

Aircraft *interiors* INTERNATIONAL

SEPTEMBER 2012

THE INTERNATIONAL REVIEW OF AIRCRAFT INTERIOR DESIGN AND COMPLETION

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full preview inside!



heightofcool

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coolcustomers

Welcome to the cool issue, and indeed the issue of cool. What do you think of the cover image? Pretty cool, huh?

That's what I should say, as that's what a cool person would say. Why say any more? However, the moment I deem something to be cool, the doubt creeps in. For one to be an arbiter of cool and declare something as cool, one must be cool oneself. But the very fact that I have questioned my coolness makes me immediately uncool, and therefore not qualified to judge. And nobody cool says 'cool' this much. Or 'oneself' for that matter.

Trying to work out this nebulous subject has made me far from cool-headed. Take the cover image, for example: even with my backing it must surely qualify as cool. But then, it was devised as a cool aircraft interior concept, and as coolness is a product of being observed as such rather than being manufactured as such, does that mean it is uncool, no matter how good it looks?

Stepping aside from the more philosophical points of coolness, what elements of an aircraft interior could qualify? A feature generally considered cool is a bar area, with particularly striking examples being Korean Air's Celestial Bar, Virgin Atlantic's Upper Class bar, and Kingfisher's First Class bar. But what actually makes these bars cool? It could be the novelty factor, or perhaps that as a premium perk they have a feeling of exclusivity, or they simply have that fairy dust that makes air travel feel special. But does that mean Malaysia's new A380 is uncool because it doesn't have a bar? Or is it cooler, as the airline ignored trends and had the confidence to simply focus on the passenger experience in the seat? A rash of features seems to arrive every time an airline receives an A380, with showers, duty-free shops and art galleries, which all sound fun but also rather marketing-driven. Not having its own headline USP may appear dull to some, while to others it could it be seen as an act of rebellion.

But cool isn't the sole preserve of the well-heeled, to whom most of these features are aimed; indeed most passengers who have accumulated the means to travel in such premium-class comfort are much older than Generation Y, the 'hipster' generation that brand experts are so keen to seduce. So how can a high-density main cabin become cool?

How about these for ideas: an aisle seat that slides across to widen the aisle for faster boarding, and creates a wider middle seat with armrest access; a wide aisle seat available for a premium; a staggered design that offers extra width and somewhere to rest your head; a saddle; a couch? These ideas, even the more outlandish ones, are all being evaluated by airlines around the world with the goal of enhancing the passenger experience without sacrificing passenger count. And therein lies the key: get the functionality and comfort right, and you're on the road to cooldom. Even if the product doesn't reach such status, it will be so good that it doesn't matter. And that confident indifference will make the airline cool. Not that I'm in a position to judge...

Adam Gavine, editor

Aircraft Interiors International.com
SEPTEMBER 2012

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COOL ISN'T THE SOLE PRESERVE OF THE WELL-HEELED, INDEED MOST PASSENGERS WHO HAVE ACCUMULATED THE MEANS TO TRAVEL IN SUCH PREMIUM-CLASS COMFORT ARE MUCH OLDER THAN GENERATION Y

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regulars

013 upfront

How to maximise economy revenues; American's ambitious A321 cabin plans; Mitsubishi's MRJ; LAN's 787 cabin revealed; better ways to board; and the latest ideas in hygienic travel

024 design briefs

Molon Labe Design's slider seat to speed passenger boarding; a futuristic city aircraft with a difference; and a double-deck premium class seat concept from Factorydesign

117 show preview

Aircraft Interiors Expo USA in Seattle promises to be a hotbed of interior supplier launches

141 products and services

The latest product news from our advertisers

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Spend some time with Nigel Goode, who as director of Priestmangoode has been involved in everything from the original A380 interior concept to Malaysia's new flagship

the cool issue

We delve into the complex world of what makes a brand cool, and what would make a cool airline experience

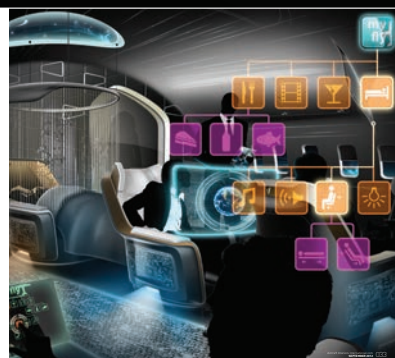
GUY BIRD,
AIRCRAFT INTERIORS INTERNATIONAL

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heightofcool

What is it that makes a brand cool? What would make a truly cool airline brand experience on board? Some of the industry's top experts share their 'cool' ideas...

Q What is it that makes a brand cool? What would make a truly cool airline brand experience on board? Some of the industry's top experts share their 'cool' ideas...





features



042 malaysia's A380

No shops, no showers. Malaysia has eschewed headlines in favour of a truly passenger-centric design for its flagship aircraft

ADAM GAVINE,
AIRCRAFT INTERIORS INTERNATIONAL



052 economy seating

Taking a flexible approach to main cabin seating can improve passenger comfort – and the bottom line

JOHN WALTON & ADAM GAVINE,
AIRCRAFT INTERIORS INTERNATIONAL





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air france premium classes 064

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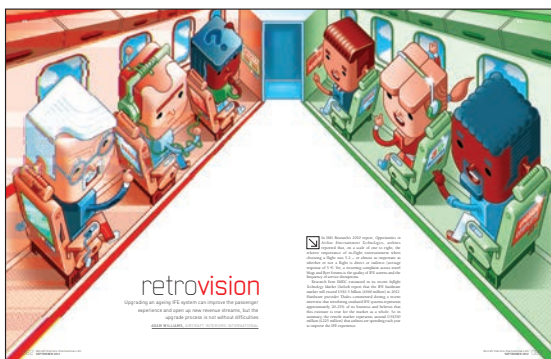
NATASHA EDWARDS,
AIRCRAFT INTERIORS INTERNATIONAL



family affair 072

Air travel may be stressful, but it shouldn't split up families. A little thought can keep family groups together on board, and improve the experience for everyone else, too

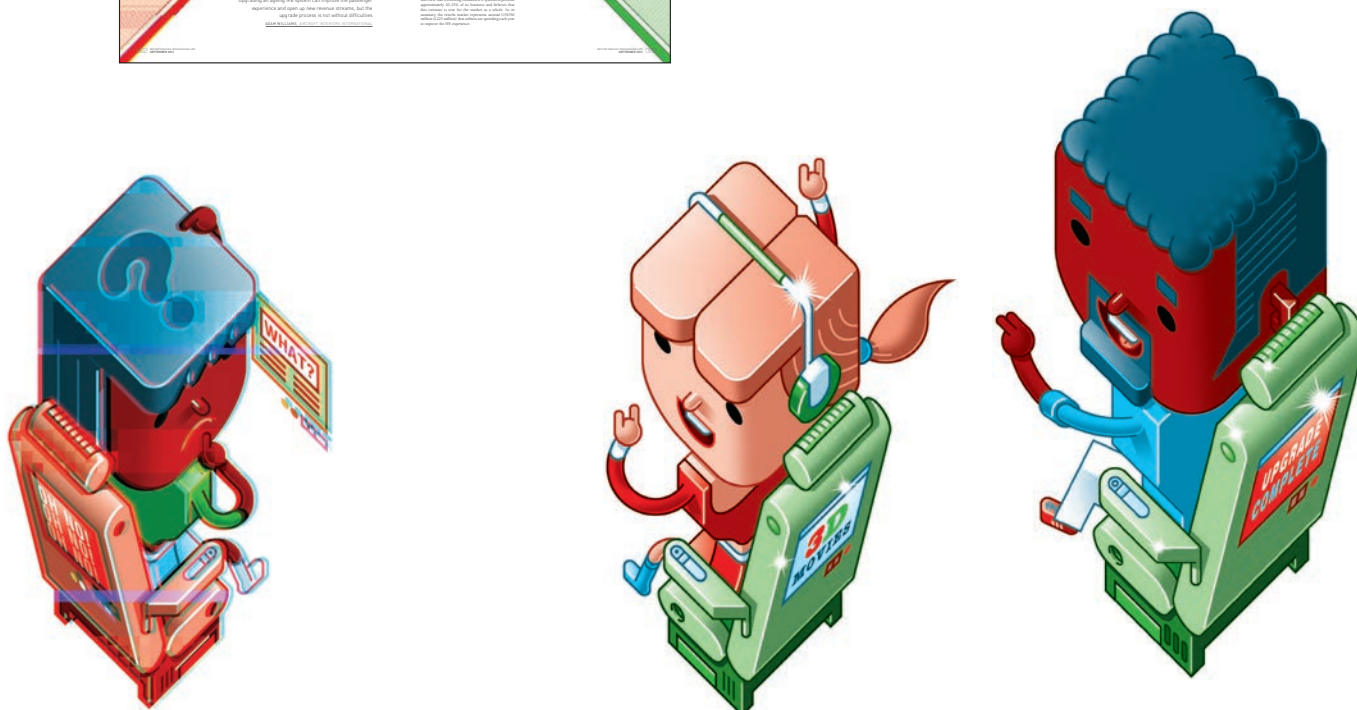
SASHA BROWN,
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As airlines feel pressure to upgrade ageing IFE systems, they might find the process is far from straightforward

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There is already a wide choice of seating for wide-body A350s. Read the story behind the catalogue

BERNARD FITZSIMONS,
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100 galleys

A recipe for success in designing and building galleys – with a sprinkle of branding

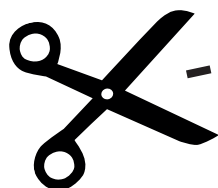
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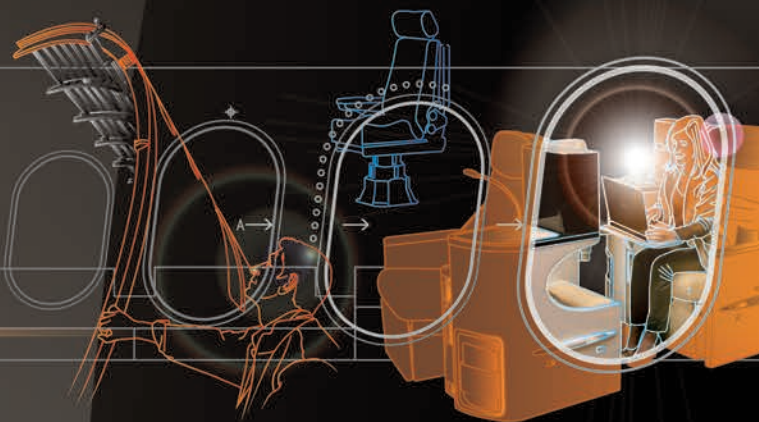
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economyboom

Airlines, aircraft manufacturers and seat suppliers continue to experiment with economy seating, in response to demands for more flexibility and increased revenues



See our feature on page 52 for more on these ideas and further ways to boost economy revenue



1 SkyCouch
Couples looking for a product somewhere between economy and business class can't help but be charmed by 'cuddle class', the affectionate name bestowed on Air New Zealand's popular SkyCouch. Occupying seats ABC and HJK in the first 10 rows of its 777-300ER economy cabins, the Recaro-manufactured design features armrests that fit nearly flush to the seatback and a padded leg rest that swings up to create a sofa-style product ideal for stretching out. Costing the price of two standard economy fares plus approximately half again for the third, unoccupied seat, SkyCouch enables the airline to recoup some of the lost revenue from flying an empty seat.

2 Airbus Extra Wide
The most controversial seat of 2012, the Extra Wide seat is the brainchild of Airbus, made real by B/E Aerospace. Originally codenamed '20/17/17' in reference to its seat widths in inches, the idea behind this economy seat triple concept is to monetise Airbus's wide fuselages by introducing 20in-wide aisle seats, compensated for by narrowing the middle and window seats by 1in. Similar to extra legroom seats, the aisle seats can become an extra source of revenue, while offering a potentially cheaper solution for larger passengers than buying two seats. The beauty of the solution, according to Airbus, is that the 17in-wide adjoining seats are still the same width as a standard Boeing economy seat.

3 Cozy Suite
A single 20in-wide seat sounds great, but how about all three in an economy triple being 20in, without sacrificing passenger numbers? Enter the Cozy Suite from Thompson Aero Seating, a staggered design suitable for both narrow- and wide-body aircraft that can operate from a 31in pitch. The company claims a gain of 2in width per seat on a narrow-body application, with seats on Boeing 757s and 737s being 19in-wide, and 20in-wide on the Airbus A320. In wide-body applications, having 17.8in-wide seats can yield an extra row of seating, while that can be achieved at 18.7in on a 777. Passenger benefits include a natural place to rest their heads and increased shoulder space.

4 SkyRider
There's an endearing honesty about the SkyRider concept from Aviointeriors, which can slash seat pitch to less than 23in to create an ultra-high-density seat and a new sub-economy class. The seating position is akin to being in a saddle, suitable for short flights, and could afford airlines the maximum certified passenger capacity of the aircraft, helping to boost revenue. Aviointeriors is serious about the design, and it has been fully engineered, ready for testing. That could be sooner than you think, as rumours abound about low-cost airlines keen to evaluate the concept.

5 Slider Seat
A new entrant in the width wars is Molon Labe Design, which reckons its Slider Seat could yield an extra 3in width for the middle seat, which is set back from the others. However, the main benefit of the design is that during boarding, the aisle seat slides over the middle seat to create around an extra 24in of aisle width for faster boarding. In theory this could allow airlines to squeeze in an extra flight or two per day. In addition, everyone enjoys the personal armrest space afforded by the middle seat being set back. Turn to page 24 for more details.

AMERICAN DREAM

Virasb Vahidi, American's chief commercial officer, explains the A321 decision: "We intend to be the only airline to offer a three-class service, and the first to offer fully lie-flat first- and business-class seats on transcontinental flights with our Airbus A321. By using the A321 aircraft with three classes of service and outfitted with fully lie-flat premium class seats, all-aisle access in first class and state-of-the-art amenities, we will be able to continue providing an industry-leading premium experience on transcontinental routes, while significantly reducing costs through improved fuel efficiency."



American is fighting to be the best rather than the biggest US carrier to attract high-value flyers

aclassapart

American is targeting domestic big spenders with a three-class offering in its A321s

- 01. The JPA-designed Sicma seats mark a new chapter in US aviation
- 02. There is still room for 20 B/E fully lie-flat business seats on the new A321s

This is an exciting chapter in American's history, with a potential merger with US Airways being mooted, as well as orders for around 230 new narrow-body aircraft due for delivery over the next five years, which will give it the youngest fleet among the major US airlines. To ensure consistency among the US domestic fleet, the interiors are undergoing a refresh, which will include creating a three-class configuration.

Designed in partnership with James Park Associates, the design, trim and finish of these aircraft are intended to reflect the look and feel of the 'new American' and to complement the interior design scheme of the airline's 777-300ERs and redesigned 777-200ERs to create a more consistent experience between aircraft types.

The A321 First Class cabins on transcontinental flights between New York and LA, and New York and San Francisco, will feature 10 fully lie-flat Sicma seats in a 1-1 configuration, giving every seat direct aisle access – a feature that no other domestic airline offers. The fully adjustable seats will feature a large tray table and work surface, and an individual storage unit for stowing personal items. The seat controls have a more intuitive design for optimum customer comfort and simplicity. First and business passengers can also enjoy a 15.4in HD-capable touchscreen IFE monitor.

The business class cabin will be outfitted with 20 fully lie-flat seats from B/E, in a 2-2 configuration,

while in the main cabin the Recaro seats will be arranged in a 3-3 configuration and have 8.9in HD-capable touchscreen monitors. The option to enjoy more legroom is available with 36 main cabin extra seats. More details about the business-class and main-cabin seats will follow in the coming months.

In addition to modern interiors, these aircraft will also offer inflight WiFi throughout the aircraft, seat-to-seat chat, live text news and weather updates, 3D moving maps, airport maps, connecting gate information, and individual 110V universal AC power outlets and USB jacks at every seat.

These aircraft will be delivered beginning with A319s in July 2013, followed by Boeing 737-800s in October 2013, and the A321s in the second quarter of 2014. American is still evaluating the specific markets these aircraft will serve.

