BOARD While the airline is low-cost, Thai did not want a budget experience in the cabin; it wanted passengers to be reminded they are flying with a Thai Airways brand, and that they are going somewhere special. On paper, the Smile experience is fairly no-frills, with prepacked meals and no IFE, but with the longest route currently being three hours, and the average route 90 minutes, a luxury experience is not required – but that does not mean it is unsophisticated.

The seats are B/E Aerospace Pinnacle models, chosen because, as Laprabang explains, “It’s a well-designed seat that provides a high level of comfort for our passengers.”

The Thai feel is achieved through the trim and finish. Many colour options were explored for the seat fabrics, such as maroons, purples and blues, highlighted with accents. In the end, a striped fabric featuring the key Smile colours was chosen – again reflecting the ‘speedy’ part of the brief – with the headrest covers clad in a purple that ties in to the parent airline’s colours.

“We looked at going more corporate, but decided on the warmth of this design. The rich textile feels almost hand-crafted,” says Hawes of the seat fabrics, supplied by Botany Weaving. “These stripes are about colours blending in and bleeding out. It’s a nice, refreshing look.”

Getting down to colour specifics, the primary palette is a purple similar to the corporate colour (Pantone 276 C), a bright orange (Pantone 158 U), a vivid pink (Pantone 233 C), and a bright yellow (Pantone 7406 C). To really help these bold colours stand out, a more muted secondary palette was created, with a grey (Pantone 426 U), putty (Pantone 7529 U), and two bespoke dark aubergine and brown shades.

Hawes explains the colour choices: “We chose the primary colours and then put together a secondary palette of darker tones to support that. You can’t use the bright colours everywhere or it will look like a sweet shop. The supporting colours are used for the dado panels, and entrance and exit areas – anything that had to be more neutral used the secondary palette to support the primaries.”

The idea of breaking up rows of seats into different colours, or featuring different colours of headrests, was

03. While the crew have a wide choice of outfits, the orange ensures strong branding
04. The folded cardboard snack boxes add a little extra fun and colour



“

WE’VE CREATED A BRIGHT CABIN BECAUSE IT’S MORE OF A BUDGET AIRLINE WITH PASSENGERS IN A HOLIDAY MOOD ”

- 05. It all comes together: the inspirational smiles, the fun and colourful branding, and the Thai logo
- 06. The Smile stripes also extend to the engine cowlings

considered and dismissed as unnecessary, given the size of the aircraft, which is configured with up to 156 economy-class seats in a 3-3 configuration.

The carpet is dark purple, again similar to the Thai Airways fleet, while the rich Thai culture is reflected in the detailing on the curtains. However, nothing is intended to detract from the main focus of the striped textiles. The finishing touch is a set of surprisingly understated brand panels on the front and rear walls, finished in a matte silver, with the Smile logo picked out in aluminium.

Having also designed the cabins for Thai Airways, Priestmangoode saw the Smile project as an opportunity to be less corporate. “We’ve created a brighter cabin because it’s more of a budget airline with passengers in a holiday mood, and it’s a chance to be bold, although I wouldn’t go as bold as easyJet with just one colour,” says Hawes.

SMALL BUSINESS There is also a ‘Smile Plus’ short-haul business class, which is available in the first four rows of the aircraft on international flights, and the first three rows on domestic flights. This class is a basic offering of an empty middle seat, a little more pitch, and with a hot inflight meal included (hot meals are a buy-on-board option in economy), although extra landside services include priority check-in, a 30kg baggage allowance, and use of a lounge. However, this may be upgraded in the future. “We are considering offering business-class seats two-abreast in our future fleet,” says Laprabang.

SERVICE WITH A SMILE At the heart of the experience, and of course the very inspiration for the Smile name, is the

crew. The friendly and efficient service is a given, thanks to the standards of Thai Airways. However, to address the ‘trendy’ requirement, the uniforms needed some thinking.

“The crew wear very traditional dress on Thai Airways, but we wanted a more contemporary look for Smile, with options of trousers and skirts, but just one colourway,” says Hawes.

Priestmangoode brought in fashion consultants at an early stage to help put together thoughts of what looks classical, what looks trendy now, and what will be trendy in two years’ time. The chosen designs reflect the orange shade that differentiates the Smile brand from its parent, with the corporate colours picked up through accessories. However, the style selected is still smart. The option of a more traditional top in Smile colours, with jeans underneath, was considered, but eventually dismissed.

OTHER ELEMENTS The four primary palette colours are also used throughout the final elements of the design, such as snack boxes, boarding passes, baggage tags, and menus. Priestmangoode also used these themes when designing the Thai Smile digital products such as websites, apps and booking engines. This task was made simpler as these systems are based on Thai systems, rebranded for Smile.

“Creating a whole new design and branding process is a first for us,” concludes Hawes. “These projects are rare – about one a year – and are something we want to get into more. Creating a seat or interior is our bread and butter, but now we’ve created an entire low-cost brand, we would like to do it for some big players with big aircraft. It was a frantic project, but one we’re very proud of.” ☒

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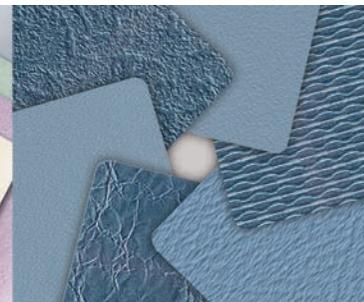
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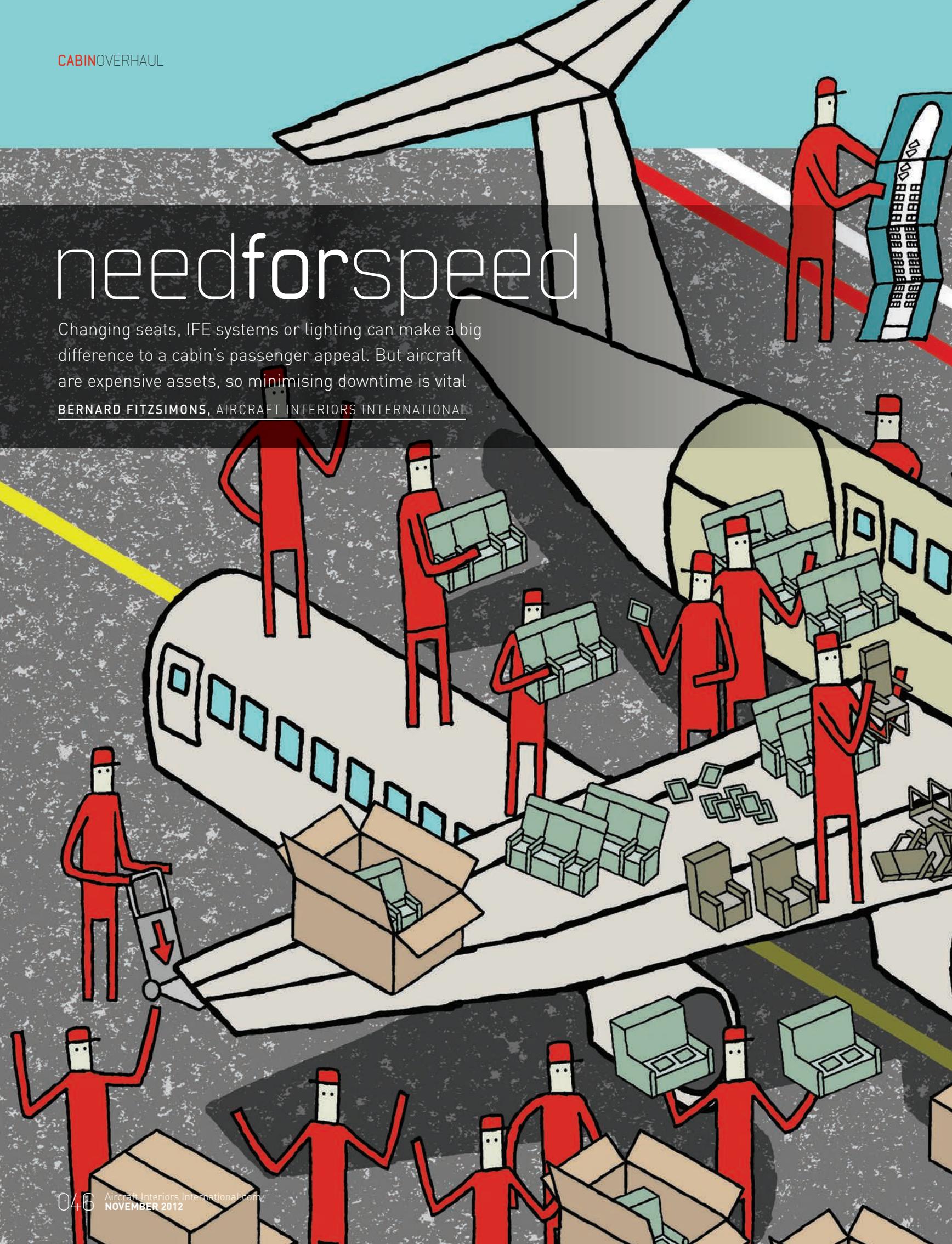


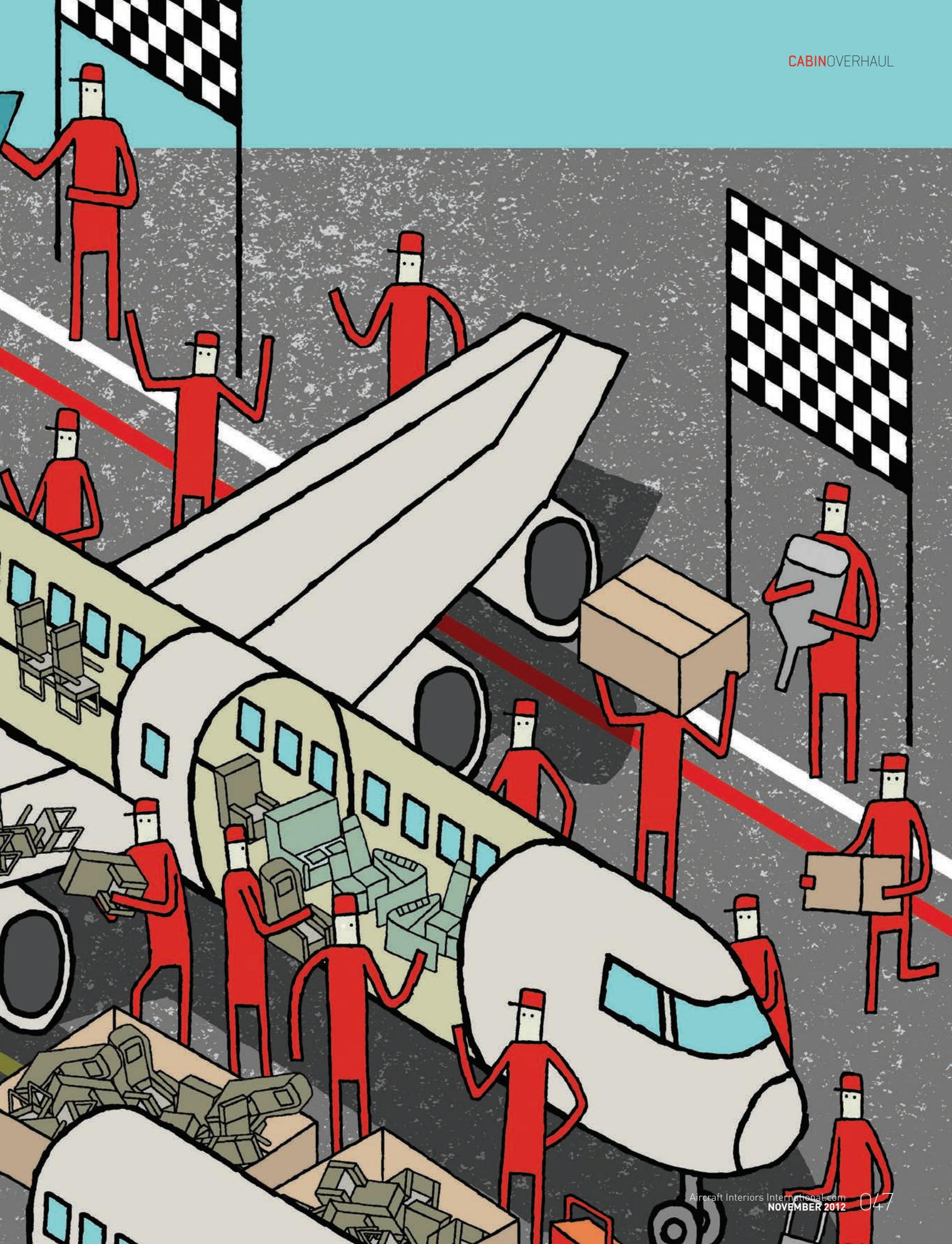
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need for speed

Changing seats, IFE systems or lighting can make a big difference to a cabin's passenger appeal. But aircraft are expensive assets, so minimising downtime is vital

BERNARD FITZSIMONS, AIRCRAFT INTERIORS INTERNATIONAL





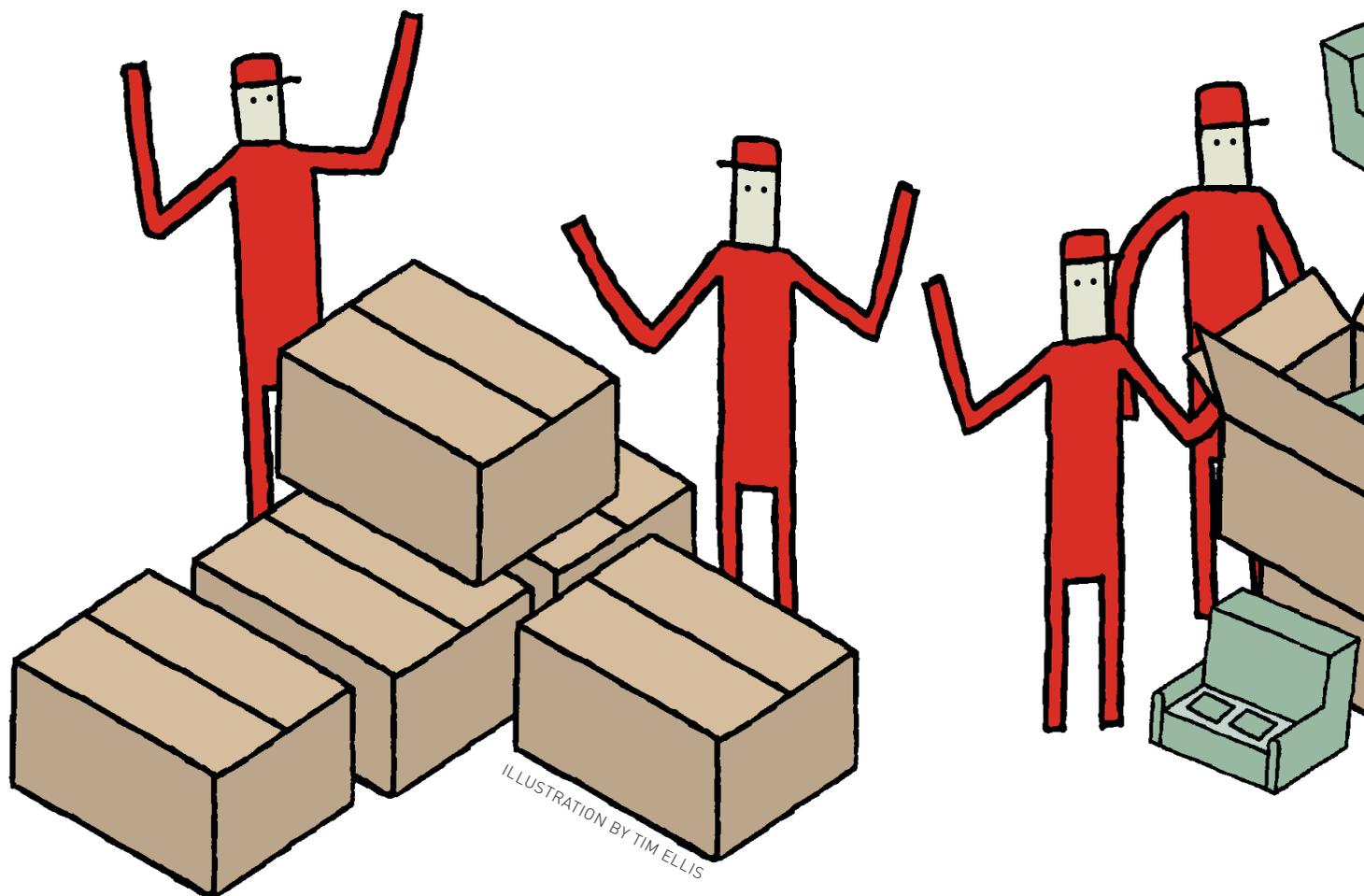


ILLUSTRATION BY TIM ELLIS

These are incredibly competitive times for airlines, with struggling economies and soaring fuel costs making profit margins ever tighter. Thus, while airlines are keen to make their cabin product as good as it can be to attract customers, every minute an aircraft is on the ground undergoing overhaul work and not in the air generating revenue is very costly. So, what if a cabin project is required outside of a C or D check?