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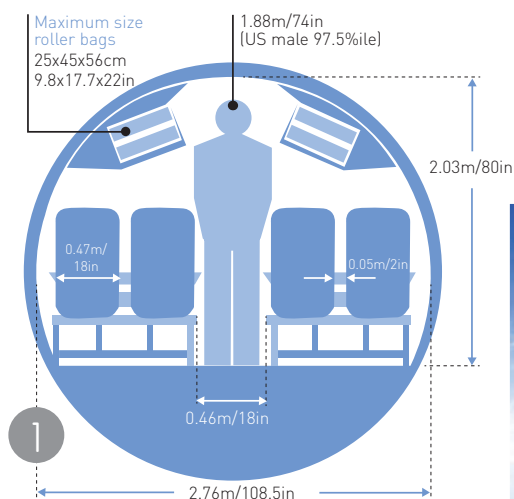
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Mitsubishi predicts a three-fold increase in passenger traffic over the next 20 years, with demand for 70-90-seat aircraft reaching 5,000 over that period as operators upsize their smaller regional jets and downsize mainline jets. The company hopes to cash in by offering a comfortable jet that also appeals due to fuel consumption savings of a projected 20% over rivals.

The 18.5in-wide seats are available in pitches of 29in to 32in

shortstory

Mitsubishi has put passenger comfort first in the cabin design of its forthcoming regional jet

As the first airliner to come out of Japan for nearly 40 years, Mitsubishi is keen to make its Regional Jet a source of pride. Airline bean counters will appreciate the jet's efficiency, while passengers will enjoy class-leading comfort and space, benchmarked against mainline jets rather than regional rivals.

There are two models – the 78-seat MRJ70 and the 92-seat MRJ90. Those figures are based on an all-economy layout with a 29in pitch, although other configurations are available, especially since the aircraft does not have emergency exits over the wings.

We took a virtual flight in a mock-up cabin, and the first thing you notice when you enter is the ceiling. The panels are sculpted into a relief of Mount Fuji, lit by bright white light when you enter. When you take your seat, a more relaxing choice of hues is shown looking down the aircraft, flanked by bins that can accommodate IATA maximum-size roller bags.

The mock-up was in a two-class layout, with Weber 6810 premium class seats in a 2-1 configuration, featuring a 31in pitch and 17° recline. Keep going and you find a new 'Slim Seat' economy model from Delta Kogyo, clad in a special 0.25in-thick net fabric. The 18.5in-wide seats are available in pitches of 29in to 32in, with a short 13in seat pan, which in addition to being space efficient, is claimed to reduce pressure on the

thighs. A further option is a slide recline function. Our only niggle is that the tray table feels brittle and deploys with a noticeable 'crack'.

At the rear are a lavatory and a three-cart galley from Heath Tecna, as were the ceiling elements, bins and sidewalls.

The MRJ will begin test flights next year, and customer deliveries will begin in 2015. To date, TSH has ordered 50, with an option for a further 50; ANA has ordered 15 with an option for 10; ANI Group has ordered five; and SkyWest has ordered 100.

- 01. A class-leading economy seat width is achieved without compromising space
- 02. Aerodynamics, composites and PurePower engines combine for efficient operation
- 03. The economy seat benefits from Delta Kogyo's automotive seat expertise

REGIONAL RIVALRY

	Cabin height	Cabin width	Seat width	Aisle width
MRJ 70/90	80in	108.5in	18.5in	18in
Embraer 170/190	79in	108in	18.25in	19.75in
CRJ 700/900	74.7in	100.5in	17.3in	16in
SSJ	83.4in	118.1in	18.2in (2+3)	20in
ARJ-21	79.9in	123.6in	17.9in	19in

FAST FACTS

Research has found that for a typical 180-seat cabin, using a third door in the centre of the fuselage (along with the front and rear exits) could shave up to four minutes off the boarding process when using two doors, and 12 minutes off when using just one.

Free seating – a common practice among low-cost carriers where the first passengers boarding the aircraft can freely choose their seats – remains the most efficient boarding policy.



Adding a third door could improve boarding times to 24 pax/minute and deboarding to 40 pax/minute

openwide

Ryanair's request for wider doors has reopened the debate into how to improve boarding

- 01. The Foldable Passenger Seat (AIDA Development) lets pax move directly into the seat row to store luggage, without blocking the aisle
- 02. Bigger overhead bins ensure faster and easier loading
- 03. A twin-aisle short-haul aircraft would aid boarding, but its wider fuselage could also add drag

Having originally caught the attention of the media (and Airbus and Boeing) at last year's Paris Air Show when it announced it was working with Chinese aircraft manufacturer COMAC on the design of the C919 aircraft, Ryanair has set the twittersphere alight again this summer after a senior executive revealed the carrier has asked COMAC to consider designing the C919 with wider doors to speed boarding. Such an aircraft would enable Ryanair to increase turnaround times and consequently operate more flights.

"The Chinese are willing to listen to what we want," said Ryanair's chief financial officer, Howard Millar, back in August. "An aircraft manufactured by Boeing or Airbus is a one-size-fits-all. We want two people [to be able] to walk through the door. If the door is wider you can load people on and off the aircraft quicker. We want a low-cost aircraft that suits our business model."

Dismissed as a mere media stunt (albeit a successful one), detractors also question the engineering behind such an idea – rather like a convertible car where you have to add strength and therefore weight to the lower half of the vehicle to ensure it is robust enough, surely creating wider doors will mean the rest of the fuselage has to be reinforced, thereby negating any possible financial gain as a result of increased fuel costs?

Of course, instead of wider doors, aircraft could just have more doors. As we reported in March 2011, this is

the option favoured by easyJet, which would like a third door in the centre of the cabin. Its 'ecoJet' scheme for an environmentally friendly short-haul aircraft features forward-swept laminar flow wings, partly for efficiency but also because moving the wing root aft makes space for a mid-cabin passenger door. The airline says the centre door would accelerate boarding, even used on its own, because passengers would be able to head in either direction after entering, rather than forming a single queue in the aisle.

And instead of one aisle, why not two? Or at the very least a wider central aisle that enables passengers to pass each other more easily? Whether Ryanair or easyJet's plans will be realised remains to be seen, but it's clear that any aircraft manufacturer or cabin designer able to solve the boarding problem is set to clean up. Revolving doors, anyone?

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HIGH FIVE

LAN will be the first airline in Latin America, and one of only five in the world (with ANA, JAL, Ethiopian and Air India) to fly the 787, when it takes delivery of its first Dreamliner at the end of August. The carrier will receive a further 31 787s (including 10 787-9s) over the next 10 years, representing an investment of US\$3.5 billion – one of the largest investments in its history.

LAN's first 787 route is expected to be Santiago-Buenos Aires. Santiago-Lima, Lima-Los Angeles, Santiago-Madrid, and Santiago-Madrid-Frankfurt will then gradually be integrated during the aircraft's first year of service.

Growth spurt: LAN achieved 15.9% growth (pax/km) in passenger traffic in 2011, after 23.5% growth in 2010

dreamticket

LAN Airlines' first 787 to feature new full-flat business class

As these exclusive images reveal, LAN Airlines passengers can look forward to a modern and comfortable cabin when the Latin American carrier takes delivery of its first Boeing 787 Dreamliner – an event scheduled for 31 August, as we went to press. LAN will configure its first 787-8 cabin with 217 seats in economy and 30 seats in Premium Business class.

Premium Business sees Contour's Aura Lite in a 2-2-2 configuration at 75in pitch, with each seat converting into a fully flat bed, 72in long and 23in wide. A sculpted seat shell, 'do not disturb' button/light and a drop-down privacy divider should help ensure LAN delivers on its business-class brand promise to provide a relaxing journey: "Our focus in economy is entertainment and in business it is rest," explains Fernanda Toro, LAN's travel experience director.

Business-class passengers will also have plenty of space to store their carry-on luggage and personal items: an ottoman features a dedicated stowage compartment; while the airline has also provided new compartments for pen and trinket storage; and there is also a net pocket for reading material and a dedicated bottle holder. Further amenities include a cocktail table, coat hook, a six-way adjustable headrest, individual LED reading light, and lumbar massage. The seat also features a memory function to ensure passengers can return to their favourite position at the touch of a button.

Meanwhile B/E Aerospace's popular Pinnacle unit is being installed in a 3-3-3 configuration in economy, at 31in pitch. With the 787 scheduled for long-haul service to destinations including LA, Madrid and Frankfurt, economy seating features a range of comfort features, including a four-way adjustable headrest, 6in of recline, and extra quilted lumbar and knee cushions.

All passengers will enjoy access to the aircraft's Panasonic eX2 IFE system, with 15.4in LED screens in business and 9in Eco Smart monitors in economy. Both classes feature touchscreen technology (with no handsets in economy), PC power, and jacks and USB docks for iPods and smartphones. "The IFE will feature 44 movies, with eight blockbusters each month, and the best Latin American movies," says a LAN spokesperson. Some 950 music CDs and 25 games provide even further distraction.

- 01. Premium Business features Contour's Aura Lite seating
- 02. The view looking forwards from the 787's vaulted entrance, showing rear ottoman panels
- 03. Each business class seat converts into a 72in fully flat bed



University of Victoria research suggests you are over 100-times more likely to catch a cold during a flight

cleantoughts

As passenger density increases, hygiene on board is critical

Have you washed your hands? It seems many people don't believe you. A recent survey carried out on behalf of Microban Europe found that 53% of travellers are "concerned" or "very concerned" about the presence of bacteria on seat covers, cushions and headrests; while 52% are similarly anxious about bacteria on meal trays, armrests, tray tables, remote controls and inside backseat pockets, highlighting the need for new hygiene solutions. Fortunately, help is at hand:

1 All change

Many passengers use the lavatory for changing before landing, which increases traffic and the risk of contamination. A separate changing room, as proposed by Diehl Aircabin, provides a more hygienic and convenient space, complete with a large mirror and shelves for items such as shirts or cosmetics. The module attaches to the wall of a lavatory or galley to open into the entrance area, ensuring valuable revenue space is preserved.

2 Look no hands

A lavatory door handle is an obvious germ hotspot. However Diehl's electrically driven toilet door concept does away with handles in favour of push buttons, which actuate a tooth-belt system (the company is also working on a version featuring touch-free sensors). It also eliminates door damage from heavy-handed passengers.

3 Stand up

On terra firma a urinal may not be exotic, but when Müller/Romca Industrial Design teamed up with Airbus and Dasell Cabin Interior to develop a urinal for Lufthansa's A380 First Class bathroom, they made aviation history. Having the urinal means the toilet area is used less and therefore remains cleaner, increasing comfort levels for female passengers, and for men it provides a clear, immediate improvement in terms of convenience.

4 Screening process

The wonder of touchscreen IFE has brought with it additional perils for cleanliness. However, rather than just relying on the cleaning crew to be thorough, researchers at the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB in Stuttgart are developing a technology that may help. When titanium dioxide molecules are 'activated' by UV light, they act as a kind of catalyst, triggering

an electrochemical reaction that produces free radicals. These and other active molecules kill bacteria, fungi and similar organisms, first destroying the cell walls and then penetrating the cytoplasm – the substance that fills the cell – and damaging the bacteria's DNA. As a result, the organic substances are destroyed instead of remaining stuck to the surface.

5 No touching

Passengers dislike touching the flap of the washroom waste bin as there is no guarantee that the previous users washed their hands. Hence Elektro Metall Export and Schueschke Solid Surface have developed an automatic flap. A sensor that measures capacitive field ensures the flap opens only when a passenger's hand passes above it, so it cannot be triggered by sources such as stray light or other disturbances. The flap has been designed as a plug-and-play replacement and has been tested for more than two million cycles.

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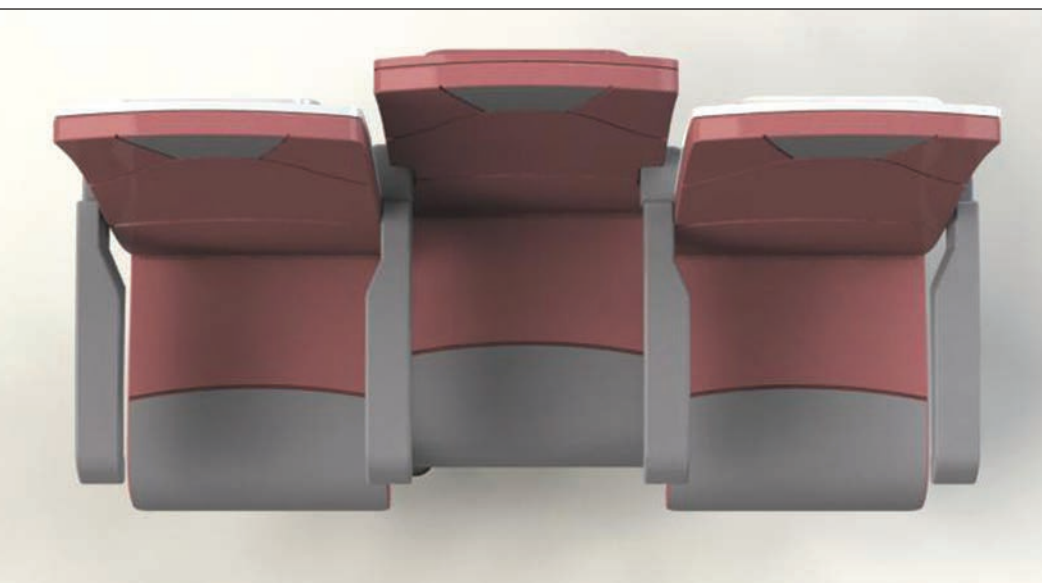


aislegottengains

BRIEF: We've all been there: you're just taking a moment to stow your bag overhead, when you realise there's a queue of passengers who can't get to their seats until you clear the narrow aisle. As well as fraying tempers, these delays waste valuable time on the apron. Imagine if you could have wider aisles for faster boarding, happier passengers, and a new revenue stream.

DESCRIPTION: Enter the Slider Seat, a three-abreast design in which the aisle seat slides over the middle seat during boarding to create around an extra 24in of aisle width to aid ingress and egress and reduce turnaround time. Passengers will be pleased at being able to be seated faster, PRMs will appreciate being able to access their seat without a skychair, and airlines will enjoy more productive use of the aircraft and the lightweight composite design.

When extended, using a button on the armrest, the middle seat remains set back, so all three passengers get armrest space. Also, the staggered design creates an extra 2in of width per seat triple on a B737, and 3in extra on an A320. For the latter, Molon Labe Design, the creator of the concept, considered adding 1in to each seat. However, following consultation with airframers such as Bombardier (which has apparently expressed interest in fitting the seat in a 3-2 configuration on the C Series), Airbus, and Boeing, it was instead decided that all the extra width could make a 21in-wide middle seat. This means that the person in the middle seat feels less crowded and people may now actually want – and indeed pay extra for – the middle seat.



VERDICT: This is not just another pie-in-the-sky idea, as prototype construction has begun and real-life sled tests and usability tests are scheduled to begin this year. There has also been interest from some airframers, who have helped solve issues such as how to stop the seatbelts of the middle seat getting snagged.

However, travellers may be baffled rather than pleased upon boarding if they are unfamiliar with the mechanism. And unless boarding is strictly controlled outboard to inboard, aisle and middle seat passengers will have to pull out the seat during boarding, negating the benefit. Likewise, if the middle seat occupant cannot stand up during disembarkation due to the overhead stowage bins, the seat cannot be slid across.

However, these issues are clearly surmountable, as the firm is currently in discussions with a potential buyer who is considering an exclusive licence for the design.



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cityslicker

BRIEF: The surface transport infrastructure is becoming ever more congested, making inter-city travel too time-consuming. The solution could lie in an elegant airborne mass-transit system, easing commuting and commerce.

DESCRIPTION: Thank you for flying Air Union, and welcome on board your aircraft – an Aerocoché City Plane A3000.