“Most of the time,” says Jon Morgan, senior manager of business development at Seattle-based MRO provider ATS, “especially if you’re talking about an OEM post-delivery modification, minimising downtime is crucial. They want to get that asset into their fleet as fast as possible.”

For example, ATS has installed the Lumexis ‘Fiber to the Screen’ system on around half the 44 Boeing 737-800s ordered by start-up airline flydubai. The system is not approved for line-fit by Boeing, so it is retrofitted to brand-new aircraft before delivery to the airline.

Morgan says the critical elements are what he terms the three Ps: “The main issues are people, paperwork and parts. The key to success for an MRO in managing a project is that all the paperwork is correct and accurate and ready to go, and that the parts are staged and on dock when the aircraft rolls in.”

As for the people, he says, “You do need a special skills group to put the proper people on the aircraft. That is a given for an MRO, but what will kill a programme very quickly, or at least delay it, is the paperwork not being correct. If it doesn’t work on the aircraft, and the parts aren’t staged and ready to go, they’re coming in late, they’re not the right part, those kind of things will throw a wrench in it every time.”

Collin Trupp, CEO of aeroinv.com, a provider of consumable and expendable parts, has a similar outlook to Morgan, and provides his own three top tips. The first bit of advice relates to organisation. “Note what is likely to need repair or replacement in the near future and ensure these parts are in stock with your aircraft parts supplier, to avoid surprises or last-minute panics,” he says.

Secondly, communication is key, says Trupp: “Make contact with your supplier immediately. A 24/7 phone line and simple online purchasing are key to exceptional and quick service when you need it most.”

Trupp’s final tip is to do your homework: “Don’t forget to try the aftermarket – end users tend not to try the aftermarket for cabin interiors, but you would be surprised at the range of parts that are available for immediate



WHAT WILL KILL A PROGRAMME VERY QUICKLY, OR AT LEAST DELAY IT, IS THE PAPERWORK NOT BEING CORRECT





leds made easy

For a rapid way to fit the currently popular LED cabin lighting, STG Aerospace is developing replacement LED lighting systems that avoid the need for wholesale cabin rewiring. Marketing director Thomas Cowper Johnson says that after 18 years of producing the SafTglo photo-luminescent emergency floor path markings, “the move into an electrical product was quite a significant step”.

The move was prompted by airline enquiries about the ability of LED lights to charge the PL strips. After producing a White Paper on the topic, he says, “We started to look more closely at the issue. We were talking to Swiss, which had a particular issue with its Avro RJs and the volume of fluorescent tubes that it was having to replace every year. We were able to devise a swap-in, swap-out solution, where you just take the fluorescent tube out and you put the LED in.” The process of removing the tubes and installing the LEDs, branded Whitehawk for the RJ, takes no more than two hours.

Further research, involving a survey of 148 airlines, revealed that “everybody loved the idea of LEDs, and wanted to get them installed”, says Johnson. “But the biggest barrier to uptake was the cost of installation, not necessarily the cost of the system itself, but the rewiring and reconfiguring aircraft to get an LED lighting system in. That pushed us down the path of seeing if we could find a solution.”

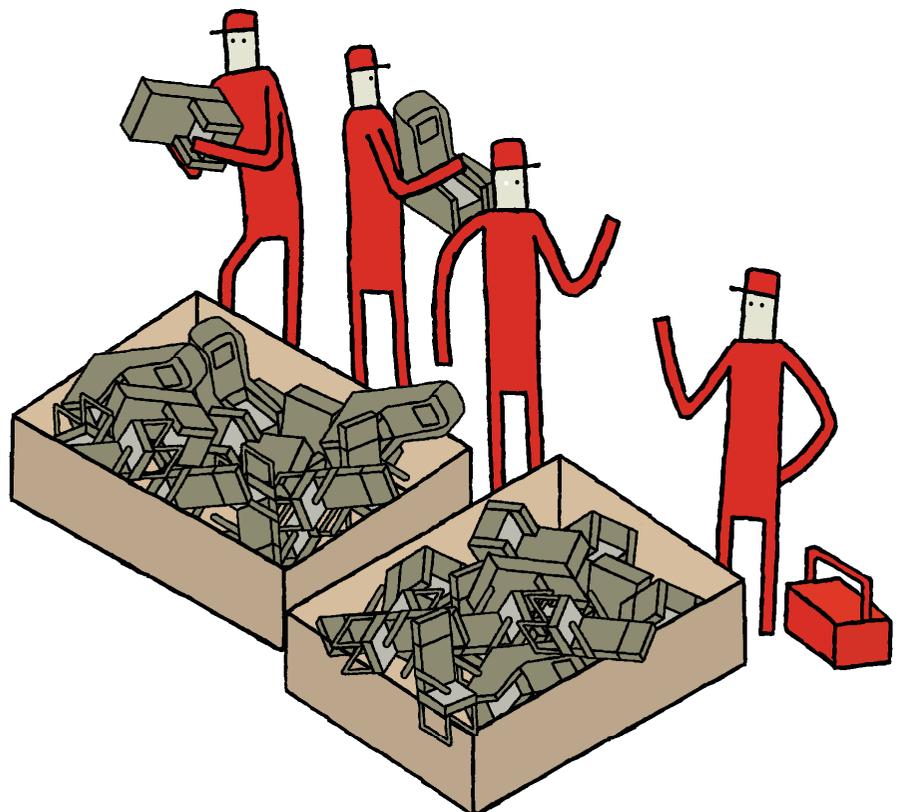
Having produced Whitehawk for the RJ, Johnson says, “We’re now working on a next generation of product for other aircraft models.” Branded LumiNet, the replacement LED system should make it easier to realise the advantages of longer life, lower power consumption and improved cabin ambience.

purchase, that are not only cheaper than the OEM parts, but also avoid any lead-time problems.”

Stephen Findlay, managing director of Aeropair, a Scottish company that manufactures and repairs a range of aircraft interior products in composite and plastics, adds his view of the fastest way to return an aircraft to profitable service: “Cabin overhaul or refresh programmes all depend on length of availability of the aircraft in check, and will often be just a quick seat change or change in LOPA, and this is primarily done at the planning stage, when the aircraft hangar date will be known. New seat projects should be planned for installation at a suitable hangar with an overnight stop, with the LOPA approved by a Part21J/ or other appropriate design approval, ensuring all seats are certified to the appropriate level for that aircraft.

“The quickest turnaround is when the seats being changed are from the same manufacturer and with the same part number, and the aircraft can then have all the existing seats removed and the new seats installed as per the LOPA, and with the appropriate staff this can be achieved within four to six hours. The only time this can be a little complicated is when the seat part number and/or manufacturer changes, which will always require a complete new LOPA,” he says.

Of course, seats that have been removed do not have to go to waste – they can be inspected and assessed for repair or refurbishment, which usually entails re-covering or cleaning, checking actuators and/or IFE if applicable, and replacing all necessary parts to final inspection standards.



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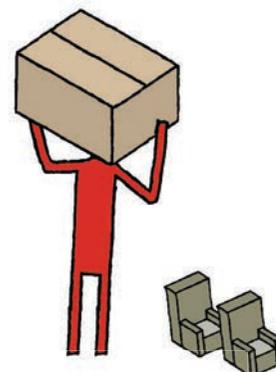
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01. AFI KLM E&M can overhaul a cabin in just three days
02. Testing newly refurbished seating controls



This work takes between two and four weeks, after which they are available for the next installation.

MAKEOVER Tommaso Auriemma, the head of project management in the modifications department at AFI KLM E&M, adds, “Cost-efficient solutions for cabin overhaul and upgrade are a key issue for any airline. Refurbishment is cost-effective while dramatically reducing total project turnaround time. Small modifications can improve the existing cabin configuration, and an immediately fresher look can be achieved by applying new laminates and by changing carpets, curtains, lighting and interior paint. We are able to provide such a refurbishment in less than four weeks’ total lead time for engineering and certification, with the aircraft grounded for only three days.”

Zodiac Airline Cabin Interiors, previously known as Heath Tecna, also has experience in quick turnarounds for seating. A spokesperson explains clients’ motivation: “Most integration programmes are driven by airlines, who want to reconfigure aircraft with new BFE seats. Often this is done because of shifts in market demand, which push the airline to reconfigure the aircraft to remain competitive. Seat pitches and a number of other parameters will need to be changed to support the installation of the new seats.”

Where the company can really save time is through its own in-house certification department, which can speed customers towards their STC for the programmes.

lightweight contender

Recognising that airlines need a fast turnaround on their interiors, Fokker has developed the Light Weight Interior, a quick solution based on three modules: lightweight Acro seats, LED lighting and re-skinned interior panels.

The seats have a short lead time to order and fit, and can compete on pricing with refurbishments and reduce maintenance costs significantly, according to the company.

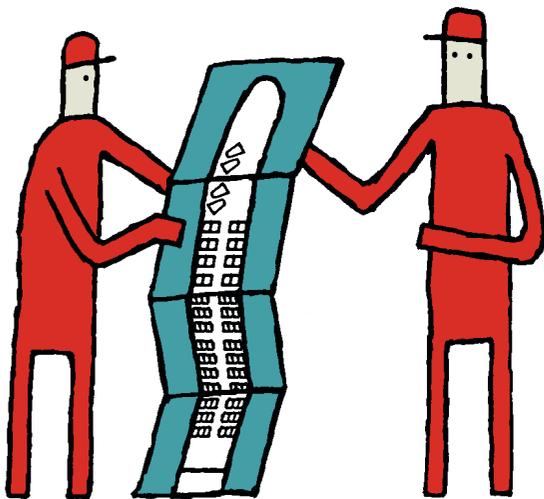
The second module, the installation of LED lighting, saves maintenance costs and lowers the power consumption, while also giving the same modern look and experience as the latest interiors on new aircraft. Adding a colour is also an option.

Tom Milder, director of modifications at Fokker Services, explains the third module: re-skinning and repairing the existing interior lining. “We offer all kind of decor materials, and are able to certify new combinations of adhesives and decor films within Fokker Services. This is specifically of great value when existing maintenance manual procedures are not covered because of obsolete adhesives or decor materials,” he explains. “Also, repairs on the interior panels are performed in-house.”

This Light Weight Interior solution is offered as a package on Bombardier Dash8 aircraft, Fokker 50s and Fokker 70/100s, and can be easily adapted for A320s, ATR42/72s and CRJs. Installation can be performed on-site with the customer, but also in combination with a check at Fokker’s facilities in the Netherlands or Singapore.



PRE-PLANNING IS A BIG KEY TO SUCCESS. IF YOU'RE STARTING FROM SCRATCH WITH PAPERWORK WHEN THE AIRCRAFT ROLLS UP, YOU'RE WAY BEHIND



Returning to the Lumexis project, ATS's Jon Morgan says that such work takes a special skill mix. "It's not your normal MRO activity, so you have to have some pretty talented avionics personnel," he says. "It gets complicated to integrate an IFE or cabin management system into any kind of aircraft and make it work correctly, so it is reliable and easy for a flight attendant to operate. It also takes some very special mechanics to be able to handle the materials, put them in, and make sure they look brand new, because that's the expectation."

The entire modification should be scripted, Morgan says, with the script updated to speed-up the process: "We start with our planning department but then it gets tweaked by the production guys, so there's basically a script or a map to how this thing gets put in, from step A to step Z. You follow that and you time it. Following that script without any delays or changes is really important."

Such work can now be carried out in just three days, including the installation of seats and IFE system, as well as all the testing and the delivery of the aircraft to the customer, according to Morgan.

ODA ADVANTAGE The first such installation is never going to be done in three days, of course, particularly when it requires FAA certification and approval by a second regulator on top of that. However, using Organisation Designation Authorisation (ODA) can reduce the time required for certification.

ODA enables the designated individuals within an organisation to sign for a supplemental type certificate (STC), which, once the installation has been completed, allows the aircraft to be released within 24 hours.

"It may take longer if you don't have an ODA from the outset of the programme, because if you're waiting for FAA certification, it could take a week or two for them to approve the STC and release the aircraft," says Morgan. "So another key to finishing the aircraft is to use an ODA, which allows you to sign the STC after the installation is complete and confirmed as 100% accurate."

The paperwork – engineering orders and associated drawings – is the third critical element, Morgan adds, "If you're looking at putting a part on the aircraft and it doesn't match the aircraft, you have to send it back to the engineering group to redo the paperwork. If you minimise inaccuracies in the paperwork, then obviously a mechanic doesn't stop, doesn't have to get a fix for that issue, and can continue on to the next thing he needs to do, and the whole flow of the aircraft continues. The paperwork has to be 100% accurate." The paperwork also has to be certified in order to sign off the aircraft and the modification.

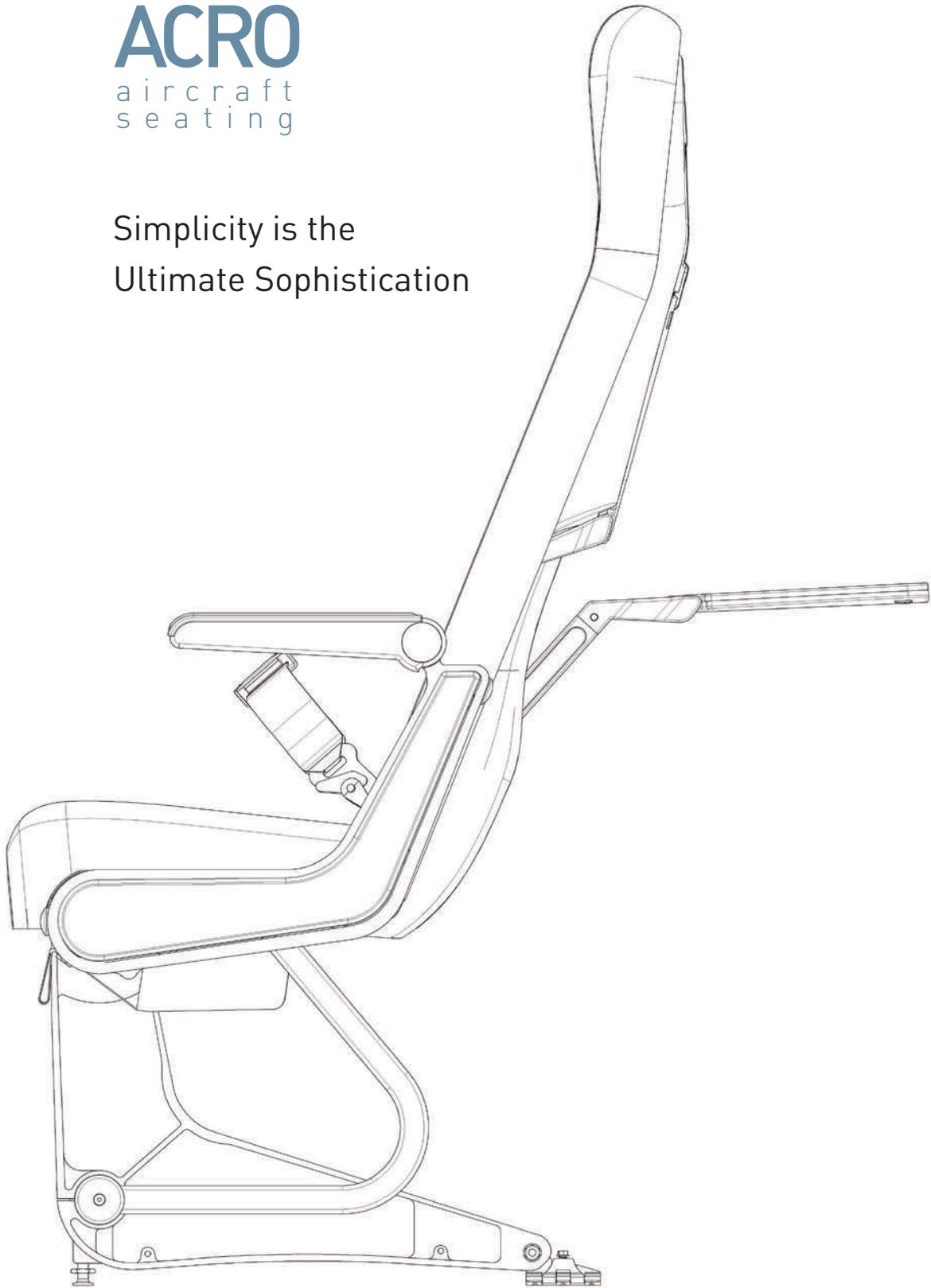
A planning department to handle the pre-planning is another key to a swift programme. Morgan says, "They can take care of getting all the correct and accurate information and then get it to the procurement folks so they know what parts have to be put on the floor and staged. Then, when the aircraft rolls up, the mechanic has all his parts and gets started. The whole pre-planning thing is a big key to success. If you're starting from scratch with paperwork when the aircraft rolls up, you're way behind." ☒

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shine on

After decades of merely offering 'on' or 'off' overhead or reading illumination, aircraft lighting appears to be in the midst of exciting changes. Let's shine a light on what's next

GUY BIRD, AIRCRAFT INTERIORS INTERNATIONAL



One of the most revealing things about lighting in 21st century aircraft is just how important this largely non-physical aspect has become in the success or failure of the designed objects that make up the cabin. Don't believe me? Then try comparing the effect on your sitting room or bedroom from merely switching the main overhead lights on versus letting the various reading, side and mood lights do the job instead.

The effects are dramatically different. The former merely illuminates everything in a bright light, while the latter accents certain areas and usually creates a less harsh and more inviting space with pleasing areas of light and shade.

Patrick McEneaney, associate director of the creative consulting department of BMW Group DesignworksUSA's California studio, explains it well: "We consider lighting to be one of the core components of a holistically designed interior. It not only informs the passenger about the subtleties and hierarchies of the space, it also reveals the colours and authentic finishes of the materials we have selected to create a premium experience."

In his view, then, lighting is fundamental to how we not only 'see', but also 'read' or make sense of an aircraft interior, as he continues: "Lighting is an opportunity for creating emotion and meaning. It connects passengers to the architecture of the aircraft interior and guides them through the routines you'd expect on any flight in a unique way."

Marc Renz, head of new programmes and product strategy at lighting manufacturer and developer Diehl Aerospace, concurs; pointing to current lighting that can do everything from reinforcing the airline's corporate colour, to creating a sunrise effect on the cabin lining. He claims Diehl's all-LED cabin lighting solutions on the A350 XWB and the 787 Dreamliner "are the most advanced aircraft programmes at the moment, with additional features including a full-colour spotlight, backlit dome, and numerous accent lights".



“THE POSSIBILITY OF ILLUMINATED SURFACES INSTEAD OF LIGHT FIXTURES IS VERY EXCITING”

- 01. This image and previous page – Boeing fitted out this 787 (ZA003) to showcase the aircraft’s capabilities, including lighting
- 02. The dramatic lighting in Virgin Atlantic’s new Upper Class was co-developed by DHA Design

LED BREAKTHROUGHS Wisconsin, USA-based retrofit and forward-fit application specialist Emteq says the now widespread use of onboard LED lighting to create and/or reinforce the idea of sunrise and sunset to assist long-haul passengers’ sleep patterns and well-being is being trumped by brand- and even location-specific lighting effects. Kimberly Hoogland, its marketing communications team leader, says Emteq is managing to help its clients blaze a trail, even on retrofits, due to the quality of the technology becoming available.

“What Icelandair is doing is really the first of a kind. Emteq’s mood lighting will enable Icelandair to create dynamic lighting scenes that mimic the Northern Lights and other aspects of nature, which results in a truly unique travel experience for the passengers, and reinforces Icelandair’s brand.”

Tom Brabant from Boeing’s communications team also believes LEDs have more to offer – despite being a mature technology known for their long lifespan, lower energy use and space efficiency (compared with incandescent lighting). “LED-based fixtures still excite us the most,” he says. “This is due to their potential to support a broad range of needs throughout the aircraft. We feel we’ve only just begun to figure out how to best interface LED-based fixtures in the cabin to support the passenger experience.”

Johannes Lampela, creative director of BMW Group DesignworksUSA, is also an LED believer, adding, “We are most excited about advances in colour and temperature control for LED systems, since these permit us to design experiences that can be both calming and surprising to the passenger. Advances in OLED flexible membranes are on everyone’s wish list, but the simple miniaturisation of LED

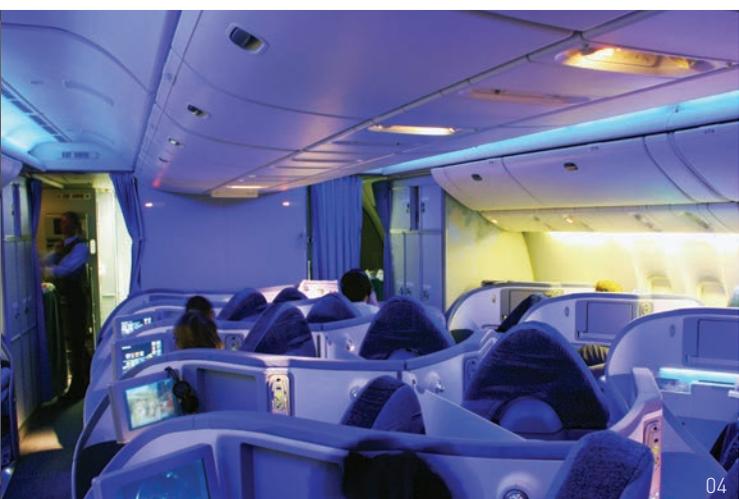


PHOTO: THALES

components is probably having the biggest impact on cabin interior and seating design at the moment.”

ARE OLEDs CHANGING THE GAME? As Lampela mentions, organic light-emitting diodes (OLEDs), currently used for small screens on mobile phones and digital cameras, have a malleable potential to illuminate curved shapes and large areas in the future due to the light-emitting layer material of the LED being an organic compound rather than hard crystalline, as in LEDs. Can OLEDs really change the game, and if so, when?

Desmond O'Donovan of London-based DHA Design, the practice behind Virgin Atlantic's recent innovative lighting schemes – for its bar among other elements – is an OLED fan. “The possibility of illuminated surfaces instead of light fixtures is very exciting,” he says. “In five years we

outside influences

Of course, aircraft lighting design isn't a vacuum. A consequence of its relatively small size in manufacturing terms is that design advances in other industries have an impact on what ultimately gets offered to airline passengers, as Thomas Brabant from Boeing's communications team highlights: “The aircraft lighting industry captures only a small percentage of the LED market, so we are influenced by the dominant markets such as automotive, domestic and mobile devices. We already see this with LEDs becoming more powerful in smaller packages.”

In terms of design cues, Diehl's head of new programmes and product strategy, Marc Renz, acknowledges that lounge and bar illumination from hotels and domestic interiors have already found their way into business and first-class aircraft cabins.

But the influence can also go the other way, as car interior designer Alister Whelan confesses in relation to the forthcoming Jaguar F-Type sports car: “The way our lights work is inspired by aircraft cockpits, where the lighting comes on in a sequence. If you start the F-Type at night, the driver needle lights sweep around their dials, then the task lighting illuminates in a cascade down the centre console, from around the air-con switches to the touchscreen and beyond.”



05



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will see the emergence of OLEDs for ambient lighting (not primary source) and miniaturisation of reading lights into smaller LED openings to help hide them in ceiling panels.” However, he believes it will be a decade before OLEDs become the primary light source instead of LEDs.

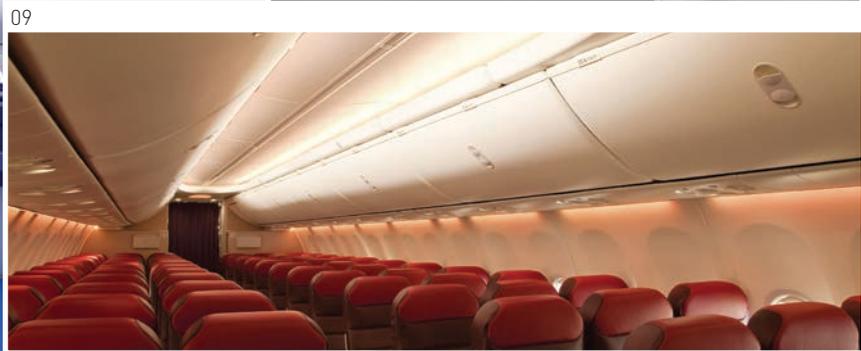
Diehl's Renz seems equally excited by OLEDs, but dismisses related electroluminescence (EL) technology – where a material emits a light in response to an electric current running through it. He also concedes that OLED as an exclusive cabin lighting technology is some time off. “We are constantly watching the progress in OLEDs and EL light,” he says, “and we perform many tests. The OLED is a promising and flourishing technology that dwarfs EL lights in all matters. From our viewpoint, over the next few years, OLEDs will be complementary to the LED solution.”

While Emteq's Hoogland is also excited by OLEDs and acknowledges their use in monitors, she reports that the company is also applying the technology to lighting control panels. However, she states, “It is still very far off from being a realistic lighting solution for airlines. One challenge with OLEDs is that they need an impermeable barrier – which at this time is glass. In the future, changes to that barrier could allow for more flexible options.”

- 03. Lighting is used to create extra drama for the 747-8's sweeping staircase
- 04. The lighting must be selected with optimal IFE viewing in mind
- 05. Diehl says its all-LED designs are the most advanced lighting systems in the air today
- 06. Back at ground level, the interior lighting of the Jaguar F-Type is inspired by aircraft cockpits



FOR RETROFIT UPGRADES, ADDING WIRELESS CONTROL SIMPLIFIES THE WIRING, AND ALLOWS INTERACTIVE CONTROLS



- 07. ANA chose a cool-blue lighting scheme to complement its livery and interior palette
- 08. Dynamic lighting highlights the sweeping arches of the 787 cabin
- 09. The features of the Sky Interior on the 737 can be brightly illuminated for boarding, and more subdued during flight

Andreas Uthmann, from Schott's lighting and imaging department, is the most sceptical, though, arguing that there is no silver bullet solution. "None of the above on its own means pure excitement for us," he cautions. "They all supply insufficient light output for aircraft cabins. Additional optic elements in combination with modern light sources are necessary in order to establish an acceptable light performance that can be used as mood and working light. We see LED-based lighting as set within the aviation industry for the next 5-10 years. Later on, laser-based solutions will likely take a great share of the volume."

One problem few experts worry about in relation to either technology is certification, which makes a change from a design perspective.

PHONE-STYLE PERSONAL CONTROL How and who controls the lighting is also going to change. All manner of slick options are on the horizon, as Hoogland reasons: "Passengers are getting attuned to personal electronic device-type controls – slide, pinch and touch controls that are intuitive – and Emteq is working on several options to introduce in the future. We also see wireless as part of the future. For retrofit upgrades, adding wireless control greatly simplifies the wiring, and allows customers interactive controls."

Just as car customers are starting to become used to wirelessly connecting their smartphones to the car to access their phone book, text messages, internet and stream music, so airline passengers will expect the same level of personalisation at their seat. DHA's O'Donovan is convinced. "No doubt personalised control will follow," he says. "I expect we will arrive at a point where frequent

fliers can store a profile, allowing their favourite settings to be replayed on a route-by-route basis. Near-field communication (NFC) will facilitate this. Mobile devices will help travellers select the look and feel of their personal space on board, although this may be restricted to the front of the aircraft."

Diehl's Renz also highlights the possibilities of gesture control for personal lighting. "We regard this trend as realistic. Personal lights could be operated individually via a touchpad or similar device and we've already exhibited reading lights with a dimming function that can be operated via gesture recognition. By narrowing the hand, or by moving it away from or towards the light, it can be turned brighter or dimmer. Still, the passenger's use of this feature has to be restricted. The main cabin illumination will certainly remain under the control of the cabin crew."

FAR-OUT LIGHTING What will aircraft cabin lighting look like even further into the future? DHA's O'Donovan reckons that in a decade's time lighting will start to become more integrated into the aircraft's interior surfaces such as seat fabrics and carpets, opening up amazing design possibilities, and dreams of extending that idea beyond interiors to exteriors too. "Maybe in 20 years the exterior skin of an aircraft could become a canvas for illumination. Imagine the advertising revenue for Ryanair if its sidewalls worked like billboards. I would hope that the premium airlines would use this technology to enhance the inflight experience." ☒

CONTACTS

www.designworksusa.com; www.dhadesigns.com;
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Welcome to the new JAL, a leaner airline with an ambitious plan for its 777 fleet, which will see dramatic improvements for every class of travel

ADAM GAVINE, AIRCRAFT INTERIORS INTERNATIONAL



It has been a fascinating few years for Japan Airlines (JAL) as it has weathered storms both natural and financial. The airline has emerged in a strong position though, exiting bankruptcy and announcing a 2012 profit forecast of ¥140 billion (US\$1.7 billion), due in part to a savage cost-cutting scheme that saw the redundancy of a third of its global staff, as well as its entire fleet of 747s. To mark a return to its core values, including a return to the Tokyo Stock Exchange with 2012's second-biggest IPO, the tsurumaru livery has come back, with the crane signifying loyalty and strength. And loyal JAL customers will soon enjoy a strong new product onboard the international fleet of 13 777-300ERs, designed to lure customers from rival airlines.

This comprehensive retrofit scheme is known as 'Welcome! JAL New Sky', with the specific 777 programme created under the title 'JAL Sky Suite 777'. It launches in January on the Narita-to-Heathrow route, with subsequent retrofits rolling out at the rate of one a month. The design was created by Tokyo-based GK Industrial Design and was influenced by frequent traveller and



01

- 01. The ZIM Flugsitz seats offer more width, and the armrests can be folded up to create an extra-wide seat
- 02. With 3in more pitch and greater knee space in the seatback, JAL economy passengers have never had it so good

award-winning Japanese author and screenwriter Kundo Koyama, who provided insights and opinions from a customer's perspective. The ethos behind the scheme is that each class should not just be improved, but should feel like an upgrade to a class above.