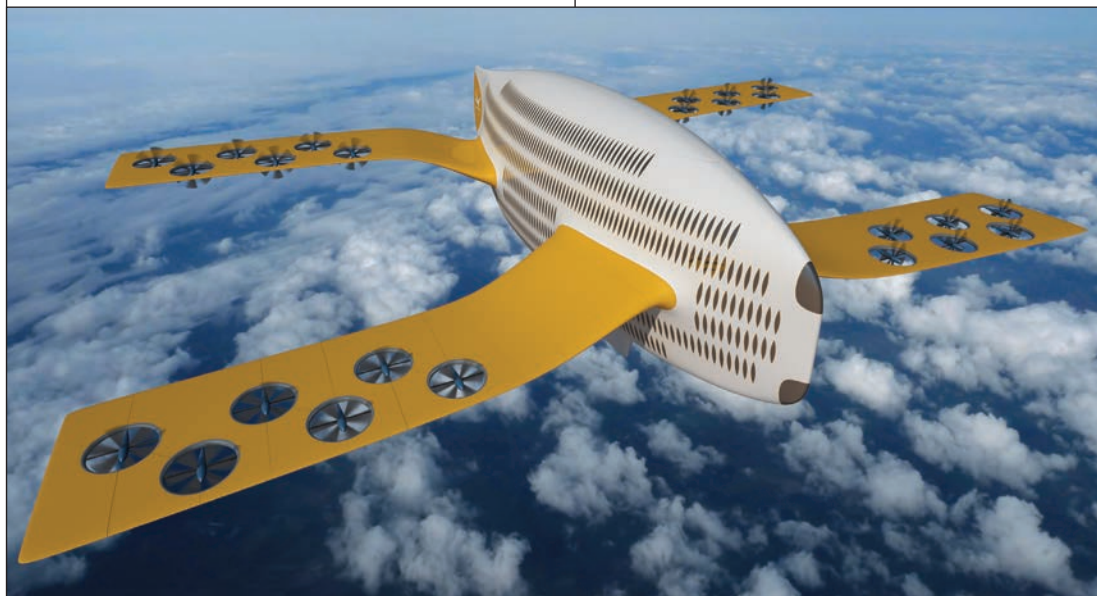
This is of course a flight of fantasy, but it is a beautiful vision of future air travel. Those who have attended Aircraft Interiors Expo will be familiar with the congested transportation systems of Hamburg, and possibly of the increasing time it takes to travel between Hamburg and other European cities. Imagining this situation will only worsen in the future, an innovative solution to allow for the dynamic and economic growth of the city has been created by a Hamburg-based designer.

The plan proposed by Yelken Octuri (not the designer's real name – he is a well-known commercial aircraft cabin designer and keeps his concept work separate) includes the use of inter-urban aircraft conceived to link regional cities. These high-capacity models can fly 3,000 passengers up to 2,300 miles at a speed of 320mph directly into the centre of a city, then land vertically on 278m-high towers, avoiding the time-consuming airport journey.

Passengers embark and disembark via two lateral retractable modules at the top of the tower, which open the bridges of the aircraft. Passengers then take elevators from modules at the top of the tower to reach ground level.



VERDICT: Just imagine the possibilities. At 84m-long, 34m-high and with a wingspan of 113m, there is room for 3,000 passengers of every budget over the eight decks. How about an opulent first class for those finding their business jet or helicopter less attractive now they can be deposited right in the city centre, all the way down to a cheap but stylish economy class? And with the scale of the aircraft, it doesn't have to end there: cocktail bars, shops, restaurants, casinos... you can let your imagination run as free as Octuri's. We have asked him to show us his vision of the interior so look out for updates. In the meantime, you can enjoy a gallery of the A3000 on our website.



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doubledare

BRIEF: Many business jet owners still have to use commercial airlines for long-haul journeys. As luxurious as most first class offerings are, they don't give such passengers the feeling of personal space they are accustomed to, especially when sleeping. The solution could lie in a pod system that cocoons the passenger.

DESCRIPTION: Remember the Not For Wimps gaming seat from last year? Factorydesign has teamed up with Contour Aerospace again to produce Air Lair, another striking concept.

The idea is for a premium cabin to be more akin to a hotel room than a dormitory, with individual pods offering seclusion. Slip into a pod and you can enjoy a 94cm-wide seat in a natural Z position, from which you can enjoy 3D IFE projected on a flip-down screen. Whether working, relaxing or playing, you can fully immerse yourself in your pod.

This is especially true when you want to sleep, as at the touch of a button the seat converts into a 73in bed. Activate shut-down mode and the night-sky feature and surround-sound noise cancellation activate to help you drift off.

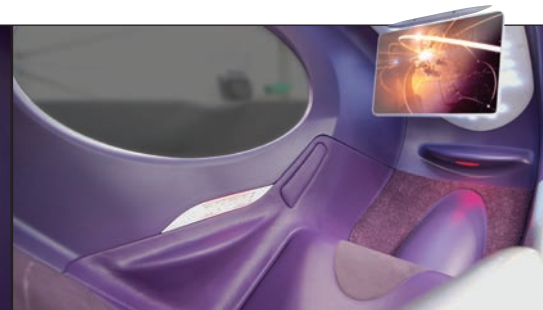
While the pod can offer the solitude many might seek, the centre pods are arranged two abreast, so if you keep the dividing wall lowered, you can talk to your neighbour.

This is great for the passenger, and for the airline. The double-deck pods are designed to be used in twin-aisle aircraft in a 1-2-1 configuration. In a first class cabin with 16 premium seats, switching to Air Lair pods means you can accommodate 28 passengers.



VERDICT: There's no denying that when Factory and Contour get together, cool things happen. However, a passenger accustomed to bizjet travel might prefer the more conventional opulence of an Emirates suite rather than climbing into a pod several times during a flight. The FAA's 90-second test may also prove a hurdle, with upper-tier passengers descending upon lower escapees.

But let's not get bogged down in regulations: this is a concept, designed to provoke thought – and it is doing just that. We look forward to seeing the next concept from this collaboration!



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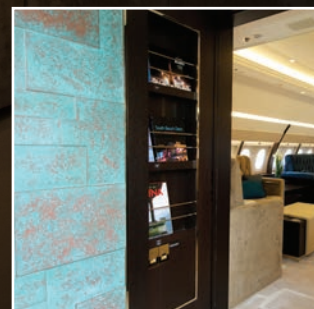
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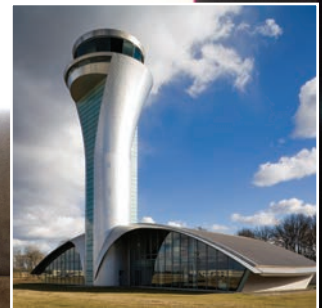
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height of cool

What is it that makes a brand cool? What would make a really cool airline brand experience on board? Some of the industry's top experts share their 'cool' ideas...

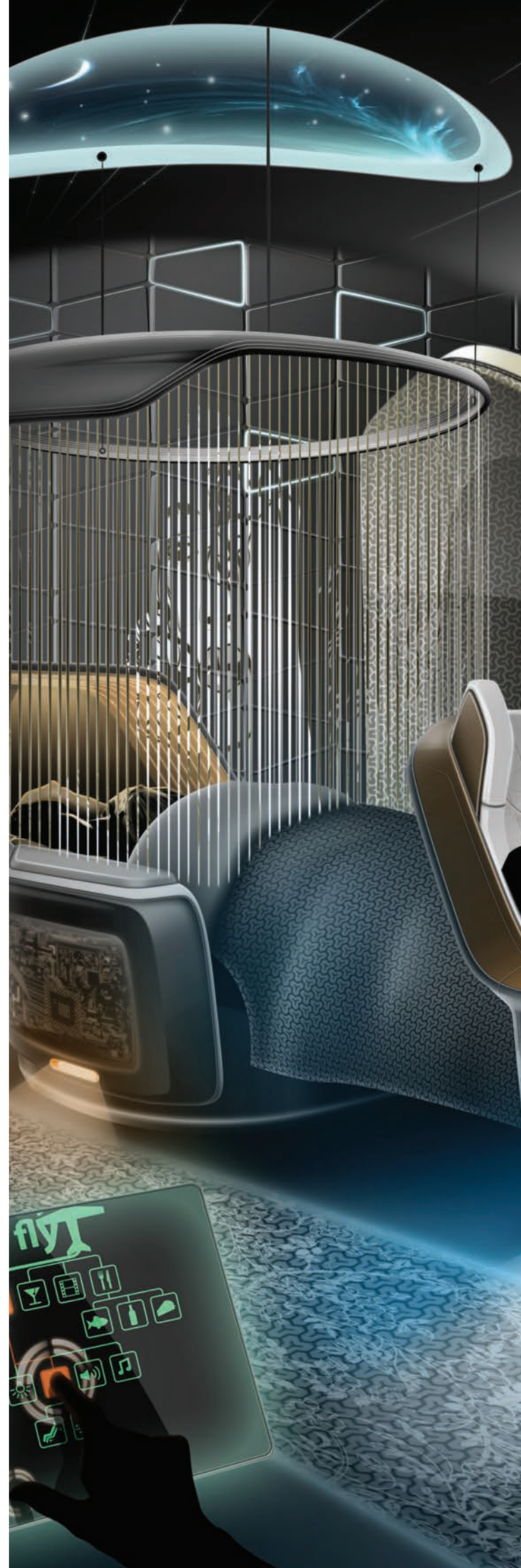
GUY BIRD, AIRCRAFT INTERIORS INTERNATIONAL



In *Cool: The Complete Handbook* by Harry Armfield there is a useful section on aircraft etiquette for cool people: "Always wait for the last call ... get an aisle seat, avoid the inflight movie, ignore the take-off safety procedure, don't read the inflight magazine, order a special meal beforehand, upgrade to first class, and don't talk to other passengers. Casual wear is fine. Tracksuits are definitely out. Plenty of hand luggage and essentials close to hand – novel, passport, money, pear drops..."

The book was written back in 1986 and with tongue firmly in cheek, but the essential thrust of its premise is still relevant today. Cool people – or brands – don't follow the herd and don't worry too much about what rivals do or think of them. Their approach is individual and distinct, and it's that uniqueness that makes them stand out.

Bringing things bang up to date, Joeri Van den Bergh, co-author of the 2011-published book *How Cool Brands Stay Hot: Branding To Generation Y*, reiterates the universal element of coolness but explains how 13-29 year olds – Generation Y – see things slightly differently. "A brand's coolness is a result of a complex mixture of attributes rather than something they buy from the counter. But although favourite youth brands differ regionally – for example in clothing retail it would be Top Shop in the UK, Zara in Spain, or G-Star Raw in the Netherlands – when Gen Yers talk about their beloved brands, they universally share the same attributes. To be embraced by the new generation of consumers, brands should have their own style (35%) and deliver positive emotional experiences (31%) while staying up-to-date (28%)."







personal service

The image on our cover and at the start of this article was specially commissioned from the team at Factorydesign. Director Adam White talks us through the various elements of their vision of future cool:

"The first time I offered my iPhone to airport security at Heathrow to have the boarding pass checked it felt a little incongruous, a bit awkward somehow. The gentleman who scanned it fumbled a little and we smiled. Now it's normal," he says.

"Heading to the airport I hit the App to check my flight time, gate number or review my seat, but that is just the start: a revolution is coming. Preflight meals and passenger Facebook profiles are all good fun and part of the bigger travel picture, but in a premium class of the future I am looking into my phone and through

into the cabin at my seat – though seat has become jargon for the piece of real estate I can use in flight.

"Customised to suit my sleep in a coma, talk till I drop or curl up with someone I love kinda mood, the phone allows me to configure the space with a bed, a sofa, two chairs and a dining table or whatever appears from a drop-down menu list of journey 'add-ons' – all of which are layered with variations for light/dark, warm or cool and quiet or loud. The space I have bought is interactive or inactive – it's a playground I can set up so no two journeys are the same. And the aircraft as a whole is finally designed around the customer experience rather than a LOPA."

The world is tailored to the passenger in White's vision. "This is the airline equivalent of getting a suit

“

VIRGIN HAS GOT THIS SORT OF
'ROCK 'N' ROLL IN THE SKY' IMAGE”



02



03

However, as Peter Knapp, global creative officer for Landor, and its resident expert on airlines, points out, becoming a cool airline is a trickier proposition than for an individual, given the nature of the business and service. “First of all, it’s hard to be a cool airline brand because the industry is typified by being risk averse as the safety considerations are so high in people’s minds,” he reasons. “And being risk averse is not something you naturally associate with a cool brand. Cool brands tend to be both courageous and unique, so you’re dealing with a paradox of sorts.”

That’s not to say Knapp has written-off the whole airline industry as uncool, though, as he continues, “Two airlines stand out and have done so for a while. The first is Virgin, which has an entrepreneurial quality based around its owner Richard Branson and all the things you associate with him, but also because it’s got this sort of ‘rock ‘n’ roll in the sky’ image. It’s seen to zig when others zag. Virgin is cool because it stakes a claim that is very specific about its anti-establishment qualities. The other airline – whether it’s cool or not, it’s certainly very attractive – is Singapore Airlines, again based around the enduring legend of the Singapore girl and all the romance and poetry associated with Asia. Especially when viewed with Western eyes, there is something there that is cool and mysterious. Those are the two, that for different reasons, have different qualities of coolness.”

- 01. Virgin Atlantic’s bar looks cool here, but is it as cool with passengers round it?
- 02. Korean Air’s take on an aircraft bar is pretty cool. The Celestial Bar features in the airline’s A380s
- 03. The world’s funkiest bunk bed? For more details on the Air Lair concept, see page 28

made in Jermyn Street – it’s personal. And the relief for the airline is you can take these requirements and tie them together, corral them just a little, and before you know it you have a range of parameters that can be defined and fed back to the passenger in the form of choice. Think flying à la carte. A good menu offers a range of courses covering a range of tastes and preferences of food types, all washed down with a selection of wine. A flight can follow the same narrative; at the top the courses – i.e. sitting, eating, watching and sleeping – and within each course a range of variables to make the progression through the journey agreeable.

In other words prepare the cabin to conform to the primary customer needs, the courses of sit, eat, watch and sleep and within those courses add a drop-down menu

that controls each of the elements as far as technically possible, and you’re off. People who have already flown halfway around the globe and just want to sleep get clustered into a quiet zone. The movie goers order their films, drinks and snacks for a marathon viewing session, and the travelling family get to dine around a central table, just as they might if they were at a restaurant.

This might seem far fetched, but these days with a top-of-the-range car I can preset the seat position remotely, warm the car, and even start the engine from indoors then open the boot as I approach – I can essentially customise the tool to suit what I need at that moment in time. I can even download an App to control my house remotely to ready it for my return after a journey away. Flying is about to get personal...



05



06

“

FOR WHAT IS A FUNCTIONAL MONUMENT,
IT ACTUALLY BECOMES QUITE A DELIGHT ”

04

04. It may not be conventionally cool, but Knapp rates Singapore's offering as very attractive
05. Landor's Peter Knapp finds luxury in a lavatory window
06. Knapp also appreciates the legend of the Singapore girl in a sarong kebaya

Van den Bergh affirms this point by highlighting two brands from another industry, in this case denim clothing. “Both Diesel and Levi's are quoted as ‘unique’ by about one out of every three US youngsters, while both being jeans brands,” he reports. “But for Levi's this uniqueness equals ‘affordable quality with a tradition’, whereas Diesel stands for ‘character, personality and style’.”

CABIN COOLNESS: WHAT'S NEXT? So how might these slightly esoteric and intangible definitions of coolness be applied to killer features and products on board that could make up the ‘coolest airline ever’? A good place to start is clearly the seating area. A few upmarket car brands already have massaging seats – and in the case of Mercedes-Benz, ones that hug your sides when its cars sense a tight corner – while others offer air-conditioned seats with perforated leather upholstery to allow ventilation. But could such features or other similar extras appeal – or even be suitable – on a wider basis for aircraft too?

President of inter-disciplinary design business BMW Designworks USA, Laurenz Schaffer, believes they can, although he recently experienced such clever seats on Lufthansa's new First Class and concedes he wasn't “a big

fan”. He's more interested in the “adaptivity of space” rather than what he sees as gimmicks. In his perfect scenario, genuinely full privacy can be achieved for relaxing or working with adaptable mood lighting to go with it, or if he's feeling more social, the space should be able to open up better than it currently does to really allow comfortable conversation and interaction.

Virgin, of course, has already installed airline bars, which is a cool idea, but can be less cool in practice. Due to its necessarily small size, the bar is only as cool as who's sitting round it – there's no escape to a quieter part round the corner if you'd rather drink elsewhere. As Knapp points out, such bars can “often be squeezed out for financial reasons”, but he does find coolness in another and more unlikely place. “Funnily enough, one of the things I find most luxurious is getting a window in the toilet because it makes that space feel so much bigger. For what is a functional monument, it actually becomes quite a delight. Small changes can make a big difference.”

Airline bunk beds are another popular idea – especially with kids – offering conviviality in an unusual reconfiguration of social space. Bunk beds would also utilise more cabin space brilliantly for economy airline passengers – as they have

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cool brands airlines can learn from

“Apple would simply redefine how we would interface with the brand from booking, check-in and onboard. Imagine Apple’s check-in area. No desks but roaming check-in staff with an iPad to check you in.”

– *Melanie Bassett Bigoni, Honour Branding*

“Airlines could learn from Milan’s high-end fashion brands as they’re very much about a promise as well as an experience. If they went to Via Monte Napoleone [Milan’s premier shopping street] they’d learn a lot about how to treat customers. You feel like a very honoured person there.”

– *Laurenz Schaffer, BMW DesignworksUSA*

“MINI cars could teach economy airlines much about dealing with small spaces and make them fun, trendy and well-considered ergonomically. The yacht brand Wally could really work at the front of the aircraft for first class. There’s an elegance in the way it uses beautifully crafted materials and functional styling – it’s a direct synergy. Wagamama or Yo! Sushi restaurants could make interesting airline catering options. There’s a kind of ‘pop’ quality to the way they do it that’s interesting. The Yo! Sushi layout offers a good use of space and makes the food experience more social and fun with its conveyor belt. Maybe there’s a way of translating that feeling to aircraft. Those restaurants are very condensed yet they fit a lot of people in a convivial atmosphere and create social ambience.”

– *Peter Knapp, global creative officer, Lander*

done for years on ships and trains – and the concept has been seriously looked into, notably by Air New Zealand, but for now there are still legislative issues to face.

Mike Crump, consultant director at brand specialist Honour Branding, works with many airlines, from Etihad to Saudia and BMI, and sees lots of ways to make cabins cooler. “Innovations and design features that tap into a latent consumer need or simply create delight from an ordinary travel experience are perceived to be cool,” he says. “From flat beds with individual temperature control, aromatherapy steam showers, to cool check-in apps that are simple to use, to a small considered hook design to place your headphones on a seat as you nip to the loo – all cool.”

IFE GOES SOCIAL A massive area of opportunity for onboard cool factor for Gen Yers – or indeed any individual used to being connected 24/7 and who gets frustrated when that connection is removed in the air – is inflight internet and social media access. BMW’s Schaffer states that, despite some carriers having become WiFi enabled, greater accessibility to data clouds is “still a big struggle”.

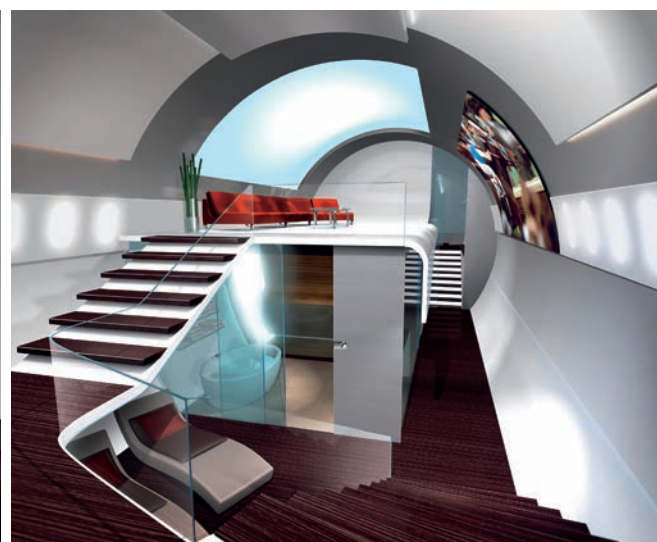
Knapp says the transition could have new social and business consequences beyond airline passengers merely keeping up with their social network, as he explains: “WiFi will facilitate an onboard conversation we’ve never had before. Customers will be able to share their real-time assessment of the journey – so you have praise and criticism at the same time – plus passengers can connect with each other from one end of the fuselage to the other.”

Of course some cool passengers – as the quote from *Cool: The Complete Handbook* mentions – don’t want to talk to other passengers. Times have changed since that book, but Knapp thinks the new tech could also create an opportunity to create more choice: “I think it’s a luxury to be cut off, but for others it’s a pain, so it might be that fuselages get divided as they used to be with smoking and non-smoking, into ‘talk’ and ‘non-talk’ zones.”

Meanwhile, many IFE software programmers are planning more open software architecture for improved future connectivity to remote customer devices, in the same way car makers are doing on many of the latest models. This could lead to customers not only being able



07



08

top 5 brand characteristics

InSites Consulting has researched the top five brand characteristics for Gen Y and come up with the following:

1. Has its own style	35%
2. Makes me feel happy	31%
3. Is up to date	28%
4. Has a clean reputation	27%
Is real/authentic	27%
Is unique	27%
Is something I can identify with	27%
5. Is clear and simple	24%

07. BMW

Designworks USA's vision of a 787 interior is undeniably cool. Here the master suite is set on an upper level.

08. How cool is that? A private cinema lounge on a 787

to play their own music or watch their own films through the system, but also being able to customise the screen they watch, just like many online kids' gaming websites can change the hair style and clothes of the avatar they want to be for the duration of their game. Or like users of TomTom satellite navigation systems can choose differently accented and gendered voices to guide them to their destination.

MATERIAL DISRUPTION Airlines could get cooler if the materials and finishes they used were more appealing from a tactile perspective, reckons Landor's Knapp. "There's a super slickness to most current aircraft cabin surfaces where everything looks good but you don't actually engage

your sense of touch," he says. "Everything has a similar type of finish but maybe in the future there will be more evidently disruptive materials, in terms of their sensory qualities – warmer or cooler, or textured or super smooth – offering greater engagement of the senses. I think the sense of touch is the one you currently use least in an aircraft cabin."

In terms of what types of materials that might mean, BMW's Schaffer sees carbon fibre as a key future cabin ingredient, as it is both light in weight and lightweight looking. Its flexibility also appeals, as he adds, "You don't need to apply a particular type of design language when applying this material. It can look very organic or geometric and it has a beautiful expression, able to be shown as the original material as it doesn't need much coating, or it can be covered."

Customer-adjustable mood lighting is also a big area for Schaffer, with organic light-emitting diodes in particular impressing him with their future 'cool' potential: "OLEDs are very thin and can be applied on very large surfaces to influence atmosphere in a wider sense."

Honour Branding's Crump is also excited by the power of technological advances in future materials making cabins cooler and more hospitable. "Electro-textiles will be able to control your lighting environment and IFE by touching the seat fabric; electroluminescent wall coverings will create 'living' walls and decorative wall lighting; and 3D flexible flatscreen technology will allow IFEs to be super light and super thin," he says.

All in all, if design creativity from inside and outside of the airline industry can harness future technology and materials with clarity, it sounds like future airline cabins – and more airline brands overall – could get cooler much sooner than we think. ☒

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simplepleasure

Designing an A380 interior is full of temptations. What to do with the space? A bar? Shops? Showers? Malaysia has eschewed such headline grabbers in favour of creating what it believes to be the ultimate customer experience

ADAM GAVINE, AIRCRAFT INTERIORS INTERNATIONAL



The launch of Malaysia Airlines' A380 marks not just the arrival of its new flagship aircraft, but also the culmination of eight years of work, including a major rethink of the design halfway through the project.

One man who has been involved in this project from the start is Nigel Goode, director at design consultancy Priestmangoode. The firm had previously worked on refitting the airline's B747 first class cabins with everything from seats to sidewalls, a design that was completed in 2004. When Malaysia announced its order for six A380s in the same year, that didn't mean an automatic shoe-in though. To make sure the airline's flagship was as good as can be, various manufacturers and designers were invited to pitch for the project in Kuala Lumpur, and their proposals were judged not just by the board, but also by frequent flyers. "It was an ordeal, but we won the pitch," says Goode.

The ordeal didn't end there as the aircraft deliveries were delayed from 2007 all the way to early 2012, and with the design ready to be installed in 2008, the delay gave the airline time to reconsider and substantially change the interior into what we see today on the long-awaited A380: a 494-passenger configuration with 420 seats in economy, 66 in business, and eight in first.

TRUE COLOURS The first design task was to rationalise and look at the airline's corporate identity for the colour palette. Work began on differentiating the classes, picking up on the airline's new corporate graphics. The intense blues of the previous business class were muted, the luxurious reds associated with first class were extended into the cabin, and to break up the hundreds of economy seats, the two economy cabins feature a mixture of red, blue and mauve. The idea is that the furnishings will be relaxing, with colour added by LED mood lighting in the premium cabins, and also the blankets and passengers. "We wanted the whole aircraft to be harmonious, with a warm feel all the way from first class to economy," says Goode.

Of course the aircraft must also convey a feeling of Malaysia, but this has been done in an understated way. "It can be a mistake to use clichés such as orchids in the colours and fabrics," says Goode. "The crew are Malaysia, they give you the Malaysian feel and hospitality, with how they dress and act. The cabin is a backdrop for the service, and they shouldn't clash. Sometimes less is more. It's a big temptation to add details, but you have to stick to quality."

And for those entering at the sharp end of the lower deck, they will find just that...

01. Gourmet meals and a luxurious seat are only half the story. The real Malaysia First Class experience comes from the warmth of the crew

02

03



02. When going into sleep mode, the seat and armrests slide down, and the leather area with the light becomes a headboard

03. A central divider means neighbours in the centre seats can be as sociable or private as they wish

FIRST CLASS DESIGN In the initial configuration, First Class was a 12-seat cabin located at the front of the upper deck, with a small lounge at the top of the stairs. However, when the project halted, and with time to reflect, Malaysia executives changed their mind about the configuration. First Class moved to the front of the main deck, and to offer greater luxury, the seat count was cut to eight.

"This is the airline's flagship so they wanted it to be the most luxurious, the most premium. Our brief was really to think of the passenger throughout," says Goode. "The Malaysian experience doesn't need gimmicks, they just wanted really wide, comfortable seats in all classes and the best passenger experience, creating a seamless journey from the lounge to the destination."

Malaysia selected EADS Sogerma's Ultimate 17 as the basis of the design, and with it came a potential marketing superlative for the airline: the widest seat and bed in the air, at 40in.

The previous design Ultimate 17s seats on board Malaysia's 747s, due to be retired as the other five A380s join the fleet, are very open, but for the A380 they wanted to create 'mid-privacy'. Aside from its dimensions and the kinematic, the seat's origins are unrecognisable. Creating the new seat required a close working relationship with Sogerma, and in the end, Goode is proud of how close the final product is to the initial renderings.

The sides of the seat and the ottoman are clad in dark wood and a dark purple leather, which is accented in the other cabins and also echoed in the Lantal carpets. Life is added through the red, purple and pink dots in the dark, sculptured seat fabric designed with Botany Weaving, and also through bright flashes of red Tapis ultrasuede wrapped around the inner seat shell and IFE monitor, and even under the stowage compartment lids. The dot colours were drawn from the company's previous logo, though it was updated in March by Landor, to create a simpler



behind the scenes

While Malaysia was selecting its design house, it also selected its seating suppliers. This dictated some of the design direction for Priestmangoode, but through previous projects they had already forged good working relationships with EADS Sogerma, Sicma and Weber.

For first and business class, Priestmangoode made full-size cardboard mockups in London, which were replicated in Malaysia for the airline's reference. In the first round of designs, Priestmangoode demonstrated four card models of the cabin in a London hotel for the Malaysia Airlines directors to appraise. The key board members were very involved, which meant regular trips to Kuala Lumpur for the Priestmangoode team to show them finishes and materials. The airline also involved its most valued flyers in the evaluation of mockups, layouts and materials.

The process was not simple, especially when creating the new premium seats. "Manufacturers' interpretation of a design can be quite different, so you have to find out why they changed it, and then go into minute detail. They don't do it because they're malicious, they do it because they're engineers," says Nigel Goode. "It's a constant battle. If you act like a prima donna you won't get anywhere, but you need to know when to be firm because you're so short of space, even on an A380."

design using three shades of blue. However, the red is still used to differentiate first class, with boarding passes and other items still printed in red.

To ensure fabric quality, Malaysia conducted extensive comfort trials, checking densities of foam, wash tests, and wear tests. All the fabrics were also taken to the Airbus factory to see how the colours reacted under the various mood lighting sequences.

The overall feel in first class is of understated luxury, which was the aim. "It's down to getting the feeling of warm Malaysian hospitality through, so the crew should be the focal point. This is really a vehicle for the five-star crew to work, with everything in its place, and an understated contemporary hotel style," says Goode. "Everything is sophisticated and seductive, but we also worked a lot with the Malaysia team to see the reality of how it can be maintained. The slightly muted colours work in service as they don't need constant cleaning and give a harmonious feel."

This low-maintenance approach was taken throughout the aircraft, with cabin crew and engineering working closely with the design teams to ensure that everything

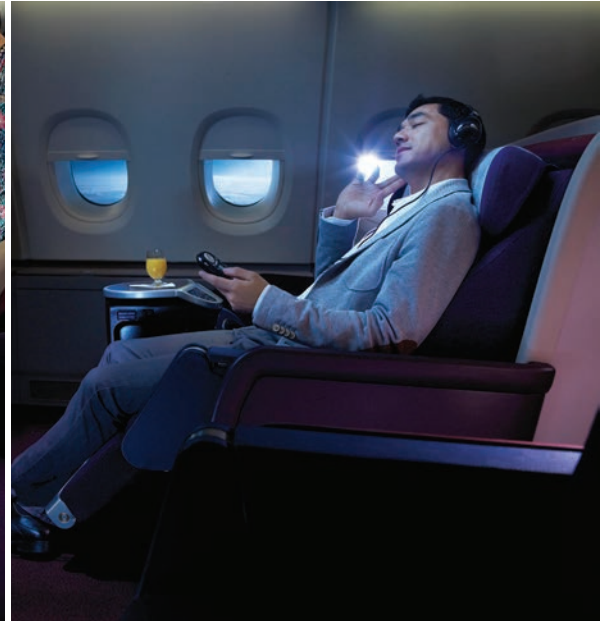
works as well as possible. For example, the aisle-side cocktail tables enable the crew to give you a drink without intruding into your private space, and were specified with cabin crew input so they could accommodate everything they need to during service. A lot of time was also spent inspecting the 747 fleet to see where seat scuffing and damage had occurred, and consulting with maintenance teams to see how to prevent that damage on the A380 without just adding ugly bumper strips.

Passengers with the coveted red boarding pass will appreciate the wide seat, which is firm but comfortable, with an 87in pitch. The dining table top, like its lid and the cocktail table, has a dark granite veneer, giving a pleasant feeling of solidity and coldness. There is generous knee room underneath should you want to use a laptop on the table, and a friend can join you for dinner on the ottoman opposite.

Many airlines wishing to create a sense of privacy in a suite opt for a sliding door, but Malaysia decided to keep the entrance open. As Dato' Salleh, head of customer experience at Malaysia Airlines explains, "One of our strengths is in having the best cabin crew in the world.



04



05



THE DESIGN ENABLES OUR CREW TO
GIVE THE BEST SERVICE TO CUSTOMERS
WHILE ALSO OFFERING PRIVACY



04. The Sigma Majesty provides the basis for straightforward – and forward-facing – luxury in business class
05. The entire aircraft interior is designed for relaxation

The design enables our crew to give the best service to customers while also giving privacy.” The opening is forward of the seat and in line with the table for access, so no feeling of privacy is sacrificed.

After enjoying some signature satay dishes, you may fancy a lie-down. Crew will be happy to help you relax, offering full-size pillows – just like you’d get in a hotel – as well as blankets, noise-cancelling headphones, and a Bulgari amenities kit. Press and hold a button and the seat slides down to create a 40in wide, 89in long, full-flat bed, the space accentuated as the armrests also slide down. A padded leather headboard is also revealed when the seatback is flat. If you wish to read in bed, a reading light is mounted in the headboard, and a second button pad has been added so you can raise the bed without sitting up.