SUITE SUCCESS Even regular JAL first-class passengers will not recognise the new cabin, with eight JAL Suites arranged in a 1-2-1 configuration. These are the Venus model from Contour, with the walls in pale cream and white to brighten the cabin, the seats covered in a brown leather and the cabinetry in a warm woodgrain to evoke a bedroom feeling. The bed length is 78.5in, and at 33in wide it is around 4in narrower than the standard Venus model. The optional door was not selected in order to aid access for personal service, and an electrically retractable divider gives those in the middle seats the option of being sociable or private. When passengers want to sleep, the crew place a Tempur foam mattress and pillow on top of the bed and supply a duvet.

There is plenty of stowage, with room for a cabin bag under the ottoman and multiple compartments to the side, one of which is large enough to accommodate a briefcase.

While many airlines are leaving the massage function as an unchecked option on seat orders in order to save weight, it is an important part of Japanese culture and therefore features in the 777's first and business-class seats. A new offering of 'mini massagers' is also soon to be launched. These devices can be attached to a passenger's legs or arms for a localised massage, with five stowed on each aircraft and available to all classes.

BIG BUSINESS Moving rearwards, there are 49 business-class JAL Sky Suites, which again mark a massive step up from the outgoing product – indeed the product exceeds its



02

brief, actually being superior to the previous first class. The previous seat, the JAL Shell Flat Seat, reclined to only 170° and had little privacy. The new seat, from B/E Aerospace, offers a fully flat bed in a private mini-suite, arranged 2-3-2, all with direct aisle access. The only downside is that JAL loses 14 seats with the new configuration.

Business travellers lose out little to those in first class, with a bed length of 74in, though it is narrower at 25.5in. In seat mode the width is 21in, but the armrest retracts and is covered in soft, padded leather to aid comfort when lying down. Prior to sleeping, the crew add a new product – an S-Line mattress and pillow from Weava Japan. These



items are made from a very fine woven fibre resin called Airweave, which looks similar to bubblewrap, and supports the contours of the body to aid sleep, while also helping control body temperature. A duvet finishes off the experience.

As the centre seats offer the most privacy, with a solid electronic divider screen on each side, JAL predicts that they will be the most popular choice for overnight flights, especially since they feature direct aisle access. However, access to overhead bins is more difficult and there is no side table, unlike neighbouring seats. There is still ample stowage space, though, with room for a cabin bag under

the ottoman. Window and centre seats also benefit from a stowage shelf on top of the seat shell, and a monitor table.

The feeling in the business seat is again domestic, with a mulberry-coloured seat fabric woven by TB Kawashima. The rear of the pod is finished in a mushroom suede-effect fabric, while the monitor surround and swivel table are clad in a pale woodgrain veneer.

STRONG ECONOMY The premium economy product is generous, with the 40 seats, configured 2-4-2, benefitting from a 19in width and 42in pitch – 4in more pitch than the previous JAL Sky Shell Seat, though four seats were

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03

sacrificed. The fixed-shell design, actually a Sicma business-class model, allows 7cm of seat slide and has a large legrest and three-stage adjustable footrest. There is a small centre divider for privacy, an armrest wide enough to prevent elbow fights, a coat hook, a seatback table large enough for an A4-size laptop, as well as a complementary USB port, video input and AC power outlet.

This is a key product, as JAL is keen to attract the many business travellers whose travel budgets no longer stretch to business-class tickets, but still want to enjoy some comforts. As a further incentive, premium-economy passengers can also access JAL's business-class airport lounges, as well as having their own cabin and dedicated cabin crew.

LOW COST, HIGH COMFORT Configured 3-3-3, the new economy cabin features 135 JAL Sky Wider seats from ZIM Flugsitz at a 33-34in pitch – a major increase from the previous 31in. Seat width also has been increased by 0.8in more than the previous Koito model, bringing it to 18.5in. A slimmed-down seatback also affords an extra 1.2in of knee space, with further comforts including a netted bottle holder and a smartphone holder near the USB port.

Further space was created by making the armrest design thinner. They also fold flush so that passengers with children, or perhaps larger passengers, can spread out a little, especially since the seatpads are flat.

ENTERTAINMENT All classes of passengers can enjoy the Thales TopSeries IFE system, as also found on JAL's 787.



04

First and business-class passengers have 23in touchscreens – an increase of 4in in first and 7.6in in business – and also benefit from Thales' Touch Passenger Media Units (TouchPMUs), an Android-based handset with a 3.8in LCD screen that can be used independently of the main screen to watch the moving map, for example.

Premium economy passengers get 12.1in personal touch-panel TV screens (35% wider than the previous product), while economy passengers watch a 10.6in touchscreen, both twinned with a more traditional handset with buttons for selecting functions and gaming on the front, and a qwerty keyboard on the back.

All classes can choose content from 50 channels, with the unique Sky Manga e-comic function as launched on

03. The new business class is far superior to the old product, now offering a full-flat bed

04. The B/E business class seats have cost JAL some capacity, but the airline hopes to gain more frequent flyers



05

05. Premium-economy passengers can enjoy a generous 12.1in touchscreen IFE system

06. The fixed-shell Sicma premium economy seats round off a budget business experience

the 787's system to follow. Inflight internet, called JAL Sky Wi-Fi and found on other routes, will soon follow on the 777 fleet.

Beyond the system itself, JAL is looking at signing up for TopCare, a turnkey maintenance programme, under which the management of every aspect of the in-flight entertainment systems will be taken care of by Thales.

FEELING PECKISH? January 2013 will also see the launch of the JAL BEDD – Sky Auberge first and business-class meal service, created by a team of prominent chefs and tailored to specific routes. Premium economy and economy passengers are offered more basic dishes from the JAL Kitchen Gallery, with some routes featuring the AIR Series meals that JAL offers in collaboration with well-known Japanese restaurants and eateries. These meals include Air Taimeiken, a fluffy omelette rice dish, Air Yoshinoya, a traditional beef bowl, and the MOS Burger with rice bun. Additionally, exclusive to premium economy customers, champagne, Dean & DeLuca ice-cream and mousse, and Toronoma Donuts will also be available on applicable routes. A special meal is also soon to launch – KFC.



06

UPSTAGED? The 777 product is certainly a compelling offer, but curiously it is also superior to the newly launched cabins on JAL's flagship 787s. Recognising this, the airline also plans to retrofit its 787s with the Sky Suite product. The airline is being tight-lipped about the cost of the programme, given its recent financial troubles, but the investment could be enough of a draw for passengers to see JAL's profit forecasts soar even higher. ☒

CONTACTS

www.beaerospace.com; www.sicma.zodiacaerospace.com;
www.contour.aero; www.zim-flugsitz.de; www.tb-kawashima.co.jp



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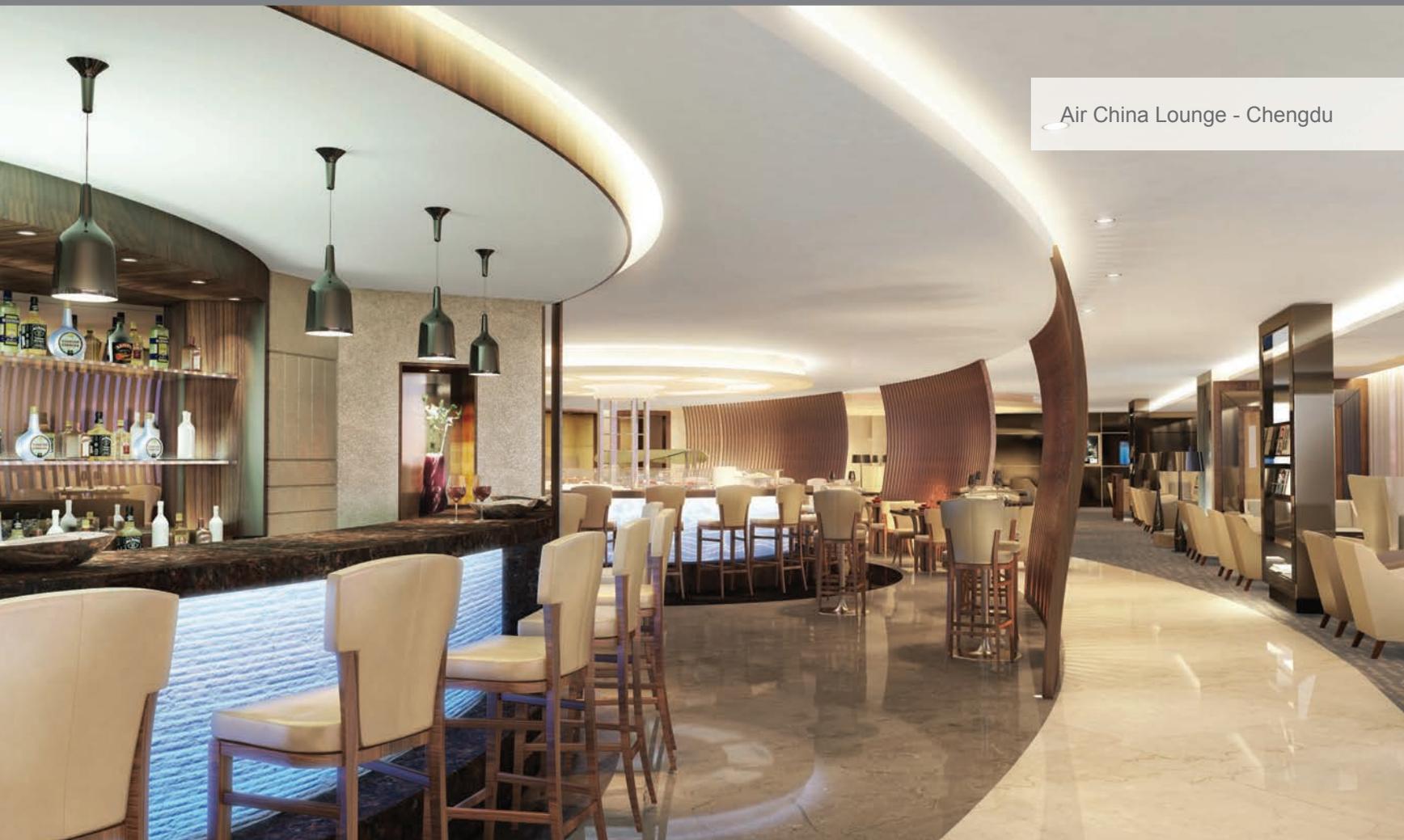
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Experts from the aircraft textiles, leathers and carpeting sector share their views on current trends

Aunde

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PETER BOLTEN, DIRECTOR OF SALES AND DEVELOPMENT



What will customers be demanding from the next generation of textiles? Weight reduction is always a focus, including seating and curtain textiles. Textile construction will therefore be a critical component for textile suppliers as it serves two purposes: weight management and cabin class differentiation. Textile surface applications will assist with class differentiation. Smart textiles will enhance the customer experience, offering a more comfortable and safer environment with an added value to both customer and operator. Airlines are also looking to increase seat comfort, with backing material applications a consideration.

What colours and textures are becoming more popular? Textures are important for cabin class differentiation, with soft touch a preference. Most airlines use colours that meet their corporate



image and designs are also representative, in some manner, of this image. Colour and pattern development will offer greater differentiation between seating options and airline brand. An interior that reflects the corporate identity of the airline is a vital part of the travel experience. This will be achieved through attention to detail and tailoring, colour and pattern. Development of surface materials considering functionality and personality will continue to be an area of focus.

Are you noticing different trends from different parts of the world? Airlines are increasingly global operators or participants in global partnerships. Therefore a high standard is expected in all regions, with a cultural influence through service, custom and cabin visual appearance having an influence. Trends range from sophisticated interiors to 'holiday' interiors, depending upon the airline's regional/route focus.

What are the main challenges being faced by the aircraft textiles industry? Trying to develop seating textiles with varying constructions for cabin class differentiation and with backing materials for increased comfort, while attending to the focus of weight reduction.

E-Leather

thebottomline

NICO DEN OUDEN, SALES AND MARKETING DIRECTOR



What will customers be demanding from the next generation of textiles? Obviously certification is obligatory, but for the customer, operating costs are the major factor. This includes weight, acquisition cost, maintenance cost, and replacement cycle cost. Visual appeal and durability are major factors in the selection process, as



are eco credentials in terms of contributing to a reduced carbon footprint.

What colours and textures are becoming more popular? Colour choice is mainly determined by corporate colourways, but many airlines have traditionally favoured mid-to-dark shades of blue in order to hide damage from pens. As more serviceable materials have been developed, the colour palette has widened, and now greys, pastels and more vibrant colours are becoming popular. We have also witnessed convergence across different transportation sectors, most recently the move from baggy, loose-fit covers, towards a more automotive style influence in terms of seat panels, contrasting colours, perforation, semi-perforation and stitch detailing.

Are you noticing different trends from different parts of the world? Many Asian airlines are adopting brighter colours. Most airlines worldwide are realising that low-cost textiles end up costing more in the long run. Spare cover sets, frequent cleaning costs and traceability all erode operating budgets. Materials that can be installed then simply and quickly maintained on an aircraft are a major plus.

What are the main challenges being faced by the aircraft textiles industry? The major and relentless challenge is the reduction of operating costs. All of the above are major, often conflicting, factors that the industry has to address. It's little wonder that new materials such as E-Leather that tick all the boxes are increasingly being adopted.

colourfullanguage

ILONA ILLING, DESIGN DIRECTOR



Lantal

TEXTILES

What will customers be demanding from the next generation of textiles? Apart from compliance with standards with regard to durability, maintenance and sustainability, the technical requirements imposed on textiles are becoming more stringent. The 'green textiles' topic is recurring more and more frequently, so our development department is being called upon to address these aspects even more.

and we are attempting to address them with the diversity of our design themes.

What are the main challenges being faced by the aircraft textiles industry? Our biggest challenge is to develop competitive aircraft textiles that please airlines in the long term – in the interest of passengers, employees and corporate identity.

What colours and textures are becoming more popular? Our design team is currently working on the 2013 trend collection, which is inspired by four design and colour realms based on megatrends. These realms are highly eclectic, ranging from boisterous and colourful, to pastels that glow in the dark, from counterpoints in natural and artificial colours, to very calm and introverted hues with a subdued design vocabulary.

Are you noticing different trends from different parts of the world? Trends are becoming more and more global and often differ only in details such as specific combinations of individual elements or material-related preferences. Distinctions in colours are more apparent. In particular, there are continental differences in colour perception,



flyingfun

ALBERTO FIORENZI, COMMERCIAL DIRECTOR



Salmaker

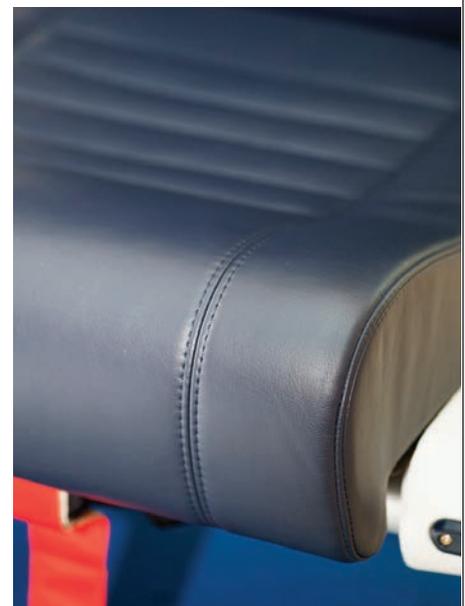
What will customers be demanding from the next generation of textiles? Lightness, ease of maintenance, comfort, and possibly smart functions. Consumers of fabrics in any trade accept or even need innovation, but we have to keep price in mind.

and some elegant and ethnic level of decoration. Flying should be fun!

Are you noticing different trends from different parts of the world? Ethnic differences are taken into account and actually they should be encouraged by designers in order to maintain identity. Decorative fabrics can help this concept.