The only feeling of technology is that Malaysia opted for a 23in IFE screen. As the screen is so large, it accounts for a major part of the passenger environment, so Priestmangoode worked with Thales, the IFE provider, to develop a special GUI with colours that tie into the suite. The carousel system lets you flick through games, TV, films and music, with 100% more content than on other aircraft in the fleet. To help the feeling of luxury rather than technology, the IFE handset is also stowed under a leather flap with a red ultrasuede interior – a little like a flash of bright lining in a bespoke suit.

MONUMENTAL SUCCESS Just behind first class is its dedicated galley. Sell scored a major contract for the monuments, with three lavatories for first class, eight for main deck economy, four for business, and three for upper economy, as well as four large galleys and two welcome areas – one at the first class entrance and one at the top of the stairs – where premium passengers can also get snacks.

These functional areas are of the same standard throughout, with dark wood laminate flooring for the galleys, marble-effect floors in the lavatories, and granite countertops that match the table surfaces in the first class suite. Where lavatories are located side by side, the centre wall can be folded away to create a PRM-friendly facility.

BACK DOWN TO EARTH Head rearwards from first class and you find 350 economy seats in a 3-4-3 configuration. However, the scale of the main cabin is broken up as it is split into three zones by a large galley and a large lavatory area. Also, rather than a single seat colour, the three colour-ways of red, blue and mauve are used, each in sets of two rows to avoid what Salleh calls a “boring monotonous feel”.

During the delays, the seat specification changed to a Weber model in 2008. The seat is essentially standard, though the dress covers have been stitched into a more quilted pattern to make them look more comfortable, and the colours of the plastics have been changed. Dark purple leather headrests complement the colour of the seats, meaning there is no need for crew to try to align hundreds of antimacassars during turnaround. The leather also harmonises with the leathers found in the first and business class cabins.

The seat offers a 32in pitch and a 6in recline, with the articulating seat pan creating an extra feeling of comfort. “It’s not just a bare minimum tourist class seat; it is comfy,

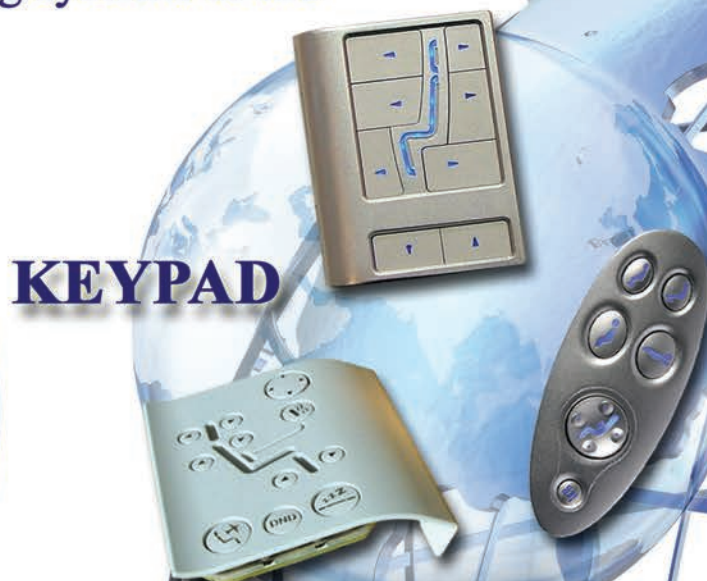
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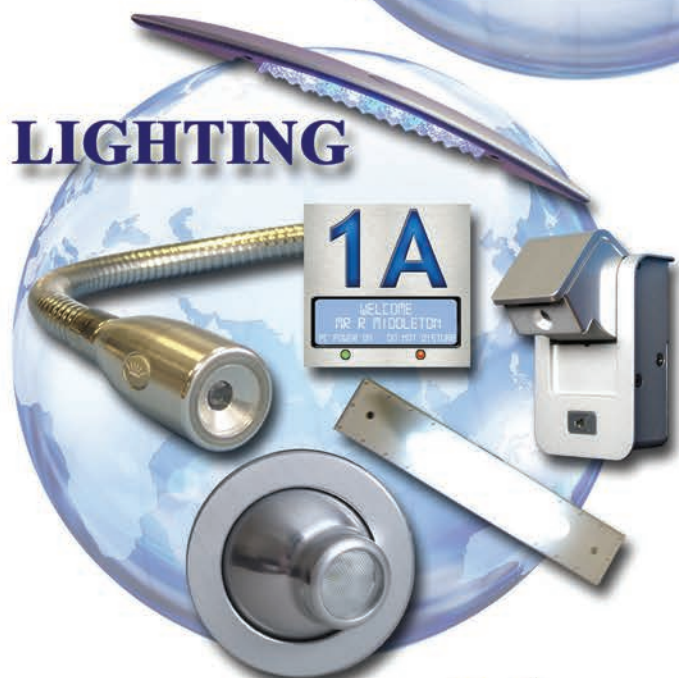
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it has a bit more padding, and a bit more space,” says Goode. “You can overdesign things, especially with around 400 economy seats, but the colour blocks break them up and add interest and contrast.”

Economy guests shouldn't be bored, with a generous 10.6in touchscreen IFE screen to keep them occupied, which does not require a footspace-robbing box – instead it is located under the seat cushion. There is also a USB port and shared power point, and a handset for playing games or calling for service.

We tried sitting behind a reclined seat and can confirm that the seat does intrude into your space, but the high literature pocket means that legroom is not compromised. The seats at the front of each economy section, as well as the exit rows, have very generous legroom, which Malaysia intends to make into 'hotseats', which can be booked for an additional fee.

BUSINESS IS UP And so, on to business class. Accessed via a wide, straight staircase at the front of the main deck, or via the upper deck doors, this is the only section that remained largely unchanged during the 2008 delays.

If approaching from the stairs, you are first greeted at the top by a granite-topped area with drinks and magazines. In the original design there was a small lounge at the top of the stairs for First Class use, but it was lost in the redesign and relocation of first class, together with the planned bar areas, and entrance areas to each class. Instead now there are two large lavatories either side of the stairwell to the same specification as the lower deck lavatories, and a small office where crew can finish their paperwork, manage the IFE, or adjust the lighting.

The carpet, armrests and seat fabrics reflect the mauve leathers used in first class and economy, with pale plastics used for the seatback shells to add light and contrast. The Sicma Majesty was selected as the base kinematic for the 66 seats, to which Priestmangoode added an all-new shell and centre console, as well as a stowage compartment for shoes, a small pull-out compartment under the IFE screen, and pockets for magazines, books and headphones. The

human touch

When Malaysia was looking to introduce the A380 into service, it didn't want to just focus on the aircraft itself. “Our strategy is to focus on every single customer touchpoint, from the point of purchase, check-in, lounge, boarding, departure and arrival,” states head of customer experience, Dato' Salleh.

When first and platinum customers arrive at Kuala Lumpur International Airport they are greeted by a team member, who escorts them to the check-in counter, where there is also an immigration officer, so when first and platinum passengers check in they don't just check bags and get a boarding pass, they also have their passport cleared by Malaysian immigration. Then passengers are escorted through a special immigration lane to the lounge.

The lounge itself has been refurbished, and Malaysia is the first airline in the world to have its cabin crew work in the lounge. “We know the crew are the best in the world and we want to extend the five star service they give in the air to our lounges on the ground,” says Salleh. “So we have selected 186 of our crew to fly one week in the month and work three in the lounge. So the people who meet and greet you are actually our crew, the people in the lounge are also our crew, and then on the aircraft you will continue to be served by our crew.”

centre console features a shared wood laminate-topped table and ports for the IFE handsets. “Some airlines want a completely new ground-up new design, others want to take a seat and just change the trim and finish, and then others like Malaysia want to take the basis of the seat and do as much as they can to give it its own identity,” states Goode. “For us that's important as whoever we design for, the seat must portray the culture of the airline.”

In this case, the airline's approach of simple passenger satisfaction means no herringbones, no backwards flying, just a simple inline 2-2-2 configuration. There is a real feeling of space in the cabin, and you keep that feeling of space when seated, with a 21in-wide seat, 72in bed and 74in pitch. As with first class, this is much more than on

06. To mark the A380 entering service, the airline has put its crew through intensive training programmes, including working in the lounges



06

practice makes perfect

Beginning in April, around 550 of the airline's top cabin crew were identified and specially selected to undergo training in various aspects of Malaysia Airlines' A380 inflight service across the various classes. The initial training involves an intensive two-week onboard process familiarisation and safety training programme, followed by 'soft skills' training to address the functional and emotional needs of Malaysia Airlines customers. Crew are being trained in batches of 20, and they will all be trained by December, 2012.

Head of customer experience Dato' Salleh explains, "Our cabin crew training modules were based on an in-depth study of the passenger journey experience and feedback from our regular and loyal customers on the type of service they would like to experience on our A380. With this training, our cabin crew will be able to bring hospitality to the next higher level of premium services by fulfilling the passengers' emotional needs.

"We will have 21 crew members on board the A380, to ensure the delivery of impeccable inflight hospitality. It will be a challenge to manage the additional 135 passengers compared with the B747-400 capacity, but our cabin crew will need to pass strict standards of training before being assigned for duties on the A380."



07

expect to find premium economy, but Malaysia considered the idea and dropped it, as it is not offered on the rest of the fleet. Instead 14 seats were added to business class, and there are plans to reconfigure again for a further two rows of business class. This area is tranquil and its small size gives it a premium feel, which is why Malaysia is considering reserving it for frequent flyers. There is also extra space and stowage for window seats, created by the fuselage shape.

There are so many possibilities that Malaysia views the cabin as something of a flying testbed for ideas – the current favourite being a premium economy area once it can be introduced to more of the fleet.

"We would like to make this cabin a testbed for a future super economy class product," states Salleh. "The first step would be to declare it child free, then add extra services such as satays and business class amenities, and charge a bit extra. If we see there is demand then maybe in future aircraft programmes we will seriously consider a super economy compartment. We're trying to do it in an incremental manner to see if it is acceptable to passengers."

Ah yes, child-free. This controversial idea is partly to create a desirable area for adult travellers, and also because the space where a baby bassinet would go is too close to a row of business class seats. "Personally I would love to make this cabin child-free. It would be a unique offering," states Salleh. "It is a work in progress for us to finalise if we want to proceed or not. We are keeping the option open, that's where we are today. At the moment you don't pay extra to be on the upper deck, but if it does become child-free we will probably make it slightly premium class," states Salleh. (For more details about this proposal, see our family seating feature on page 72.)

The next step in Malaysia's journey is to recreate the flagship experience onboard its new 737-800s, using the same trims and finishes for consistency across the fleet. The simplicity of this A380 may not have stolen all the headlines, but it may well steal passengers' hearts. ☒

07. Possibly the most fascinating part of the aircraft, the upper deck economy cabin holds great possibilities

the outgoing 747s, which offer 58in. "Where some carriers are trying to shave bits and pieces off, Malaysia has a really very generous offer," says Goode. "Some rivals are very tight and measure bed length point to point, whereas Malaysia keeps it very simple and straightforward, with a massive pitch, a large cocktail table, lots of storage, good IFE and a large screen. The cabin looks spacious, which is important for the perception of what you'll get."

There are only two criticisms of the seat. The first is simply a product of being inline: there is no direct aisle access for window passengers. The second is more serious: the seat is not quite fully flat. It is still comfortable, but a surprise given the thought put into passenger comfort, and with full-flat business class fast becoming the norm. However, the airline has sought feedback from frequent flyers, and also from *Aircraft Interiors International*, and is planning to have the seats modified to go fully flat.

ECONOMY LABORATORY Behind business class is a further economy cabin with 70 seats. This is where you might

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Clever reworking of the hard product in economy cabins could yield increased customer satisfaction, and increased profits

JOHN WALTON AND ADAM GAVINE, AIRCRAFT INTERIORS INTERNATIONAL



From a passenger perspective, economy seats haven't changed a great deal over the past 50 years. Width and legroom have shrunk, entertainment and power options have grown, but other than that a seat is still a seat. However, all that looks set to change as carriers reexamine their economy offering in a bid to boost profits. The questions all airlines are asking are: how can we improve our overall yields in economy? And what will passengers actually pay for?

The answers will differ based on an airline's passenger demographics, budget and ability to upgrade products. Some carriers are investigating the benefits of installing revolutionary new seating to unlock new revenues; while nearly all are working to improve yields through more inventive marketing, adding value to their existing product.

GO EXTRA WIDE Originally codenamed '20/17/17' in reference to its seat width in inches, the idea behind the

Airbus economy seat triple concept first shown on B/E Aerospace's stand at this year's Expo in Hamburg is immediately apparent: extra-wide aisle seats, compensated for by slightly narrower middle and window seats.

The concept aims to monetise Airbus's slightly wider fuselage cross-sections. An inch is taken from each of the other two seats (currently just wider than 18in), making them 17in – the same as a standard Boeing 737 economy seat. "It's a win-win situation for everybody – for passengers wanting extra comfort and for airlines maximising the use of space in the cabin," explains Susana Hrnkova, head of interiors marketing at Airbus. "Over the last 30 years the human body has changed, and we are bigger and taller, with larger shoulders and larger hips, so we had an idea to offer extra comfort for people who want to pay for it, which generates additional revenue potential for airlines," continues Hrnkova. "Passengers are ready to pay extra – already airlines charge extra fees for seat



flush with success

Aiding the push for more seating space is the modular lavatory system (MLS) from B/E Aerospace (*below right*), and the Space-Flex PRM lavatory from Airbus.

The MLS uses Spacewall technology to free-up cabin space, creating room for up to six incremental seats. Meanwhile, Space-Flex makes efficient use of the rear of the cabin, to accommodate two PRM lavatories and a galley, while freeing up more revenue space in the main cabin. This is the first time a full PRM lavatory has been available in a single-aisle aircraft.

Boeing recently selected the MLS for its 737 Next-Generation family, as well as the 737 MAX. The estimated value of the award is in excess of US\$800 million, exclusive of retrofit orders.

"The advanced modular lavatory system uses proprietary technologies that increase cabin floor space, resulting in increased passenger placements, as well as improved reliability and simplified and speedier maintenance, resulting in increased flight hour availability," said Amin J. Khoury, CEO of B/E.

The company has been ramping up production of MLSs, with deliveries for Delta Airlines' new-buy 737s expected to begin in the third quarter of 2013.

Space-Flex has also found a buyer in TAM Airlines. José Maluf, contracts VP at the airline stated, "Space-Flex maximises cabin revenue space and gives us more flexibility. In the future we could easily adapt to market demand and improve seat-mile costs by adding six seats without any compromise in comfort."



positions with extra legroom. So a passenger will pay extra for an extra-wide seat. For example, a larger passenger, a passenger looking for more personal space, or parents travelling with young children on their laps. Or, if I'm travelling for business and I need to work, with the extra-wide seat I have room to work and not interfere with the passenger sitting next to me."

Hrnkova says Airbus has tested the seat with several airlines who are now thinking how to integrate the concept into their business model. However, carriers might question whether they can reliably sell one-third of their seating at a premium – if they can't, there are economic questions as to whether passengers will pay in advance for what they can get for free as a frequent flyer benefit, at check-in seat assignment, or by simply moving seats when on the aircraft.

STAGGERING ABOUT Staggered seating is no longer just for business class according to Thompson Aero Seating, which has designed its staggered Cozy Suite for economy use on both narrow- and wide-body aircraft. "With a narrow-body application, because of the unique design of the Cozy Suite, we gain 2in per pax place on seat width," asserts Thompson's vice-president of sales, Brian Rogers.

"Seats on Boeing 757s and 737s will be 19in-wide and on the Airbus A320 family of aircraft they will be 20in-wide."

Long-haul benefits include a natural place for travellers to rest their heads: the cushioned recess between seats that also dramatically increases shoulder space. But there's also something in it for the airline: "With the wide-bodied long-haul application, we gain an extra column of seats maintaining a seat width of 17.8in for most aircraft types with an 18.7in seat width on 10 abreast for B777 aircraft," says Rogers.



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01

Alternatively Thompson offers an extra-wide application: “We can offer a number of seat widths on both narrow- and wide-bodied aircraft, offering new revenue streams to airlines and maintaining seat count,” says Rogers. Seat widths will vary on aircraft types, with an 18-18-24in configuration available on an A320. The Cozy Suite can operate from a 31-38in pitch.

Thompson is currently working to fly Cozy Suite with a number of airlines, with no firm date for installation available at present.

IN THE SADDLE For a concept that could make even the most hardened budget carrier blanch, look no further than the SkyRider concept from Aviointeriors, an ultra-high density seat which can be used at a pitch of less than 23in.

Although just a concept, SkyRider has been completely engineered and is ready for testing. The SkyRider has been designed and engineered to offer the possibility to even



further reduce ticket prices while still maintaining sound profitability and a degree of comfort, which, even with a dual- or three-class seating arrangement, will allow maximum certified passenger capacity of the aircraft.

The SkyRider is intended as a new basic class. The passenger's seating position is similar to that of a touring motor-scooter rider. This posture means that the overall longitudinal space occupied by the seat with the seated passenger is far less than that of a conventional, very high-density 28in economy class seat.

Furthermore, in the SkyRider arrangement, a partial overlapping of the passenger seating between rows is allowed, thus further increasing the cabin density. The seat structure itself also provides space for personal baggage.

LIE DETECTOR However, the most revolutionary economy product introduced to boost revenues in recent times remains Air New Zealand's Skycouch, manufactured by

01. The SkyRider concept from Aviointeriors can operate at a pitch of less than 23in



02



03

Recaro. Occupying seats ABC and HJK in the first 10 rows of a Boeing 777-300ER cabin, each Skycouch features a swing-up padded leg rest that creates a sofa-style product with armrests that fit nearly flush to the seatback. With the sidewall armrest up, the 'couch' is 1.55m-long, while the width of the cushion and leg rest combined is approximately 74cm (measured from the centre of the seat cushion at the back to the front edge of the leg rest). This provides enough room for two passengers to sit/lounge

with their backs to the windows, hence the obvious moniker, 'cuddle class'.

With Air New Zealand asking for the price of two standard economy tickets, plus approximately half an additional standard fare for the third, unoccupied seat, Skycouch is interesting from a revenue perspective, as it enables the airline to recoup some of the lost revenue from flying an empty seat.

So how does the airline control the selling of Skycouch to prevent it reducing yields on 'sold out' flights? Does it become unavailable for booking at some point?

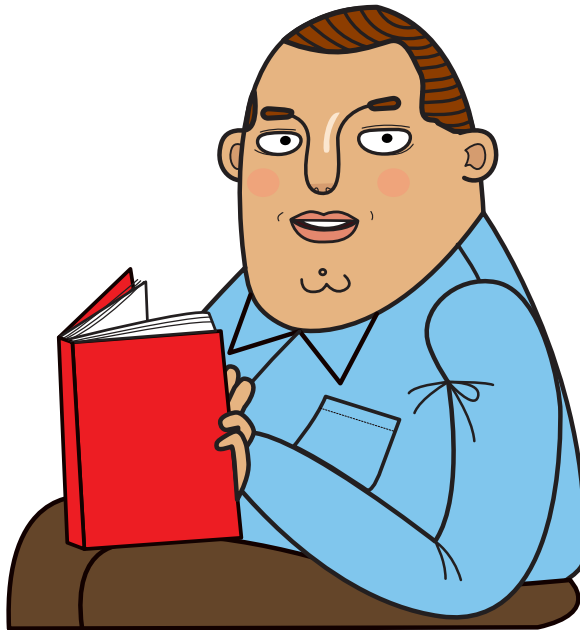
Kerry Reeves, programme director at Air New Zealand explains, "It's a fairly complicated issue but it would never become unavailable, just more expensive. Although obviously if all the Skycouch seats are sold or more Standard Economy demand occurs then they will be unavailable."

"Essentially we revenue manage the price point (this is done daily) against the likely loadings from the demand curve. This takes into account the predicted demand, etc when the flight is still sometime out and then more focused on the selling profile as the flight gets closer. This is no different to the way we revenue manage the other classes of seats sold in Economy."

The airline has had some issues with some wholesalers in other markets not selling SkyCouch to travel agents, but Reeves is confident in the product's future. "The Skycouch is proving to be a great product for both the airline as well as the passengers. We have now had it in service a little over 12 months and are now at the stage where we want to review our strategy going forward to maximise the value to

02. SkyCouch lets passengers cuddle between Auckland and Los Angeles

03. The Airbus Extra Wide Seat sees a 20in-wide aisle seat next to two 17in counterparts



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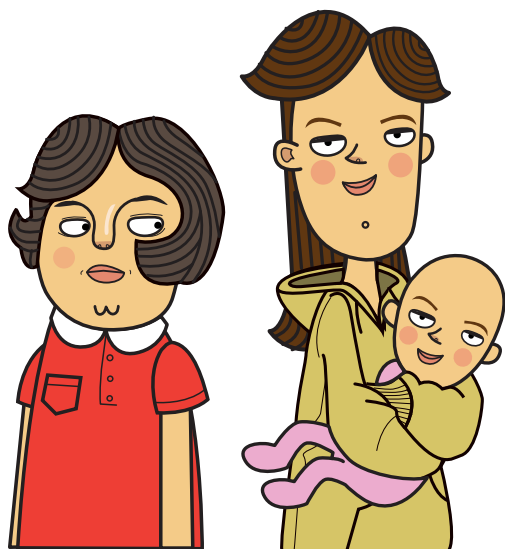
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be achieved. This will include opening up the distribution channels from the online-only option that we are currently selling it on, as well as the commercialisation of the product to other airlines.”

SELF-IMPROVEMENT Not every airline is looking to introduce radical new hard product, but nearly all are looking to boost revenues by working with what they already have on board. The most obvious example of this is the current trend to charge passengers for existing economy seats that offer extra legroom due to their location – in emergency exit rows or at the front of the cabin, for example.

However, some airlines are taking this concept further, offering a product between economy and premium economy, with a few extra inches of legroom available free to high-tier frequent flyers or for a charge to regular economy passengers.

United's Economy Plus offers regular economy seats and service with an extra 5in pitch at 37in, while Delta's Economy Comfort seating offers an extra 3in pitch at 34in pitch – and free booze – internationally. These seats are located just behind the premium cabins and in front of the rest of economy.

Beyond selling extra legroom, some airlines are also experimenting with selling extra elbow room, partly in response to data showing passengers are getting bigger. Existing ‘customer of size’ models such as that offered by Southwest include one person buying two seats – with or without a refund if the plane departs at less than 100% load – or two passengers sharing a blocked middle seat.

This offer is now being made available to other passengers who want more room on board. For example,

in the zone

With airlines selling the bulkhead seats previously given away free to families with infants, there's an increasing argument for creating family areas at the very back of the aircraft. Families boarding first would go straight to the back, not getting in anyone else's way, and would benefit from the extra storage options for their carry-on found in the rear galley area.

Families would need to perceive extra services as a benefit rather than as ‘banishing babies to the back’. Selling points could include: quick access to the cabin crew, for warming bottles and preparing kids' food; avoiding the glares of passengers disturbed by their child; extra servings of snacks and children's meals; cabin crew story-time for kids while parents enjoy some quiet time (as available on Air New Zealand); the space for kids to play board games with new-found friends made on board; assistance with stowing family carry-on items; and extra help during the flight.

Meanwhile, offering extra legroom seats at the front of the cabin and a family zone down the back could help position an airline as one dedicated to meeting the needs of both businesspeople and families. And airlines could use the deepest discount fares to create a buffer zone. Clever seating of passengers with the cheapest tickets between family and business zones could ensure that the noise and disturbance of families (and, let's face it, people in the cheap seats) don't affect the pricier seats and frequent flyers at the front.

For more family travel discussion, see page 72.

Icelandair's Economy Comfort class offers a blocked middle seat for an additional fee over standard economy, together with an extra inch of legroom and complimentary food and drink.

The option for passengers on either side to buy the empty middle seat requires careful management. Pricing is key: for solo travellers to be interested, the price has to be below an airline's business and premium economy offerings. Meanwhile, the airline would ultimately like to sell every seat available at full price – selling ‘unsold’ seats at a discount is only ever a ‘second-best’ solution, but it can have a big impact on yield, as Air New Zealand has discovered with its Skycouch concept.

COOKING THE BOOKS In their quest to boost profits, airlines are increasingly selling perks to economy passengers previously restricted to frequent flyers or premium cabin customers. These include greater ticket



IF AIRLINES UNBUNDLE OFFERINGS PREVIOUSLY RESERVED FOR BUSINESS OR FIRST CLASS PASSENGERS, THEY REDUCE THE ATTRACTIVENESS FOR THOSE PREMIUM CABINS ”



flexibility, early seat selection, best seat selection, priority check-in, extra hold baggage, fast-track security, lounge access, priority boarding, inclusive food and beverages, free selection from the trolley, upgraded food and beverages from the premium cabins, fast-track immigration, priority baggage, and even a fast-track escort through the airport.

American Airlines' Five Star Service, US Airways' PreferredAccess, easyJet's Speedy Boarding, easyJet Plus and Flexi Fares, and Virgin Australia's Flexi fare are all good examples of this trend.

Of course, if airlines unbundle offerings previously reserved for business or first class passengers, they concurrently reduce the attractiveness (and thus demand) for those premium cabins. À la carte pricing may not be, overall, as economically beneficial for airlines as a prix fixe menu.

As Jay Sorensen, president of the IdeaWorksCompany, an airline ancillary revenue consulting firm based in the USA explains, "British Airways is an example of an airline that has unbundled an element of their Club World product. Lower-priced business class fares and reward seats don't receive free seat assignments. I've been quoted a price of US\$98 for advance seat assignment for a one-way Club World trip from Chicago to London. Beyond that, I'm not aware of airlines that are unbundling their premium class products.

"Business and First class should not be unbundled – that's the point of a premium class cabin. It should provide exceptional comfort and convenience for one price, and this is especially true for global network airlines. Premium class passengers don't want to be bothered by à la carte choices," adds Sorensen. "I'm a strong advocate for à la carte pricing for economy class passengers, where frugality is a feature often pursued. Premium economy is an interesting middle product and I would suggest a carrier follow its branding principles when deciding fees for this cabin. United could easily charge fees there, while a carrier such as Virgin Atlantic should be far more careful.

"The world of low-cost carriers will always provide exceptions, especially as they add premium services. AirAsia X provides a premium flat bed service. Amenities include many of the usual perks but certain exceptions exist. For example, beer, wine, and cocktails will incur additional cost, as does video entertainment. The usual admission to a lounge is not included. Of course, their premium fares are tiny compared with the competition. Meanwhile, Aer Lingus, as a low-fare carrier, offers a traditional business class with all perks and privileges normally associated with global network carriers. ☒



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“

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02

01



With the arrival of its seventh and eighth A380s at the end of May, Air France has unveiled its new Première and Classe Affaires cabins at the heart of an ambitious policy to move upmarket and remain competitive in the luxury market.

“With satisfaction extremely high in Voyageur [economy] class, the challenge came more from the high end,” says Carole Peytavin, vice president of marketing R&D at Air France, of a cabin design that was already seven years old by the time it came into service in 2009. Priority went to modifying the nine seats in La Première (first class), while meeting the constraint of keeping to the original footprint, in what was virtually a bespoke refit for an estimated cost of €200,000 per seat, compared with around €60,000 for the original seats.

In fact, it has been an ongoing upgrade – the Premium Voyageur (premium economy) cabin was added to the fifth A380, new flat bed seats in Classe Affaires (business class) for the sixth A380, and the restyled La Première Cabin for the seventh and eighth, with four more aircraft to arrive during 2013 and 2014, the forerunner of a “significant upgrade” of first and business classes across much of the fleet that is expected to be announced this autumn.

Air France brought in the Yellow Window design consultancy (the Parisian subsidiary of Enthoven Group) – which had previously worked with Air France on the bar of the Boeing 777-300 – to redesign La Première, with a double brief to meet the demand for improved comfort and create a style to suit the image of luxury travel and market demand for unique spaces like boutique hotels.

“They [Air France] considered that the first-class style no longer corresponded with their status,” says Patricia Bastard, director of Yellow Window. “They wanted something more slender and lighter, that corresponded with an image of Air France Première that is feminine, refined, French, open and spacious.”

As a result of passenger surveys and consultation with customer feedback groups who said, “We want more privacy, but we don’t want an enclosed space,” an open seat was chosen, providing, as Peytavin puts it, a European

bienvenue chez Maison France

Behind the idea of travelling La Première with Air France is the sense of belonging to an exclusive circle, the refined world of the happy few who feel at ease among themselves, in a transversal approach to design a lifestyle that encompasses the whole journey from the moment you reach the airport, to the time you step off the aircraft at the end of the flight.

There are 162 dedicated ground staff at Paris Roissy-Charles de Gaulle to provide one-on-one personalised assistance and, as Franck Tourlonias, communications manager of the Air France hub at Roissy, puts it, it’s the details that count – the bellboy who collects the luggage, a dedicated circular vestibule for check-in, an exclusive channel through passport and baggage control, and a fleet of chauffeur-driven cars to take passengers to the aircraft.

At the heart of the ground experience is the La Première lounge, designed by architect Didier Lefort to create a feeling of privilege, calm and space. The lounge has many luxury features, including an Alain Ducasse restaurant, with a seasonally changing menu and some of Ducasse’s trademark dishes from his three-star Michelin restaurants in Monaco and Paris; artwork lent by a Paris gallery; and a relaxation zone, where you can stretch out on daybeds screened by partitions composed of a ‘wheat field’ of brushed aluminium rods, or enjoy spa treatments from the Biologique Recherche natural product range. With curved lines, excellent sound insulation and not a logo in sight, this is a hushed cocoon, far from the din or brash lighting of the normal airport terminal.

halfway house between the enclosed suite favoured by Asian and Middle Eastern airlines, and the open cabins appreciated by North and South American customers.

Inspired by a blooming tulip, the new seat enables travellers on one hand to “appreciate the space of the A380, and on the other a more intimate space when you are seated,” says Bastard. “You feel really protected, you can’t be seen by others, and when you sleep you are more protected from people passing through the corridors.



03



04

01. The curved front staircase is for the sole use of La Première passengers
02. Why not grab a drink before promenading between decks?
03. French café culture and conviviality
04. Gimmick du jour: The Galerie d'Art, where you can enjoy a museum visit via video screens

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05

“An aircraft cabin is still quite a confined space. If one makes enclosed suites, even using luxurious materials, it will never be very qualitative,” continues Bastard, “so the choice we made with Air France is to consider that, after all, the voyagers who are in Classe Première belong to the same world and should not be enclosed; on the contrary we should play on the space, opening up the cabin to give the sentiment of being at home in the ‘maison France’.

“They brought us in to work on the design, knowing that we must rework the design in improving the seat and completely change its appearance, but without changing the technical specifications,” adds Bastard.

TIMBER! Yellow Window developed the first class seat in collaboration with Contour, the manufacturer of the original seat. Although overall dimensions remain the same – each seat converts into a 2m-long (82in) fully flat bed that is 61cm (24in) wide to save the time and expense of homologation – the weight was reduced by reducing the trimmings on the shell. “Technically it has kept the structure of the earlier seat, but in terms of volume and image we have changed it considerably, with a much more open design, and an improved ergonomomy through slimmer headrests, adjustments to the seats, and wider armrests,” explains Bastard. “There is also a more luxurious stitched leather, and we have taken out all the fake wood that gave it a downmarket feel, and the colour has changed to a patchwork of warm greys and touches of red. We also completely reworked the privacy screen, making it much larger to give a seat that is open on the cabin, while allowing privacy inside.”

With sockets and cables hidden away, Yellow Window prioritised looks over technology in deliberate contrast to the technical, functional style of business class. “We were determined to make the technology disappear as much as possible, so we rethought the control panel for the seat, as well as the reading light. Although we are in an aircraft that is evidently pretty technical, the aim is to make it as user-friendly and accessible as possible,” explains Bastard.

Air France also took the opportunity to redesign the colours inside the cabin, moving from a dominant beige

a walk in the park

With the opening of its 3,000m² Classe Affaires lounge in Air France's new Roissy 'Satellite 4' hub on 28 June, Air France has unveiled its largest and most sophisticated business lounge yet. Keeping up the idea of a continuous experience between ground and aircraft, it's no coincidence that Brandimage-Desgrippes & Laga, who worked on the original A380 interiors with Eric Gizard, is here again, this time in collaboration with French designer Noé Duchaufour-Lawrence, whose suave yet futuristic designs include the restaurants Sketch in London and Senderens in Paris.