What colours and textures are becoming more popular? This field is still traditional in colours and textures, although some cultures are more refined than others and so are their airlines. Technology can enable more natural-feeling fabrics, with textures and colours normally found in homes. Synthetic yarns can provide the look and feel of a natural fabric, while also offering outstanding performance in terms of low weight and maintenance. It is now time for more courageous colour selections

What are the main challenges being faced by the aircraft textiles industry? Simplicity of design is the direction for innovation in the aircraft industry. There are many new ideas. We, for instance, have developed a revolutionary new idea, but whether the industry will let it fly is yet to be seen. The challenge is to manage innovation to get beyond the prototyping stage.





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PATSY GEMMELL, SENIOR DESIGNER



Replin

What do you think customers will be demanding from the next generation of textiles? Airlines demand a personal, unique product that will reflect their corporate brand identity and fit with the anticipated experience of their customers. Continuing environmental concerns and anticipated stricter regulation are clearly reflected in customer expectations of new fabric qualities.

The requirement for light weight continues to be a major aspect, although there cannot be any compromise on durability from these lightweight qualities.

Uncertainties on the future cleaning regulations have led to the development and growing interest in anti-stain fabric finishes, and there is growing interest in the development of machine-washable qualities.

What colours and textures are becoming more popular?

Fashion and interior trends have always filtered through to aircraft interiors and this now seems more obvious. With the growing addition and development of mood lighting, more consideration is being given to the coordination of colour and textures within the overall cabin.

Traditional navy, blues and greys will always be present, but there is a tendency to combine these colours with trendier, more fashionable shades, which results in a fresher, brighter palette. Anti-stain finishes allow for the use of paler, more solid shades. Economy headrests and curtains may introduce energising highlights without dominating the interior. Warm oranges and bright greens are easily combined with traditional palettes and have been strongly selected from our recent ranges, while the upcoming fashion trends for warm plums and berry shades will soon be filtering into aircraft interiors.

The seat cover can combine coordinated, contrasting colours and textures. Contrasting stitch details are another option for introducing that interest and contrast.

There has been an acceptance of coordinated colour and pattern fabric stories that combine to support the mood of the brand and travel experience.

The creation of "pods" within the first class and business-class areas present the possibility to coordinate colours and fabrics across seats and hard services. There has been a 'boutique' style introduced to these areas – neutral palettes, muted pastels responding to the expected and perceived luxury and value of the first/ business experience.

Textures are more structural than tactile. Dimension is being achieved through construction, dismissing any possible performance issues created by fancy yarns. Blending of colours and additional texture has been achieved through twists, and this is obvious through the success of melange ranges.

Are you noticing different trends from different parts of the world?

No, there is more of an international trend pattern. Design direction tends to be led by an airline's brand identity and the travel experience it wishes to create for the customer. International airlines tend to employ international branding agencies, which are key in establishing new trends for the industry. Consideration is given to the airline's national identity and is captured in the new design. In turn, the larger national airlines are the leaders in their location, and smaller regional airlines will follow the trends set by their national peers. It can be a very slow and not too obvious process.

A current trend is technical, structural looks; dimensional fabrics created through complex constructions and contrasts of colour. Elements of one design may be separated to create coordinated fabrics, which will combine within the cabin. Fabrics may appear simple, but when seen up close, present complex detail. Metallic and sporty concepts, and textured stripes and stitch details are also popular. International consumer trends are seeing the introduction of strong pattern and colour. In time this will filter back into aircraft interiors.



Tapis

betterthantherealthing

JASON ESTES, DIRECTOR OF SALES, COMMERCIAL AVIATION



What will customers be demanding from the next generation of textiles? There are several main demands: ecological materials that are fully recyclable; lightweight products that have very high performance characteristics, such as being ink-free; breathable fabrics that offer acoustical properties to reduce cabin

noise; materials that are wider than the standard 54in textiles; and materials that can meet the most stringent flammability requirements in any custom build-up. Tapis has been developing fabrics to meet these demands, such as a faux suede made of 100% high-purity recycled polyester; ultraleather products that are

significantly lighter weight than leather and many other faux leathers; and ultraleathers that outperform fabrics and genuine leather in sound-absorption qualities and demonstrate improved low- and mid-frequency absorption, significantly reducing cabin noise. We are also working towards improved flammability treatment and technological improvements.

What colours and textures are becoming more popular? We have noticed a recent trend towards textures that have a very technical look – they are not traditional leather grains.

Are you noticing different trends from different parts of the world? We have seen a lot of customer growth from Asia, and colours from this region have been very colourful, with warm, neutral tones. But more often, customers want a look and feel that they think represents their airline specifically.



Tatsumura

gentletouch

MR NOBORU NISHIO, GENERAL MANAGER, INDUSTRIAL MATERIALS



What will customers be demanding from the next generation of textiles? We produce seat-covering fabrics at the request of airlines, especially for All Nippon Airways and Japan Airlines, the dominant Japanese carriers. Each company has its own policy for interior decorations. Both of the airlines have followed a similar trend of warmly welcoming their passengers through the interior decorations of the aircraft. They try to create 'Japanese taste' and a welcoming atmosphere in their aircraft interiors, which are designed to set themselves apart from the other airlines around the world. Anti-bacterial and deodorising treatments for the seat fabrics are also recent trends for these airlines.

What colours and textures are becoming more popular? Dark colours are the basic trend because they make most passengers feel relaxed. Thinner-denier yarns are more acceptable because more intricate designs can be depicted on the textile fabrics.

What are the main challenges being faced by the aircraft textiles industry? Lighter-weight fabrics are a must because airlines need to save weight. Fabrics weighing less than 300g per square metre are beginning to show similar results in tests of their properties compared with those of much heavier fabrics. The newest technology research is underway with the aim of producing seat fabrics that can relax passengers just through touch.





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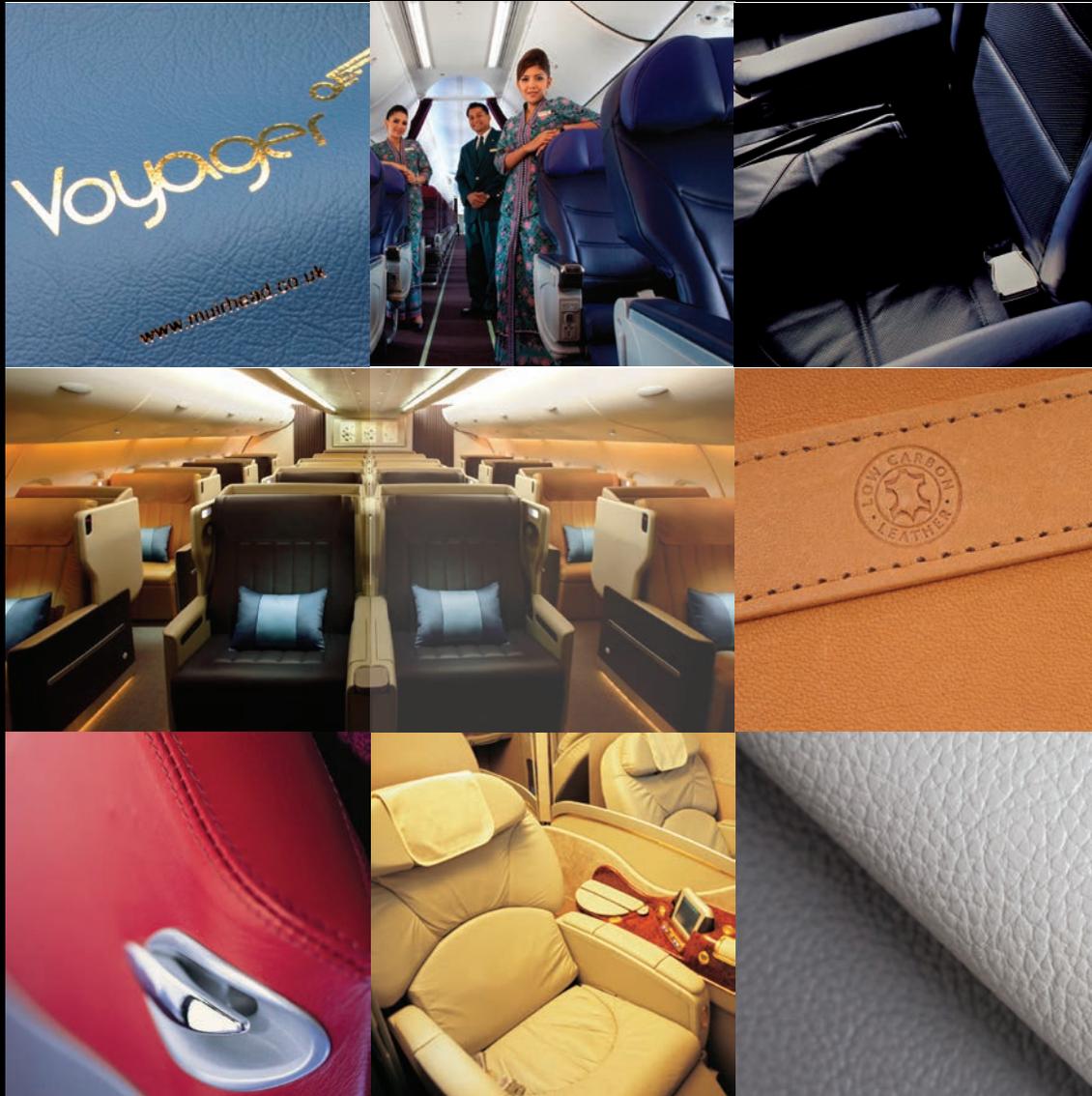
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MATTHEW NICHOLLS, GROUP MANAGING DIRECTOR



What will customers be demanding from the next generation of leathers? As someone from an airline recently said to me, "every ounce counts". But beyond that, we're noticing more of the designs and trends that are usually found in corporate boardrooms becoming more common in the aircraft cabin. Whereas previously leather makers only had to make 'grey leather', airlines are challenging tanners to make something their premium passengers see symmetry with, in their office and home. There is a greater emphasis on touch, handling and depth.

What colours and textures are becoming more popular? The current trends in colours are moving towards browns and a generally more earthy palette, which is also the best-selling palette in our home and office interiors division. There is a noticeable shift towards replicating other types of interior. However, the old-school favourites of light grey, dark grey and dark blue continue to be the most popular.

Are you noticing different trends from different parts of the world? There isn't a major difference between East and West. Typically in airport and lounge interiors we see more yellows and golds, almost what we would perceive as autumnal colours in the West, and darker, more contemporary colours (for example, charcoals combined with flashes of red) in the western world. A good example is the camelskin leather for aircraft seats that we have developed for a major airline in the Middle East. The camel is somewhat iconic in parts of the Middle



East, and by combining its unique texture with a sandy colour, we hoped to evoke a more Arabian feeling throughout.

What are the main challenges being faced by the aircraft leather industry? Wear is an issue. For a long time, there was a myth that leather was indestructible and that if it started to wear, it was faulty. But leather wears, just like any other material, and instead of trying to make it harder and harder, we are encouraging customers to think about using it appropriately and in the right parts of seat covers. The end result is a leather seat cover that looks like the ostentatious product it rightly is – and it will remain looking good for years to come.

We have also seen the leather makers of the world rising to the growing challenge from synthetic, man-made products. The initial advantages of having leather-look products on a roll are becoming muted by leather makers offering pre-cut leather. The weight savings of synthetics are also looking less likely.

Yarwood Leather

futurefancy

DEBBIE BURTON, MARKETING DIRECTOR



What will customers be demanding from the next generation of textiles? Customers will continue to demand increasing technical performance, while desiring hitherto unachievable prints and design effects. Designers continue to select leather because it offers the durability required for robust customer use and that element of luxury not readily achieved with fabrics. The next generation of leather will offer novel design elements that are not currently associated with aviation leathers. These will include more complex colour patterns, highly novel textures, and bespoke surface effects.

What colours and textures are becoming more popular? While blues, beiges and greys continue to be colours of choice, many airlines are looking to mirror shades used in residential design. Although some designs use sleek and simple colours, warmer colours are on the increase, with shades of brown, red and green seeing a surge in demand.

Are you noticing different trends from different parts of the world? In general there remains a strong cultural bias in colour preference. Lighter colours such as greys and beiges continue to be favoured by airlines that are based in warmer climates, while darker colours such as dark greys and blues remain the conservative colour selection in colder climates.

What are the main challenges being faced by the aircraft leather industry? Leather is an upholstery material of preference for airlines looking to combine luxurious aesthetics with technical performance. Fabric's main design advantage lies in its ability to be manufactured with complex and varying patterns, and this demand will also be made upon leather. Leather will also be asked to perform to increasingly high technical levels for use in non-seating applications.

Pittards

LEATHER



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SARAH ECKLER, SENIOR VP OF SALES AND MARKETING



What will customers be demanding from the next generation of leathers? What has always been required: high performance standards without sacrifice for aesthetics. The ability to create aniline, natural looks and feel without colour or performance limitations is the dream.

What colours and textures are becoming more popular? The conservative greys, beiges, and creams in contemporary hues and tones still inspire many schemes. We see increased use of colours that 'pop' for accent areas or give contrast; I've noticed an increase in shades of orange (from bright orange to burnt orange) over the past year. A natural grain look is still the most desired; embossed grains are becoming more acceptable as they lend a tailored, uniform look – it is a must that these leathers look and feel natural, though, and not embossed, like deerskin.

Are you noticing different trends from different parts of the world? There is a greater desire to stand out and have an original, identifiable look that evokes an emotional response or feeling to the design and colours. Designers know that leather can be engineered to meet their project desires, adding unique elements of customisation to projects. Examples range from custom colours to higher levels of



customisation such as developing intricate custom-embossed designs. Custom-embossed patterns on leather, or even custom designs or logos, incorporated into projects for certain applications, are more affordable and doable than ever. Interest is leaping in more hand-effects being applied to leather – imitating the look or texture of fabric, stone, wood on leather.

What are the main challenges being faced by the aircraft leather industry? Time and quality. It's a highly competitive market, and many OEMs are reducing delivery times, increasing features and options, and adding value, all while holding prices to gain orders. We are all challenged in these economic times to act in kind. The quality expectations of our customers also increases with each new height reached, while the best raw material becomes less and less available.

lifeofluxury

SUSAN ROSS, DESIGN MANAGER



What will customers be demanding from the next generation of leathers? The look and feel of genuine quality leather is important, but it must be within the required specifications of the customer or aviation authorities. As well as the aesthetic of real leather, customers are increasingly looking for the next generation of aircraft seat design, so we regularly work alongside designers to create leather that will work with their new techniques. Our experience in designing leather for

premium cars is translating well into aviation seat technology.

What colours and textures are becoming more popular? To ensure that the aircraft cabin won't date too quickly, ageless, slow-moving trend colours are popular, rather than fast-track, fashion-based colours. Old-world luxury style such as dark browns and tan are being selected for luxury, while dark blues, rich purples and greys suggest low-key but modern interiors. An emerging

texture is technical micrograins, but natural embossed grains and soft finishes are the most popular.

Are you noticing different trends from different parts of the world? Traditionally there has been a distinct trend for fabrics within economy class; however due to the practicality of leather, many airlines worldwide are now choosing leather throughout the full cabin, which is also due to leather's low life-ownership cost. Trends seem to be less corporate and more individual, creative and international because design teams are based globally.



What are the main challenges being faced by the aircraft leather industry? Weight is undoubtedly the main challenge. In order to overcome this, we have reduced the weight of our leather by 30% while keeping its thickness. The aircraft leathers industry also wants to be seen to be sustainable, which is fast becoming a universal focus.