Unlike the La Première lounge, where there are rarely more than 20 passengers at a time, this lounge can accommodate more than 600. Inspired by the park and the concept of the lounge as a promenade through the different spaces and services, a tree theme – seen in a real preserved tree, leaf and tree trunk motifs along the walls and unusual sculpted Corian tree lamps – runs through the design like a metaphor for nature, accompanied by hardwood floors and natural green, beige and ochre tones.

Curved wood screens, resembling the shells of aircraft seats, separate the lounge into distinct work and rest areas, with swivel leather seats in some places, streamlined daybeds elsewhere, as well as a VIP zone reserved for famous faces. It is the first Air France business lounge to offer hot food – breakfast until 11.30am, selected hot and cold dishes thereafter – as well as meeting demands for connectivity with free WiFi, a computer lounge, iPad desk and iPad bar.



06

05. Classe Affaires passengers, located on the upper deck, get a new longer and wider 'full-sleep' seat from B/E Aerospace

06. There are 38 Premium Voyageur seats on the upper deck, in a 2-4-2 configuration



07



08



PASSENGERS CAN PROMENADE AROUND THE AIRCRAFT AND BETWEEN DECKS



07. The privacy screen has grown, but when dropped, neighbours can still socialise

08. Bon nuit. While you retire for a nightcap, cabin crew will prepare your bed

to softer, warmer greys. “To give a sense of luxury when travelling first class, we used white and grey that are linked to Air France, with light colours that also increase the feeling of space,” says Peytavin.

Meanwhile in Classe Affaires (business class), located on the upper deck, Air France has introduced a new longer and wider ‘full-sleep’ seat manufactured by B/E Aerospace, gradually being introduced on the A380 and B777 between 2011 and 2013, while preserving the same footprint in a 2-2-2 configuration, with a generous 2m bed length. A removable armrest makes the seat accessible for reduced mobility passengers, while a fixed footrest allows additional storage space in the seat back.

CAFÉ CULTURE Has the size and the layout of the A380 changed the way passengers behave? Air France conceived the voyage as “a spatial experience,” says Peytavin. “We designed the A380, which is a big aircraft, to give you the sort of pleasure experience you used to get when travelling across the Atlantic on a cruise liner.”

Like on an early Transatlantic liner, passengers can promenade around the aircraft and between decks, while preserving a similar notion of separation between the classes. Thus La Première passengers travelling on the main deck can climb the wide, curved staircase reserved exclusively for them at the front, up to the first-class bar and the Galerie d’Art, reserved for Première and Classe

Affaires, where exhibitions are presented on video in association with major museums. As seats are spread over both decks, passengers in Voyageur class can still move between the levels by using the stairs at the rear. The six bars (one in La Première, two in Classe Affaires and three in Premium Voyageur and Voyageur classes) play a key role in what Peytavin sees as a characteristically French touch of conviviality and café culture, a place where passengers – both business and leisure – can mix over a glass of wine.

A key feature in creating the right ambience is the sophisticated mood lighting, designed in-house by Air France with input from Brandimage–Desgrappes & Laga. Almost 80 onboard scenarios are programmed automatically, depending on the seating class and its cabin harmony, with varying colour temperatures and intensities, according to the flight profile, whether you are flying east or west, the departure time and duration of the flight, to help passengers cope with jet lag. For example, a sunrise atmosphere can be set at breakfast time, a more restaurant atmosphere for dinner, or a red glow for sunset.

Finally, the new aircraft also has an enlarged IFE offering, and a new guide to help passengers find their way round the 300 CDs and vast VOD selection. Along with a wide choice of Hollywood and French films, Air France is increasing its international film coverage, notably from China and India, and the choice of languages. A USB key is available for all classes to download information, while inflight information includes views from three cameras located on the aircraft. ☒

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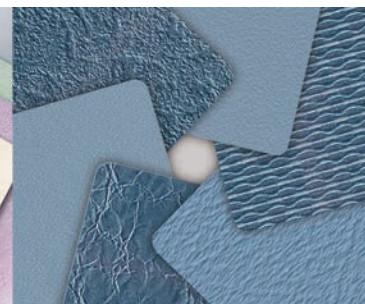
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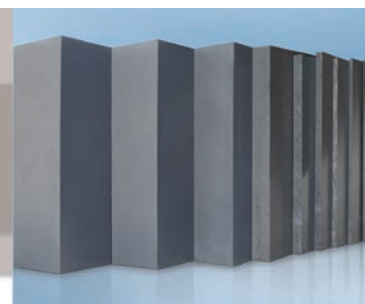
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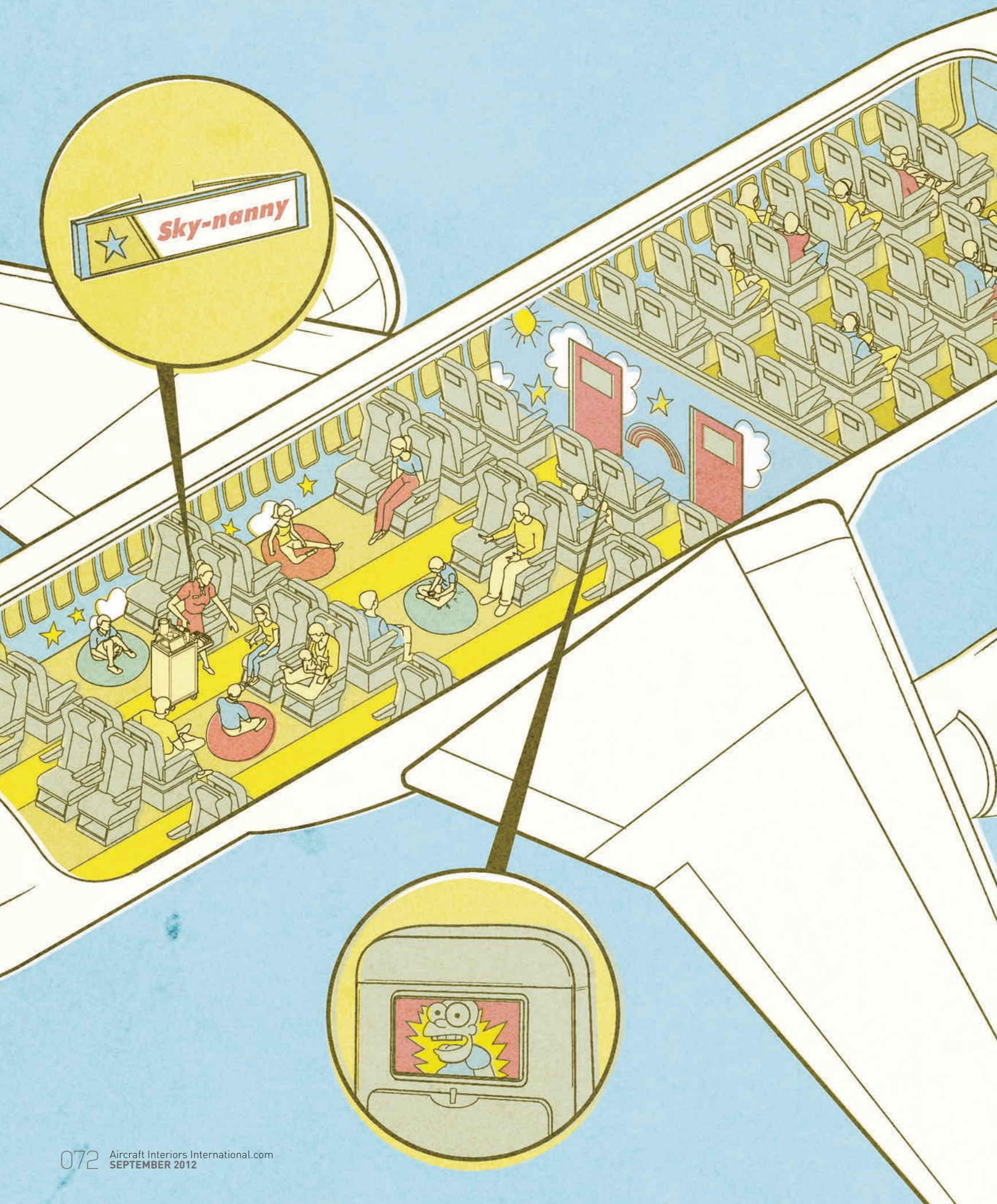
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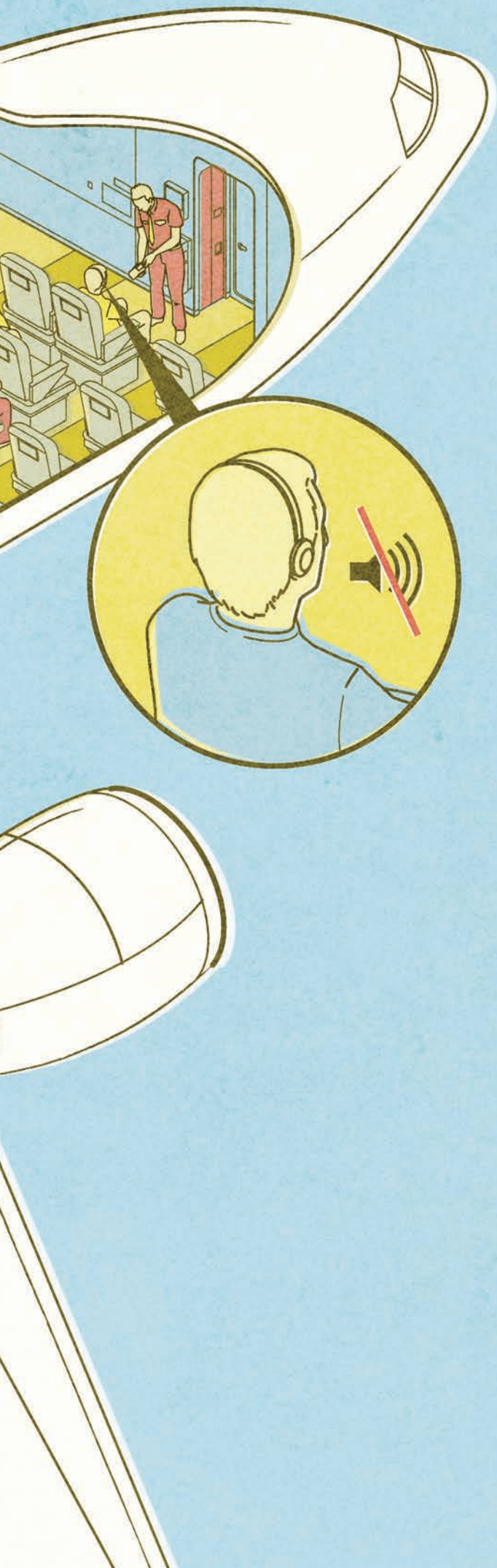
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familyvalues

Air travel with a young family is tough. Some revenue-generating seating schemes are splitting up families, while many passengers dread being near younger travellers. It may be time to restore some family values

SASHA BROWN, AIRCRAFT INTERIORS INTERNATIONAL



The challenge of family travel has led to the introduction of dedicated family-focused services as part of the onboard experience. Some airlines have seen a revenue opportunity for assigned seating, but balancing increasingly popular concepts and keeping an eye on profit seems easier said than done.

The reality is that most airline passengers prefer to be as far away from children as possible. A popular online forum on family travel highlights some interesting views and comments, ranging from practical opinions that advise parents on pre-flight preparations, to more bizarre suggestions such as “packing all your children in one bag” as a possible solution.

One passenger that flew business class on a major airline from Buenos Aires to Madrid posted a comment saying that the eleven-and-a-half-hour journey was a complete nightmare. “The couple sat right in front of me were flying with a little devil – he was about 10-11 years of age – who appeared to have read the whole handbook of ‘not-to-dos in business class’.”

The post then read that eventually one parent resorted to sleeping on the floor in order to give the child ample space to sleep; by this time the flight was only one hour and 30 minutes from arriving at its destination. “So from my own perspective, that single kid turned the airline’s €100 million investment into an irritating experience. At no point did the airline appear to be ready and equipped to offer the child something better to kill his time and improve mine,” the comment read.

Complaints about travelling with children are common (and who can forget the lady who took Qantas to court, claiming a toddler’s screaming on board made her ears bleed), and several airlines continue to develop strategies to deal with the issues, but of course the priority level varies. “Some basic minimum requirements, such as sitting together, can be a source of anxiety, for example. Some

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01



02

01. Gulf Air's Sky Nannies help take the pressure off parents during long flights
02. But the nannying can begin from the moment you check in, so you can fully enjoy the lounge too



airlines do not even provide pre-booked seat places, which may sometimes leave families scattered down the cabin," observes Peter Tennent, director at London-based design consultancy Factorydesign.

For obvious reasons, most airlines claim that they are fully prepared to deal with any family-related travel problems, but one carrier that has taken the leap forward is Gulf Air. Earlier this year, the Middle East carrier was voted Best Airline for Family Travel by the Kids First Fund programme in the USA. The array of services offered by Gulf Air takes a comprehensive approach to serving families through a wide range of service touchpoints on the ground and in the air.

Fully qualified cabin crew members called 'sky nannies' are the focal point for Gulf Air's onboard service for families on certain routes to help parents with meals, setting up bassinets, and general assistance throughout the flight. The airline also offers a dedicated family seating zone on the aircraft.

Apart from Gulf Air, examples of design features that have been embraced by airlines to improve the family's flying experience are very few. Peter Tennent says this should mean that the opportunities to make improvements are broad, but the challenge is not simply in the product, but in the process.

"Spaces dedicated on one flight to a family or families may, on the next flight, need to accommodate passengers without children. How does an airline manage the change

flight of fantasy

Soundproof children's areas, anti-kick seats, and a 'singles section' all make up a typical passenger's dream aircraft, according to a recent survey by Skyscanner, but many of these and other concepts will remain just that – a dream – as Factorydesign director Peter Tennent explains, "There are very particular physical constraints when designing products to fit in a tube, and there are very real commercial requirements to keep the airline flying."

From a design perspective, Tennent says new services, features and products are not difficult to identify and define, but the designs and innovations that make it into the air would be those that also address key commercial and regulatory requirements. The key would be designing products and spaces that have in-built flexibility.

"The aviation industry, designers, airlines and vendors alike, will continue to strive to find an inch here or an inch there," says Tennent. "There is a healthy component to the strong competition that drives the need to innovate, to make products better, to out-do your neighbour, but perhaps the ability to integrate something like a family zone, will have to come from a broader review of how passengers are classified."

"We classify travellers in a very particular way – economy, premium economy, business class and first, perhaps even super first – but perhaps there should be a family class... with bean bags, child-minders, lots of IFE and lots and lots of noise-cancelling headphones."

adult content

One airline that has grabbed a lot of headlines is Malaysia, following rumours that it was planning to make the economy cabin at the rear of the upper deck on its new A380s a child-free zone. *Aircraft Interiors International* editor Adam Gavine cornered Dato' Salleh, the airline's head of customer experience, in this controversial cabin to find out the truth.

"To be really honest we were testing the market for making this cabin child-free. We got a few negative reactions, but a lot of positive reactions. It was around 90% positive and only 10% negative," he stated. "There are still a few technical things to sort out with our booking system – for example we need to modify the identification process in our internet booking system so it can block any booking with a child or infant when booking any of these seats. We are working with SITA to see how to make that modification for phone and web reservations. Once they confirm they can make the modification, we will make a firm decision whether to go ahead with it or not.

"Personally I would love to make this cabin child-free. It is a unique offering. It is a work in progress for us to finalise if we want to proceed or not. We are keeping the option open. That's where we are today."

At present, economy passengers don't pay extra to be seated on the A380's upper deck, but if it does become child-free the airline is considering making the area a testbed for a new premium economy class.