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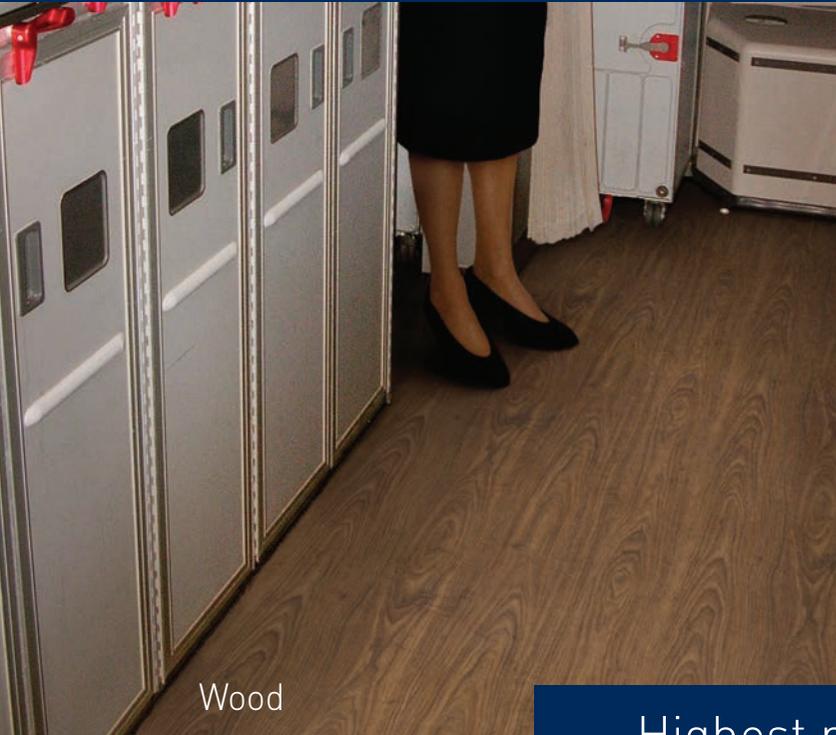
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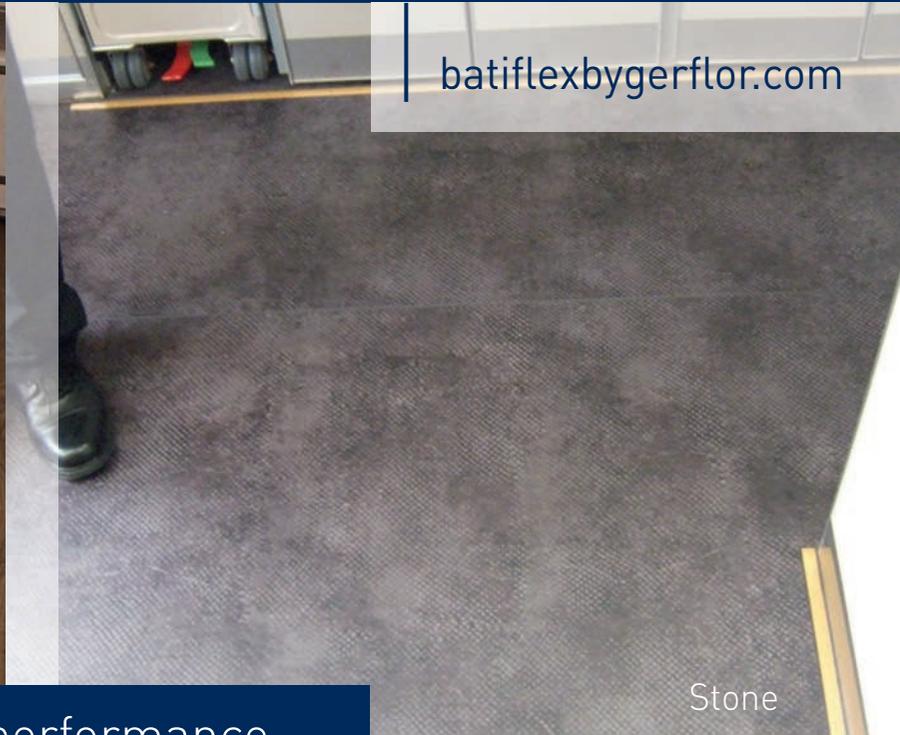
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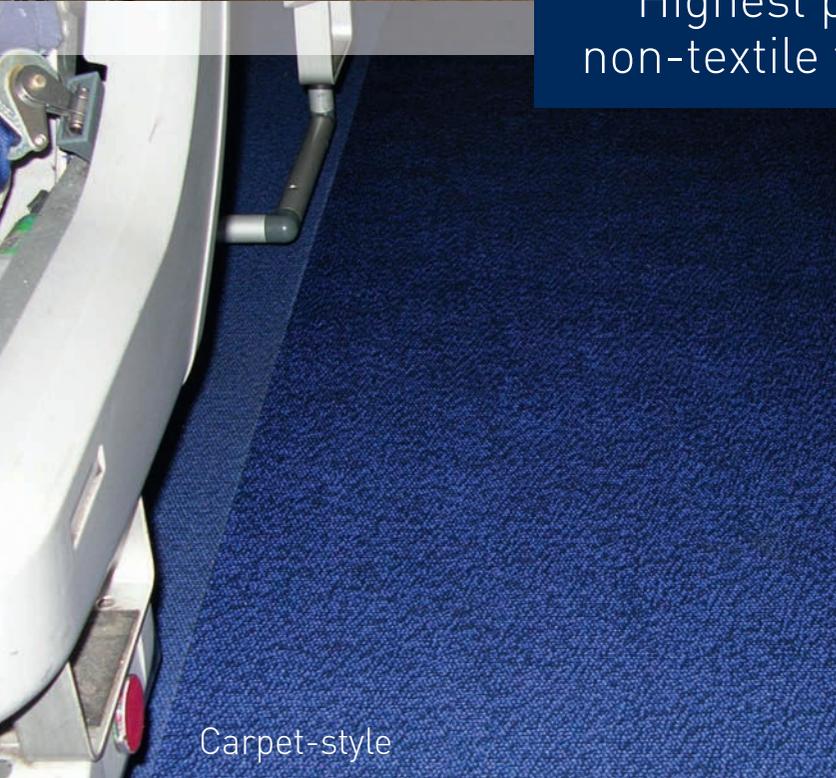


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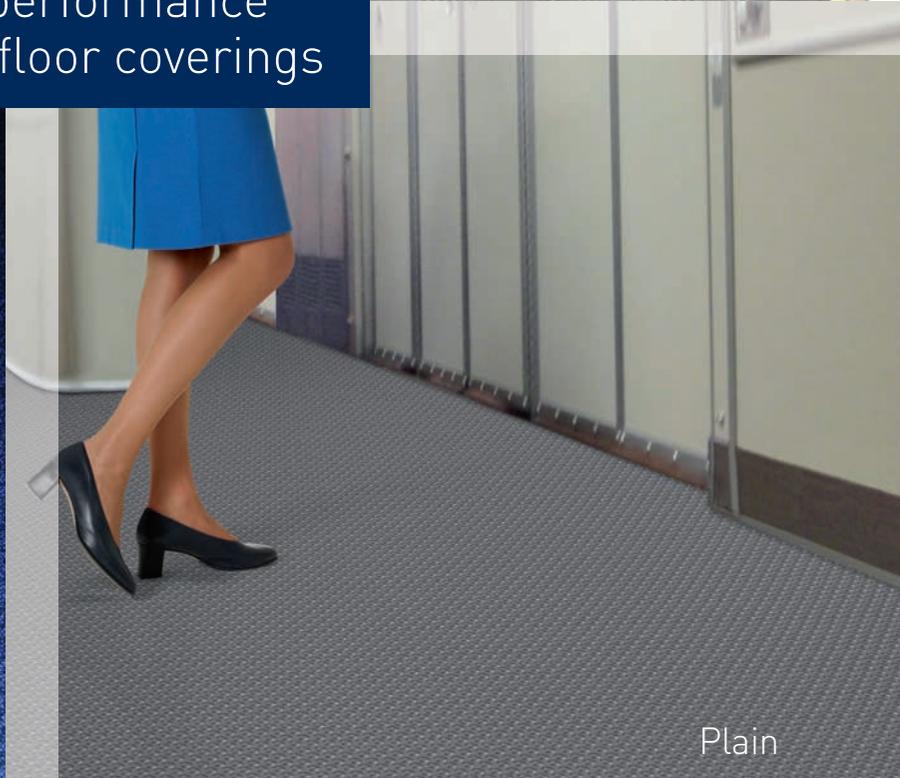


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TAD JAKES, CEO



What will customers be demanding from the next generation of flooring? With the industry moving towards more composite materials and lightening the aircraft, it makes sense that carpet and interior textiles follow the lead. Technology is improving and a larger selection of non-woven products is becoming available, such as PET carpet product lines. This 100% recyclable material is used in a variety of plastic products including water bottles, and offers many advantages. It eliminates the need for minimum orders, as it is printed, not woven, and can be made on an 'as needed' basis. PET is antimicrobial/antibacterial, and provides possibilities for creative designs, colours and patterns not possible in woven fabrics.

What green pressures are you under? Green is in! Many airlines are currently striving to become 'green' through various

measures such as collecting recyclables on flights and reducing non-recyclable containers and materials. Carpet can help too, as standard carpeting made of wool or nylon takes years to break down in landfill (not to mention the amount of space it takes up), whereas recyclable carpet can be shredded and returned to raw PET and reused in other plastic products.

What are airline expectations on carpet life versus cost? Airlines count on a return on



investment. Green Sky is on the lower spectrum of current airline carpeting cost, and when fuel savings are added, it can actually pay for itself. We are currently working on Rev.4 to increase wearability and carpet life. Currently we recommend six-monthly replacement for aisle carpets and 12 months for the carpet found under the seats. We hope that by the end of the year we will have developed a carpeting product that will be tough enough to wear all the way through from heavy check to heavy check.

What are the main challenges being faced by the aircraft leather industry? Weight is always a factor in aircraft manufacturing and operations. However, PET carpeting is approximately half the weight of standard woven aircraft carpet, which equates into fuel savings and helps to offset carbon dioxide emissions.

Green Sky Textiles

allinone

FABIEN LANSADE, PRODUCT LINE MANAGER, SPECIALITY PRODUCTS



What do you think customers will be demanding from the next generation of flooring? Lighter materials, uncompromised comfort, creative and innovative aesthetics, improved hygiene, easy maintenance, a long lifespan, and low-toxicity materials that meet the ABD0031 requirements.

What colours and materials are becoming more popular? We are seeing a rise in the request for non-textile flooring – which appears to be driven by emerging countries with low-cost airlines. They prefer non-textile flooring as it is durable and easy to maintain. With a combination of the right texture and colour pattern, a look can be achieved that makes non-textile flooring very similar to carpet, making it aesthetically feasible for areas that are



usually covered with non-textile flooring. Woodgrains are on the rise, and to a smaller extent, stone. This year we have seen increasing requests for dark red/maroon, brown, warm mid/dark grey, purple/grey and dark blues (as usual).

Are you noticing different trends from different parts of the world? Asian customers are very practical and are open to the cost savings that are offered by non-textile flooring products. They are willing to use non-textile flooring throughout the aircraft. European customers remain traditional in this respect and place value on other aspects. The perceived comfort related to textile flooring is still more appreciated in Europe than the idea of a product that offers low-cost maintenance.

What are the main challenges being faced by the aircraft flooring industry? Short development times for new products. We also need to find ways to combine low weight with comfort, while still meeting environmental requirements. OEMs expect flooring suppliers to provide an aesthetically satisfying product that fully complies with an increasing amount of engineering specs.

Schneller

FLOORING

brighter richer bolder

JESSICA COURTRIGHT, SENIOR DESIGNER



What do you think customers will be demanding from the next generation of flooring? We recognise that designers may want to create an interior that reflects an extension of the home or office, but we are also seeing the continued need for classic designs and textures with broad appeal.

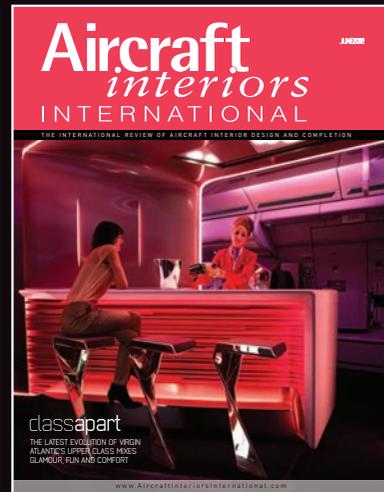
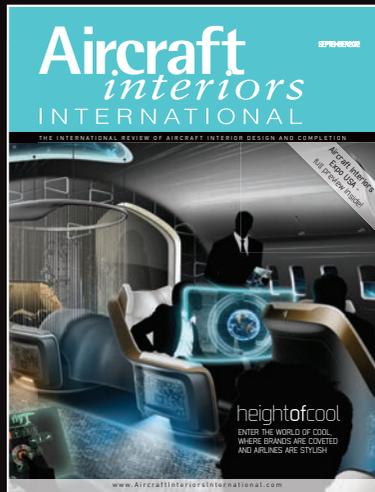
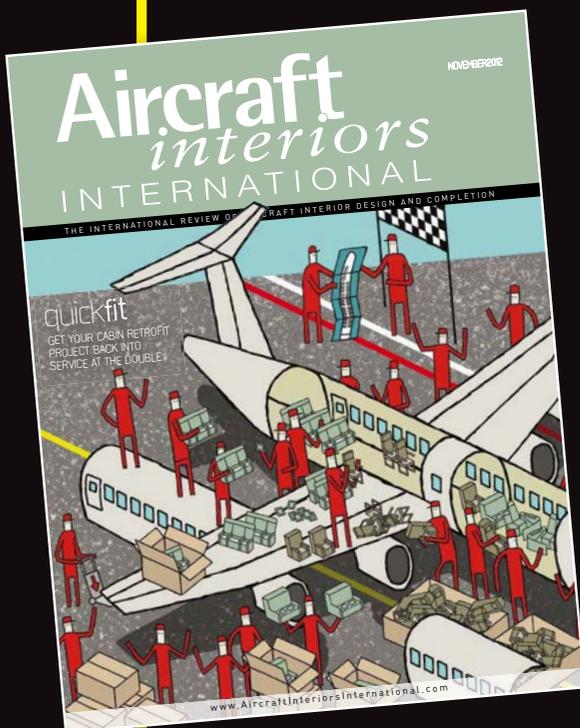
What colours and materials are becoming more popular? Classic neutrals continue to be popular, and in addition to beige, we are seeing the greater use of greys and taupes. We are also noticing more projects that incorporate a subtle use of colour and have an overall more personalised look.

Are you noticing different trends from different parts of the world? There are more colour variations used by customers outside of the USA, as well as brighter, richer colours, and also bolder designs.



We have also seen a shift over the past several years to a more modern aesthetic, and are responding to the needs of designers with carpet collections that reflect the current landscape of design. Designers are also using more contrast in their interior schemes. Several years ago, you wouldn't often see dark colours like charcoal or chocolate brown used in the carpet, but now it's being used to create a more dramatic look.

What are the main challenges being faced by the aircraft flooring industry? The aircraft industry is moving faster, requiring quicker turnaround and shorter lead times. We are a very nimble company, and because we manufacture everything in one location in the USA, we are positioned to respond quickly to subtle shifts in the market with products that reflect our customers' needs.



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Baggage fees and slow handlers are creating a situation where travellers are trying to stow more and more bags in the cabin. How can extra stowage space be made and, indeed, should it be made?

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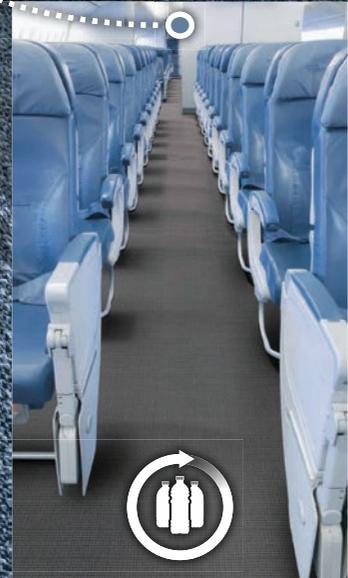
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It's happened to pretty much everyone who has flown anywhere in recent years. You roll your bag aboard to find there's no room for it in the bin above your seat or those nearby. If you're lucky, there's space 5 or 10 rows away. Otherwise, it must be gate checked.

The simple truth is, there isn't enough space on most airliners for everyone to put a big bag overhead, and this won't change any time soon. That's particularly true of single-aisle jets, passengers of which are most likely to be travelling only with a roll-aboard case.

"On a standard single-aisle aircraft, you're just not able to physically offer every passenger that comes on board the ability to stow a single roller bag," states Kent Craver, regional director of passenger satisfaction and revenue at Boeing Commercial Airplanes. "There just isn't the space."

Airline fees to check bags have exacerbated the problem, but didn't create it, according to Craver and Jenny Ruegamer, associate creative director at design consultancy Teague.

"I think the issue would probably still be there, even without the baggage fees," Ruegamer says. "With airports getting more complex, people want to hold onto their bags, because you don't want to wait for them when you get off the aircraft. By that point in your journey, you're done. You just want to go."

In written responses to questions, Airbus noted that early aircraft only had overhead racks for emergency equipment and such soft items as coats, blankets and pillows.

"The profile of passengers, especially on short business trips, has changed," Airbus says. "Nowadays, business-class passengers usually carry only cabin luggage so as not to waste time with check-in. This trend led to the growth of quantity and dimensions of cabin luggage. As the size and quantity of passenger carry-on baggage evolved, so did stowage bin design. Overhead stowage capacities have increased and the designs have changed to better accommodate the sizes and geometry of today's onboard luggage."

ILLUSTRATION BY TRACY WORRALL



future liquid plans gel

One of the main gripes travellers have with carry-on luggage is the restrictions on liquids in place at airport security, which sees many upset travellers having to discard expensive toiletries. To solve this, and to improve the passenger experience, ACI Europe and other aviation partners have signed a statement of intent with the European Commission regarding the future of airport security measures concerning passengers carrying liquids, aerosols and gels (LAGs), with a view to the eventual lifting of the restrictions. The roadmap will be determined based on results from co-operation with the USA and stakeholders, and put forward for agreement from the European Parliament and EU Member States.

However, the timeline hinges upon the availability of security technology that is mature and robust enough for operational reality in a live airport. The initial proposed deadline of April 2013 has been postponed due to technological shortcomings.

Olivier Jankovec, director general of ACI Europe, comments, "Airport security is an absolute priority for airports – and this goes hand in hand with ensuring that the hassle factor is kept to a minimum for the 800 million departing air passengers travelling through Europe's airports each year. This renewed co-operation is good news, as it should ensure that when a change in the restrictions does occur, the passenger experience will be genuinely improved and that the integrity of airport operations will be maintained."

However, he says of the failed trials, "As much as we would like to get rid of the existing restrictions on the carriage of LAGs, the trials carried out at several European airports have shown that the technology allowing for that just isn't there yet. Further progress is needed to develop more mature and robust technology, fully geared for operational reality and effectively improving the passenger experience. We support the approach proposed today and look forward to further cooperation with the Commission, Member States and the European Parliament."



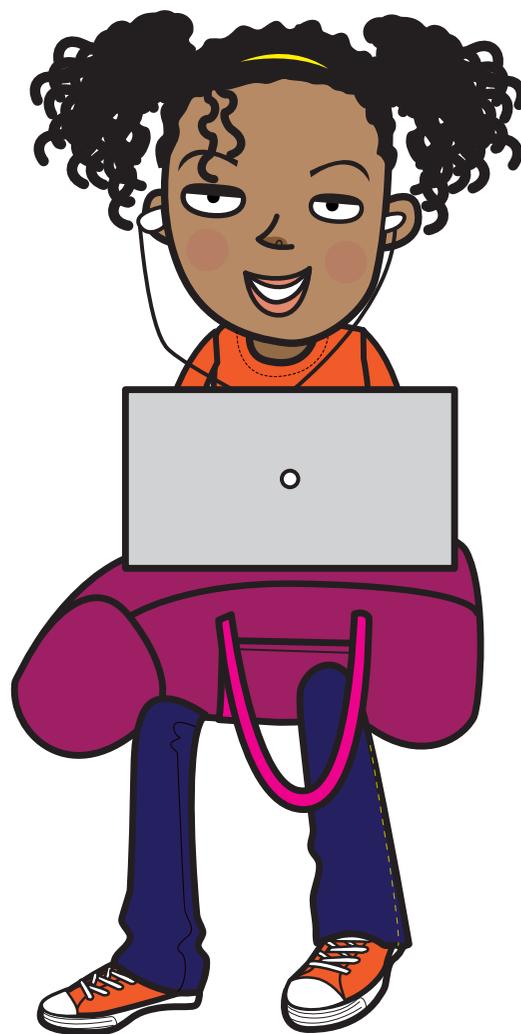
ON A STANDARD SINGLE-AISLE AIRCRAFT, YOU'RE JUST NOT ABLE TO PHYSICALLY OFFER EVERY PASSENGER THE ABILITY TO STOW A SINGLE ROLLER BAG.

THERE JUST ISN'T THE SPACE





YOU KNOW, MOST PEOPLE ARE ACTUALLY OKAY WITH GATE-CHECKING THEIR BAG, BECAUSE IT'S RIGHT THERE FOR YOU WHEN YOU GET OFF THE AIRCRAFT



Whether passengers are trying to avoid fees, waits at baggage claim, or both, the result is a problem, says Peter Tennent, managing director of Factorydesign. "Hand luggage is the greatest contributor to sluggish boarding and de-boarding," he says. "It's a bit like recline in economy, which continues to be perceived as a benefit for, and by, the passenger, but where the advantage to one is cancelled out by the disadvantage to another."

Cabin designers have made progress in recent years, tailoring overhead bins to the bags most commonly shoved into them.

"We really started to focus on what it is that people are bringing on board and designing our bins around that," Craver says. "Thirty years ago there was a lot of unusable volume. Maybe if your bag was triangular or 'L' shaped you could use all the space that was in those bins."

So a Boeing 737-800 with the new Sky Interior holds 118 standard bags (9 x 14 x 22in), up from 114 in Boeing's BigBins and 70 in standard bins. At this year's Farnborough International Airshow, cabin fittings company Zodiac Airline Cabin Interiors (then known as Heath Tecna) unveiled its new Project Amber retrofit interior with bins that, the company said, can hold larger bags and 36 to 42 more roller bags than the 737 Boeing Sky Interior.

Airbus didn't provide specific numbers, but said, "One of the A320 family provides space for up to 20% more bags than our competitors' new overhead compartments."

Designers have started to look into adding space elsewhere. The latest business- and first-class seats have

storage bins built in, Ruegamer notes. "But those are usually the classes where it's not an issue, because there's usually enough stowage."

Could more space be found under seats or even under the floor? "Those are things that a lot of people have looked at or talked about," Craver says. "We've actually done research. We've built mock-ups, we've tested those sorts of things, and what we've found is that it's harder on the human body to store things below you." Also, he adds, "Inevitably in flight things spill... and that stuff finds its way down."

Manufacturers and designers are looking at other ideas, but won't give many details. "We're always looking at different ways to innovate and ways to improve," Craver states. "I cannot speak of anything specifically that's on the horizon."

Airlines won't embrace a solution that takes away seats and, in fact, are using space freed by smaller lavatories and galleys to add seats, not storage.

"I think the overall problem cannot be solved by trying to add more stowage space in the aircraft," Ruegamer says.

Teague has industrial design and research and strategy teams trying to re-frame the issue, she continues: "Does it happen in a different check-in process or a different baggage claim process? Is there a way that airlines can do gate check? You know, most people are actually okay with gate-checking their bag, because it's right there for you when you get off the aircraft."

Airlines could also assign bin spots or let people buy specific spots, Ruegamer adds. And, if you can get people



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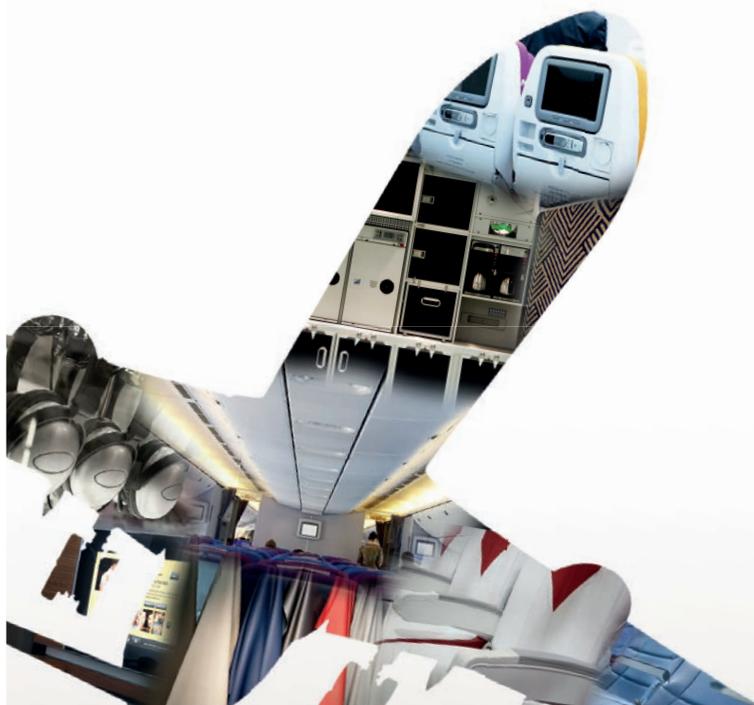


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you can keep your shoes on

Carrying a bag onboard may ultimately be seen as a time saver, but it is not without its disadvantages, especially when it comes to passing through security. However, regular flyers with United Airlines will like that the airline has joined the Transportation Security Administration's (TSA's) PreCheck programme, a new risk-based, pre-screening initiative that allows customers to volunteer information about themselves that may make them eligible to expedite their screening experience. Eligible United customers travelling through Terminal 1 at Chicago O'Hare International Airport are allowed to leave on their shoes, light outerwear and belts, and to keep laptops and 3-1-1 compliant liquids and gels in their carry-ons.

"The TSA PreCheck process will make our customers' overall experience easier," says United's senior vice president of network operations and United Express, Alex Marren. "We have a great partnership with the TSA and appreciate its efforts to make the screening process more efficient."

The TSA manages and operates this programme and is working with United and with US Customs and Border Protection to identify possible participants. For customers who choose to participate, the TSA will determine eligibility for expedited screening prior to each flight and will embed this information in the barcode of eligible customers' boarding passes. TSA agents will scan the boarding pass and will direct eligible customers to the assigned pre-screening lane. The TSA will always incorporate random and unpredictable security measures, so no customers are guaranteed expedited screening. However, the scheme has recently been criticised, as when the TSA decides who is eligible for PreCheck, that information is passed to the airline, and the decision is embedded in the barcode on a boarding pass. Unfortunately, the information on the barcode is easily decoded, giving passengers advance notice of the level of security screening they will have to pass through.

to carry fewer bags onto the aircraft in the first place, that makes boarding and deplaning faster, he notes. "It's connected to a whole bunch of other problems."

Taking more bags out of cabins would also make them feel less tight and crowded, she says.

Some solutions are relatively straightforward. Southwest Airlines and Spirit Airlines both avoid the problem of people ducking checked-bag fees, but in opposing ways. Southwest doesn't charge for the first two checked bags, while Spirit charges for checked and carry-on bags. In fact, the first checked bag costs less than a carry-on for Spirit's domestic and international flights.

US Transportation Secretary Ray LaHood blasted Spirit's 2010 decision to start charging for carry-on bags, telling *National Geographic Traveler* ombudsman Christopher Elliott that the fee was "outrageous" and "ridiculous," and adding, "I don't think they care about their customers."

But Spirit Airlines chief executive Ben Baldanza insisted to Elliott that the fee was an attempt to eliminate delays, after the airline "identified excessive carry-on baggage as the number one controllable reason that our aircraft were being delayed at the gate". It's not about bringing in more money, given that the airline lowered base fares



“ THE AIRLINE IDENTIFIED EXCESSIVE CARRY-ON BAGGAGE AS THE NUMBER ONE CONTROLLABLE REASON WHY AIRCRAFT WERE BEING DELAYED AT THE GATE ”

- 01. United has selected the Boeing Sky Interior, partly due to its baggage capacity
- 02. Heavy bags also have health implications for the crew handling them



“ THE MOMENT ONE CARRIER FINDS A WAY TO REDUCE THE IMPACT OF HAND LUGGAGE WITHOUT AFFECTING SERVICE LEVELS, THE REST WILL QUICKLY FOLLOW ”



by the amount of the fee or more, he said. “No one pays more, some pay less, and those with carry-on bags get to board first.”

Alaska Airlines addresses travellers’ concerns about waiting for checked bags with the following guarantee: “If your baggage is not at baggage claim within 20 minutes of your aircraft parking at the gate, you’re entitled to a US\$20 (£12.50) discount code for use on a future Alaska Airlines flight or 2,000 Alaska Airlines Mileage Plan bonus miles.”

Sometimes the issue is with the airport, Ruegamer says. “There are some where you know that when you get off and you go through immigration, your bag will be there at baggage claim. And there are some airports where you can wait forever.”

Something is bound to give, Tennent adds. “One thing is certain – there will be changes to the issue of carry-on luggage over the coming decade,” he says. “At the low-cost end, you can bet there will be additional charging structures that encourage passengers to put their luggage in the hold. At the premium end of the market, airlines will have to be more imaginative about how cabin luggage

is handled in order to improve the passenger experience as the conflict continues between providing sufficient luggage space against using that space for seats and beds. In addition, having bags above your head or around your feet is alien to the ambition to bring a sense of domestic and luxury hotel interiors into the cabin environment. The moment one carrier finds a way to reduce the impact of hand luggage without affecting the levels of passenger service, the rest will quickly follow.”

Boeing is designing jets for the way airlines run their businesses, rather than worrying about changing airline policies, Craver states. “Ultimately our goal is to make sure that we’re providing products to our airline customers that enable them to run their business the way they want to run it.”

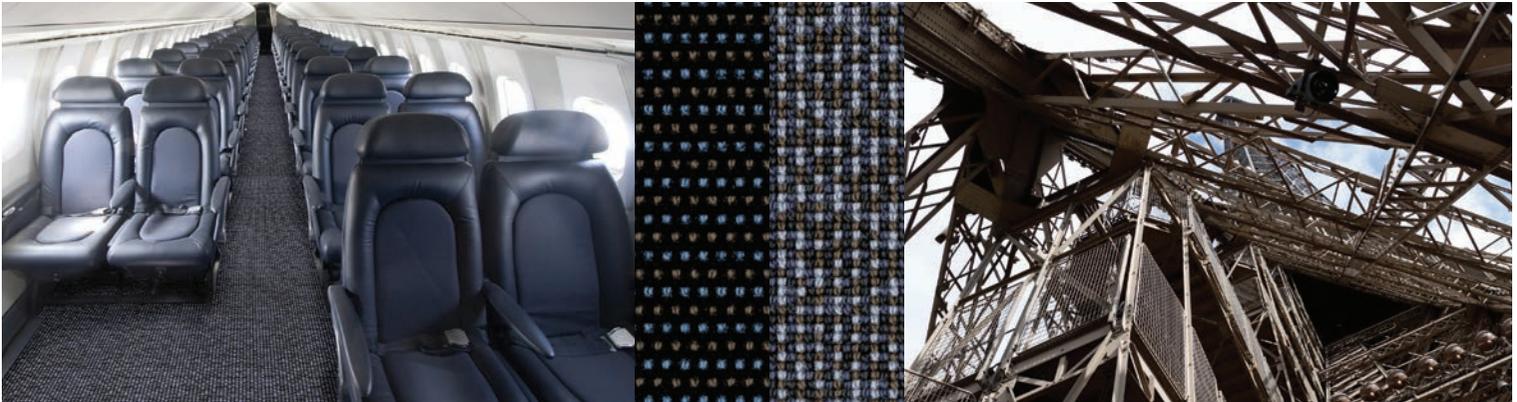
If you want the best chance of finding bin space for your bag, fly widebody jets, which have more space. In fact, Boeing’s 787 Dreamliner, whose cabin inspired the 737 Sky Interior, is Boeing’s first airliner designed with enough bin space for every passenger to roll a bag aboard. “That was a design goal, and a design goal that was met,” Craver asserts.

Airbus also aims to have sufficient room for every passenger on board its competing A350 aircraft to stow a roller bag in the overhead bin. In fact, it plans to have enough space for every business class passenger to roll two bags aboard. ☒

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AVIOINTERIORS 



A new versatile horizontal full-flat seat offers excellent sleeping comfort to passengers

divineintervention

Launched in October 2012 by Aviointeriors, the Zeus HFF is a horizontal full-flat seat composed of a double seat module and a front double support module.

By lowering both the armrests when in the sleeping position, the Zeus HFF's bed width is just a little less than its entire seat width, providing excellent sleeping comfort. The bed footprint is optimised by a full-size ottoman, making every sleeping position possible.

The seat is designed to be installed in a classical in-line configuration, making it an ideal full-flat product for both single- or twin-aisle airframes.

As a first installation, to be completed in early 2013, the Zeus HFF will serve as the first-class product on a B737NG, proving its excellent ability to take full advantage of even the narrower cabin width.

The minimum installation pitch for the seat is 78in, enabling a 98th percentile male to sleep fully stretched.

A single-leaf, full-size table can be deployed and adjusted in depth and rotation. All the transitions and adjustments are driven by just two actuators, which makes it lightweight and reliable, while lowering the power requirement.

A service module is located between the two ottomans, with space for bottles, magazines and newspapers.

Zeus HFF is dressed in a classic style, giving an impression of being both fresh and familiar.

Any IFE system and any massage system can be integrated into the seat. The surrounding shell gives optimal privacy to the sleeping passenger without being an obtrusive presence when upright. This shell is trimmed in the inner section, providing a feeling of cosiness.

The extensive use of composite materials gives strength and lightness to the structure. The estimated weight per PAX is around 75kg, including the monument.

The lead time for orders is six months for 'follow on', and nine months for 'first of model'.

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ZIM Flugsitz is translating customer wishes into comfortable, individual seating concepts with high-quality standards

made to order

Three renowned airlines have selected ZIM Flugsitz to build seats for part of their aircraft fleets, confirming that the company's course and strategy is heading in the right direction. Modern composites, intelligent combinations of materials and mechanical parts engineered to shave weight means that while the seats built by ZIM are lightweight, they still offer appealing design and superb comfort.

Customisation of products plays an important role at ZIM, and the company's modular concept for components and accessories ensures a highly distinctive seat configuration, which makes the seats easily recognisable – a vital factor for an airline's image.

For the past two years, the EC-01 economy-class seats and the BC-01 business-class seats have proved their worth for everyday use at Air Transat, Thai Airways and Air Berlin. They have provided comfort, ease of handling, and reliability on long-haul intercontinental flights, as well as on short and medium runs within Europe. The EC-01 is designed to offer low weight and high comfort; to achieve this it uses a combination of lightweight alloys, plastics and selected upholstery fabrics, while the mechanics of the seat allow for ease of operation and maximum strength.

ZIM recognised early on that customisation is the key to success. "The feel-good factor is vital and each carrier has its own ideas about which seats best fit its image and its customers," says Angelika Zimmermann, who is president of the company. ZIM's seats offer many different components and design ideas that can be added in a modular system. Thus the EC-01 economy-

class seat can, if desired, be fitted with seat cushion adjustment, six-way movable headrests, footrests, cup holders, IFE equipment, and numerous other features.

Since demand for premium economy-class products is rising, especially for long-distance flights, ZIM intends to bridge the gap between typical economy- and business-class seating with a new premium economy seat, featuring a leg rest and an entertainment display integrated into the backrest. In the near future, ZIM is also planning to unveil a prototype for optimised, lightweight economy seating for short-range flights and single-aisle aircraft. In the interest of consistently saving weight, a similar philosophy was used for the new BC-01 business-class seat.

"With new kinematic concepts, optimised functions, more space for the passenger, and an intelligent mix of materials, we have been able to lower overall weight without sacrificing comfort and quality," says Uwe Salzer, vice president of research and development at ZIM. In designing the BC-01, ZIM consciously did without power assists, instead placing its faith in carefully engineered, lightweight components.

ZIM is currently expanding production space at its Markdorf site in Germany. As of April 2013, capacity will increase from today's 11,000 seats, to 40,000 units per year. "That will let us continue manufacturing our product portfolio at the present site, both efficiently and profitably. At the same time, we are able to better respond to changing customer requirements, while further reducing our time-to-market from the current average of eight months," concludes company president Zimmermann.

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natural selection

Gerflor manufactures Batiflex non-textile floor coverings for the aviation industry. The range includes many products to address customer needs, being compact and extremely lightweight, with either foam or laminate backing.

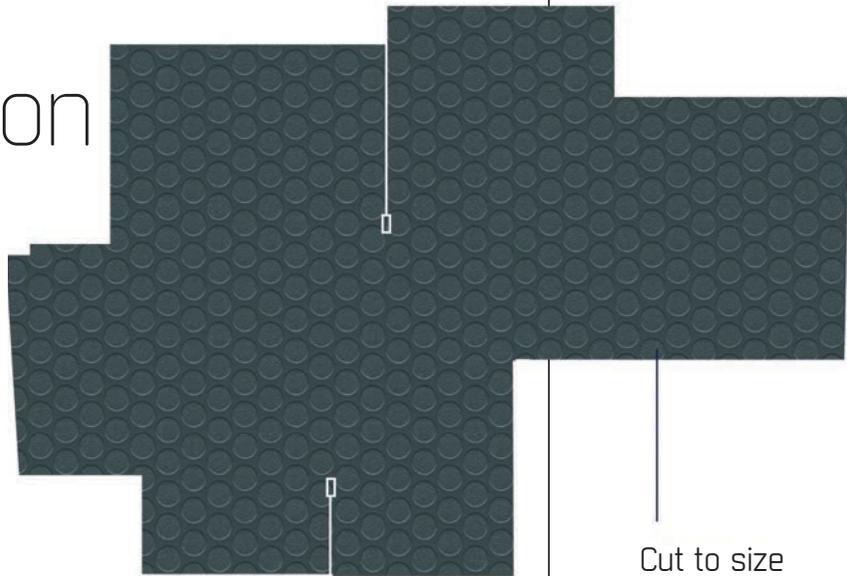
The range has just been extended with several new patterns and colours, whether in classic 'Solo' dots, 'Opus' contemporary elegance, a realistic carpet design, a natural stone grain appearance, or refined wood patterns.

The standard selection is available in stock, with the company's sales, customer service, logistics, production, quality and engineering teams committed to quick and reliable service.

Batiflex floor coverings are also safe, with all products exceeding FAR 25.853 flammability and FAR 25.793 anti-slip requirements. The Batiflex AVR 160 and AVR 175 lines have formulations for low smoke density and toxicity.

The floor coverings are all available in rolls as standard, and can be cut in net-fit segments following each configuration's drawings. They can also be supplied with or without self-adhesive backing. These options are saving customers precious hours during installation.

Gerflor's unique hot-welding technique ensures waterproof, flexible and durable seams,

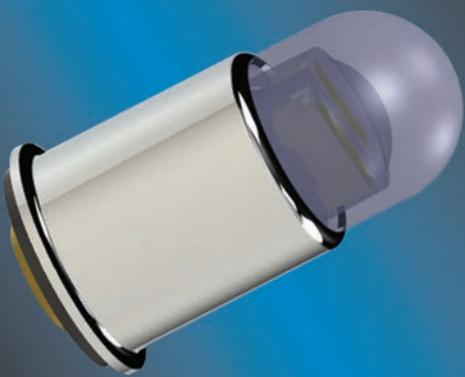


Cut to size
and welded

helping reduce corrosion issues. All Batiflex non-textile floor coverings can be supplied in extra-wide factory-welded rolls, or they can be welded in the aircraft.

Looking for solutions that help customers reduce maintenance costs, Gerflor developed the Batiflex alternative to traditional carpet: a non-textile floor covering that can match a customer's carpet, suitable for installation in galleys, aisles, or the full cabin. Carpet-style Batiflex floor coverings are more durable, and easier to clean and maintain than traditional carpet products.

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Reader Enquiry No. 503



Paul Rice, CML
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Reader Enquiry No. 504

ledsmadeeasy

FAA PMA approval has recently been granted for CML Innovative Technologies' LED replacement for the industry-standard 387 incandescent lamp. This new solution uses high reliability, warm-white LEDs to offer an incandescent-style light, while consuming 60% less power.

With a life of 50,000 hours, the new solution lasts more than seven-times the life of incandescent lamps, leading to less downtime and reduced maintenance costs.

Like the incandescent lamp, the CML product offers bipolar operation and can be fitted in any of the lamp applications. Just as importantly, the CML solution is based around a single replacement part for all applications and does not require additional part number control and increased stock count.

Ash Foster, technical manager at CML Innovative Technologies, explains, "It was important to us that this product provided all of the benefits of LED technology, while meeting the exacting demands of our aviation customers. To this end, we consulted with several major European airlines during the development process. Initial return-on-investment calculations from these airlines suggest highly significant year-on-year savings from using our product."

Paul Rice, sales manager, adds, "We expect this to be the first of many CML LED solutions developed for use in the aviation market. One of our main objectives is to provide airline customers with innovative LED solutions that can be retrofitted as a 'plug and play' solution – offering aircraft enhancement at piece-part cost only."

CML Innovative Technologies is a major brand in aviation lighting and is one of the largest suppliers of miniature lighting solutions, with 1,200 employees worldwide.

From the publishers of Aircraft Interiors International magazine

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newbrew

Aerolux, the specialist galley inserts company, is now under new management following the sad passing of founding owner, Ken Metcalfe, in June 2012. Aerolux is a UK-based company renowned for its Nespresso coffee machines, wine chillers and fridges, and speciality galley products including rice cookers, skillets and toasters.

The new team is to be headed up by Tony Robinson (pictured below), best known as the founder of Aircraft Interiors Expo, who takes on the role of executive chairman and CEO. He will be joined by another key member of the original Aircraft Interiors Expo team, namely Rob Shelton, who spent many years working on the show as one of its three international sales co-ordinators. Shelton has spent six months familiarising himself with the company's products and some of its long-standing customers, and it is his mission to meet each and every Aerolux customer over the upcoming 12 months.



Robinson, who has played a passive role on the board of Aerolux for the past three years, explains, "Although I remain heavily committed to my role as chairman and CEO of UKIP Media & Events, the global media and exhibitions company that I founded 21 years ago, the excellent team I have there enables me to now devote a significant amount of time to the future business development of Aerolux."

"The company boasts many excellent attributes, not least a fantastic commitment to quality, and very experienced staff with great skills. It is now the time to harness these strengths to move Aerolux forward. We will be unveiling new and improved products in the coming months, and working closely with customers and key strategic partners to build on what is a very strong base," adds Robinson.

Aerolux continues to operate from its headquarters in Blackpool, UK, where much investment has recently been put into new buildings. This is just the start of a long-term growth and investment strategy, according to the company. Key established staff, including Noel Ellison, Sylvie Abina, Dave Brennan and Peter Robinson, will continue to work alongside the newer appointments.



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nathan sparshott



Want to know more about the personalities that drive some of the industry's most successful companies?

In this issue, Nathan Sparshott, senior designer at Virgin Atlantic Airways, describes how being an everyday pioneer is good for the passenger, and thus good for the airline

01 WHAT IS YOUR BACKGROUND? I consider myself fortunate to say I studied at Brunel University [in the UK] at a time when the campus at Runnymede was home to the product design course. A beautiful grand old country estate, with its woodland and views of the River Thames and Windsor Castle, made for a unique environment for studying design.

After graduation and an internship at Philips Design in the UK, Philips offered me the opportunity to work at its headquarters in Holland, working on consumer electronics and a number of research projects. I learned my craft as a designer there in an environment among some very talented people, many of whom I have worked with since.

02 HOW DID YOU GET STARTED IN AIRCRAFT INTERIOR DESIGN? I used to live not far from the Virgin Atlantic office [based in Crawley, close to London Gatwick Airport] and had often thought it would be a fantastic place to work. The timing of my return to the UK coincided with a vacancy in the design department, which I was thankfully offered, and almost immediately I set to task on my first cabin interior project, a fresh look at seating for the economy and premium economy classes.

03 WHAT DESIGN PRINCIPLES DOES VIRGIN WORK BY? Our brand idea is 'Everyday Pioneers'. It describes us as "an innovative organisation, challenging conventions, exploring new ideas and new customer experiences without fear of failure. Fuelled by a thirst for the new, and the thrill of the open skies, our spirit of adventure is evident inside and out". I think that is a good summary of our design principles.

04 DO YOU WORK WITH OTHER DESIGNERS IN THE VIRGIN GROUP TO ENSURE COHESIVE BRANDING, OR DO YOU WORK INDEPENDENTLY? We work pretty independently. The Virgin Atlantic brand remains incredibly strong, which is a testament to the customer experience we create.

05 WHY DID YOU CHOOSE THE COLOURS IN YOUR CABINS? WHAT FEELINGS ARE THEY MEANT TO CONVEY? Colour, materiality and lighting are so important in creating the right cabin mood. We have historically never shied away from bold moves and creating statement interiors that our customers love. Our latest A330 interior had the working title of 'Effortless Chic'. We spent a lot of time in development getting

this particular palette right with our suppliers. I think the result is a balance of striking boldness in communal areas and refined calmness in the seating spaces.

06 SHOULD CERTAIN COLOURS BE AVOIDED IN AIRCRAFT CABIN DESIGN? I wouldn't rule out anything in isolation, but I do know that the cabin interior is a harsh environment for wear and tear. It is just one part of the job to provide a trim and finish ambition; implementation is where we spend a lot of focus, ensuring the materials and finishes are up to the rigours that await them.

07 WHAT DO YOU SEE AS THE UPCOMING TRENDS IN CABIN DESIGN? As time has passed, the playing field has levelled. As well as the obvious desire for light weight and modular design of the physical product, I think we will see a focus towards service and a desire for airlines to be consistently great at delivering a complete experience that customers value and want to return to.

08 DO DESIGN TRENDS FROM OTHER SECTORS INFLUENCE YOUR WORK? Very much so. For us, it is very important to look outside the industry for examples of great customer experience, particularly when it comes to exemplary service, and to try and thread these influences into our work. There is no question that the aircraft interior is a unique environment in which to sit, eat, sleep and be entertained, so we need to ensure our customers enjoy what we offer.

09 DO YOU PREDICT IFE TECHNOLOGY TAKING A MORE CENTRAL ROLE IN CABIN DESIGN? IFE is about staying connected and being entertained. We were among the early pioneers of IFE and continue to drive a fantastic offering. Interestingly, video-on-demand was originally seen in our aircraft prior to the now widespread availability on the ground. As the digital world advances, customers increasingly expect to be able to use their own devices seamlessly on board and stay connected, as well as enjoy the offering from us and stay entertained.

10 WILL THERE BE ANY SURPRISES IN YOUR 787s AND A380s? A FIRST-CLASS CABIN PERHAPS? You'll have to wait and see. Times are tougher commercially, which does make the role for a designer that much more challenging, but also more rewarding when we create great experiences for our customers.

11 WHAT IS YOUR PROUDEST ACHIEVEMENT? I am in a privileged position to work for an airline that has design at the heart of the brand, where the projects are always interesting and varied. I wouldn't point to a single invention or creation of a new experience, but more towards the people I have worked with and the role I have in the team. Without the people to carry ideas forwards and keep creativity alive, we don't have anything.

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