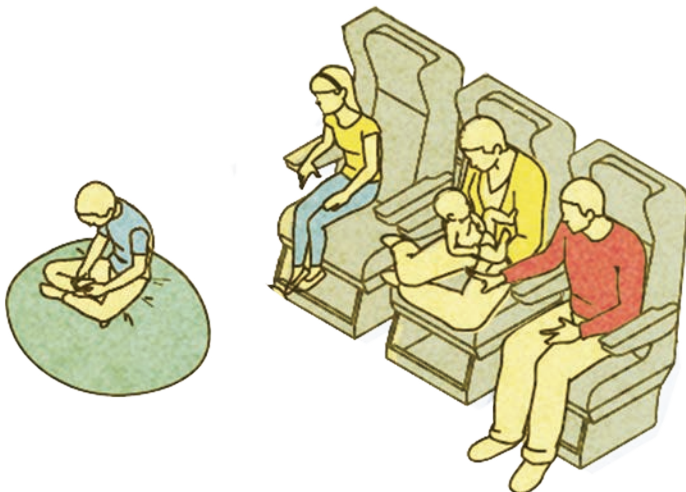


ILLUSTRATION BY TOBY LEIGH

in usage of a space to keep it usable? The difficulty is not with the creation of a better product for families, but with how the airline first acknowledges the need, and value, to its customers, and secondly, does it have the commercial vision to embrace difference?" says Tennent.

Jenny Ruegamer, associate creative director at design consultancy firm Teague, says the physical design and concept for a family zone is not particularly difficult: "An ideal family zone or experience could be easily designed with dynamic lighting, materials, custom monuments and seating; the experience could be further differentiated with new boarding, as well as service and food concepts. The real challenge in designing zones within an aircraft is how to create a flexible platform for configuration and service where the idea could actually be realised. It's much easier said or conceptualised than done."

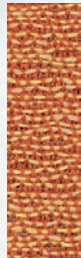
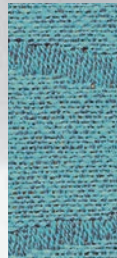
Peter Tennent agrees, "The key is flexibility. Designers work endlessly to accommodate variations in the sizes of people, but the variations in family sizes and requirements are quite another matter. That said, it is easy enough to design features that any family would find beneficial; the challenge then is how to factor in the booking process, the adaptation of space, and the allocation of seats in special areas, while at the same time keeping yields as high as possible and not leaving a four-year-old sat next to a frustrated frequent flyer who has just missed the last upgrade," he adds.

The issue is how airlines will balance the need to accommodate increasingly popular concepts such as family zones and the need to maintain operational profitability. Tennent says this is a question airline executives are battling with all around the world – and the issue is simply about space.

"The designers and passenger experience teams want to give the passenger as much space as possible, while the bean-counters want to cram in as many paying passengers as the laws allows, sometimes without pausing to look at the wider scenario that if you make your product better than the competition, more people will fly with your airline," says Tennent.

Ruegamer also sees a challenge when design concepts compete with profit, but she highlights that every concept isn't for every airline, and that airlines need to focus on what is important to their brand and their most valued passengers.

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“They need to think radical and big,” Ruegamer notes. “Incremental steps are not going to bring larger concepts like a family zone into reality. Change can happen; we see it now with airlines such as Air New Zealand, Virgin America and Porter that have looked at their brand and place in the market in new ways and have successfully brought new ideas forward to create meaningful change and innovation for their passengers.”

WHAT THE AIRLINES SAY Despite the positive response to a family zone concept, it is not an idea being currently considered by most airlines. Holiday airline Air Transat says it has multiple initiatives in place to address the concerns that families may have, including dedicated check-in counters, pre-boarding and child-specific IFE systems – in line with the majority of other airlines. However, the introduction of family zones seems off the airline’s radar at this point.

Of concern to some, particularly with regards to full-service premium airlines, is that airlines tend to hold back a number of aisle seats and window seats for their most frequent passengers – so that non-elite travellers are left with a handful of random middle seats. In the USA, for example, they are calling for regulation to ensure that small children are not separated from their parents on flights.

Airlines for America (A4A), formerly known as Air Transport Association of America, told *Aircraft Interiors International* that its member airlines work closely with their customers to seat parties, including those travelling with children.

“In a market as intensely competitive as the airline industry, the customers win – having ultimate ability to vote with their spending on varying products that are priced differently. As with all other products and industries, it is

house rules

US Congressman Jerrold Nadler, a senior member of the House Transportation and Infrastructure Committee, has introduced legislation to help keep families seated together on commercial flights. In response to ever-increasing fees and decreasing transparency among airline carriers, the Families Flying Together Act of 2012 would require the US Department of Transportation to direct each carrier to “establish a policy to ensure, to the extent practicable, that a family that purchases tickets for a flight with that air carrier is seated together during that flight; and make the policy... available to the public on an appropriate internet web site of the air carrier.” The legislation would help to ensure that children are not separated from their families and seated alone on flights.

“Air travel is complicated and expensive enough for families without adding new stresses,” said Nadler. “Families should not be stuck paying hidden fees, or buying ‘premium’ seats, simply because they wish to be seated together on crowded flights. It is positively absurd to expect a two or three-year-old to sit unattended, next to strangers,



THINK RADICAL AND BIG. INCREMENTAL STEPS ARE NOT GOING TO BRING CONCEPTS LIKE A FAMILY ZONE INTO REALITY



the market that can – and should – determine how air travel is priced, not the government,” says A4A.

Virgin Atlantic, which is heavily dependent on lucrative routes to the USA, denies holding back any aisle seats. “The only seats that are held back at the time of booking are those not shared between different aircraft, because we don’t always know for sure which aircraft will operate a flight, so we can’t release the seats that are not on every type; and those we block off for families with infants (the bulkhead seats with the bassinet position), exit rows and extra legroom seats.

“When the actual aircraft is assigned to the flight, we release the other seats that are available,” explains a Virgin Atlantic spokesperson.

In the UK, the law states that airlines must seat children under 12 with at least one parent or guardian.

tips from the experts

Father of two and senior cabin crew member with British Airways, Justin Cox is very familiar with the challenges involved with child travel. Should you find yourself facing a long flight with family, his advice may just improve your – and your fellow passengers' – journey. "As a parent I understand that travelling with kids can at first seem like a daunting prospect, but it really needn't be," he says. "After my 12 years as BA cabin crew, I have found that flying can be made more comfortable and even fun for kids by following a few simple pointers."

- If you plan to take your own car seat for the flight, check with before travelling to make sure the seat fits the airline's criteria.
- Before your child's first flight in their own seat, sit them on the sofa at home with a cushion between you as the armrest, explaining how it's going to be on board.
- Take a small compact travel pushchair for easy cabin stowage onboard – regular-sized pushchairs or strollers will normally have to go as hold luggage.

- Pack their favourite teddy, pillow or comfort blanket – to help them get to sleep more easily and make it feel more like home.
- Sometimes waiting for take-off or leaving the aircraft can be boring for young children – a bag of treats can work well at this point as a distraction.
- While visiting the flight deck mid-flight is no longer allowed, if you ask the crew they are usually happy to arrange for children to see the deck after landing.
- If you are flying somewhere with a big time difference, try to allow yourselves two days when you get back to give your children time to get back into UK time and their normal routine, before they go back to nursery or school.
- The IFE system is great but I always pack a portable DVD player or a pre-programmed iPod with my kids' favourites as well. Also, I always try to avoid taking games with lots of fiddly bits like jigsaws. They're likely to get lost during the flight and cause upset when you arrive at your destination!



Air New Zealand (ANZ) introduced the economy Skycouch just over a year ago, and the airline claims that the product is selling 30% faster than the rest of the economy cabin. ANZ indicates that if a family booked together on the same passenger name record, then they cannot be split up. "They do not need to make a seat request to ensure this," says an ANZ spokeswoman.

"We have introduced the Skycouch on our 777-300 aircraft, offering families the chance to have their children lie down and get some sleep like they would on their couch at home. The Skycouch proposition also gives up the opportunity to drive additional revenue from the economy section of the aircraft," she adds.

Interestingly, ANZ plans to sell its Skycouch product to other (non-competing) airlines in a move that could generate millions in revenue for the Auckland-based carrier. Over the next few months, ANZ will begin talks with around 12 airlines over licensing agreements.

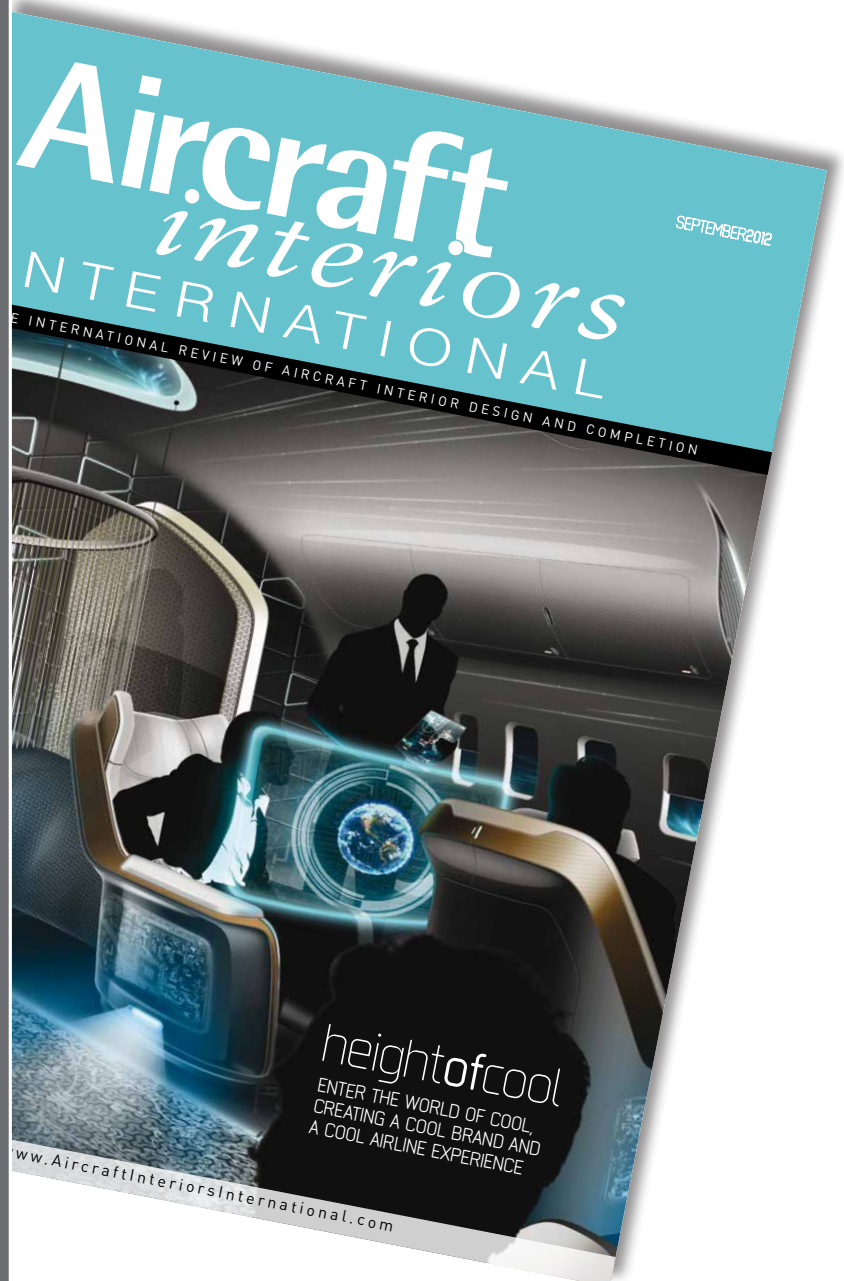
From a low-cost airline angle, Spanish airline Vueling indicates that bookings made online have an automated seat allocation process that identifies travel with infants, which then ensures adults and children travelling together are not split up.

Maria Cardenal, the head of ancillaries and product development at Vueling, says families are one of the airline's target sectors, and dedicated family-friendly segments on the aircraft could be something to think about. She stresses, however, that it is necessary to consider that not every family has the same seat preferences. "Some families prefer to sit in the front of the aircraft, while others choose to sit towards the back. Proximity to bathrooms and the flight attendants often influence the areas where a family likes to sit," says Cardenal.

She adds, however, that where travel includes babies, the booking system will recommend seats that are most suitable and passengers have the options to book them from €3. "This type of special consideration for families is an example of how Vueling aims to balance cost and service.

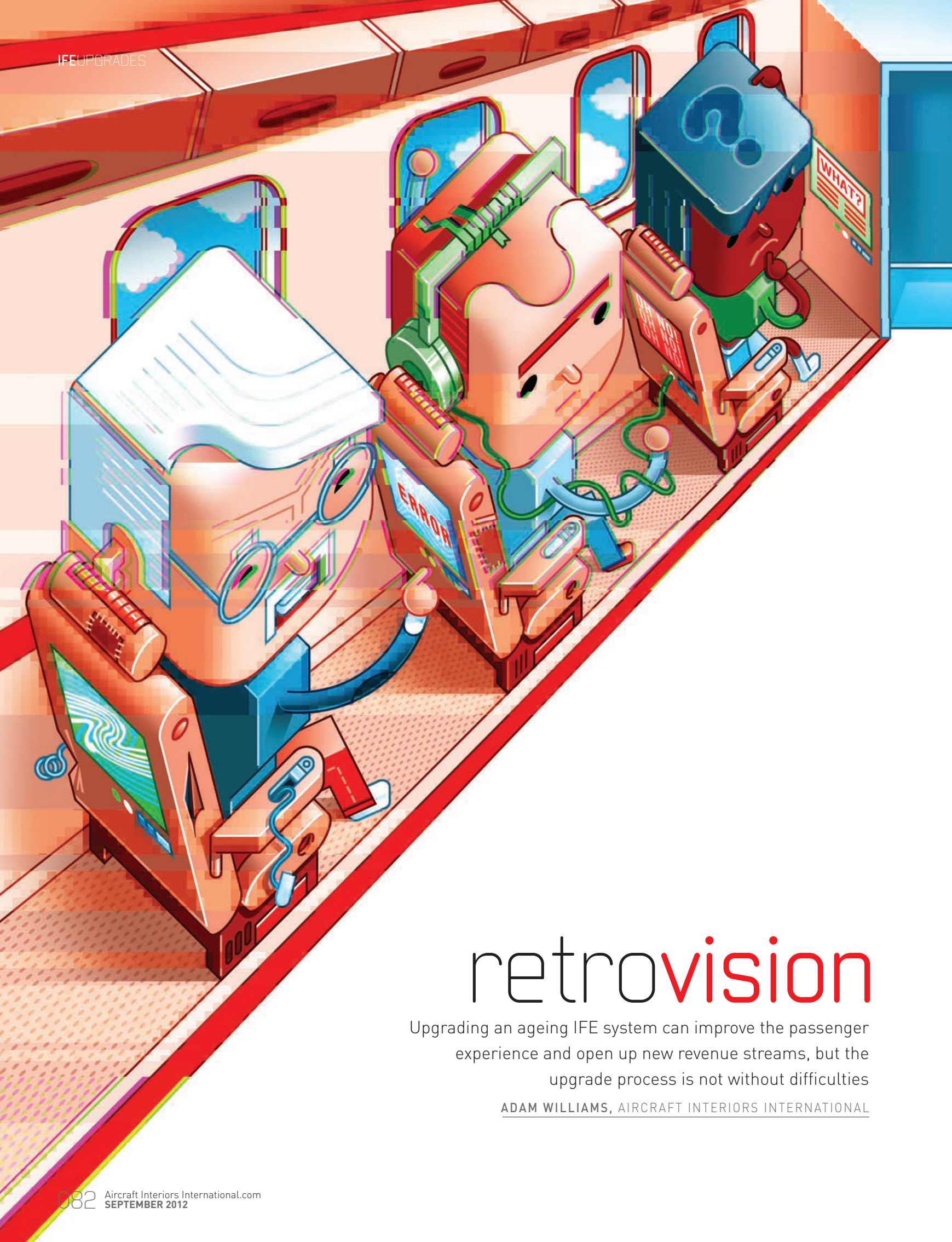
"Using the online check-in ensures that you will have your seats assigned before you even arrive at the airport. If the flight is busy, and online check-in hasn't been completed, Vueling cannot guarantee providing seats together, so it is better to make these choices in advance," explains Cardenal. ☒

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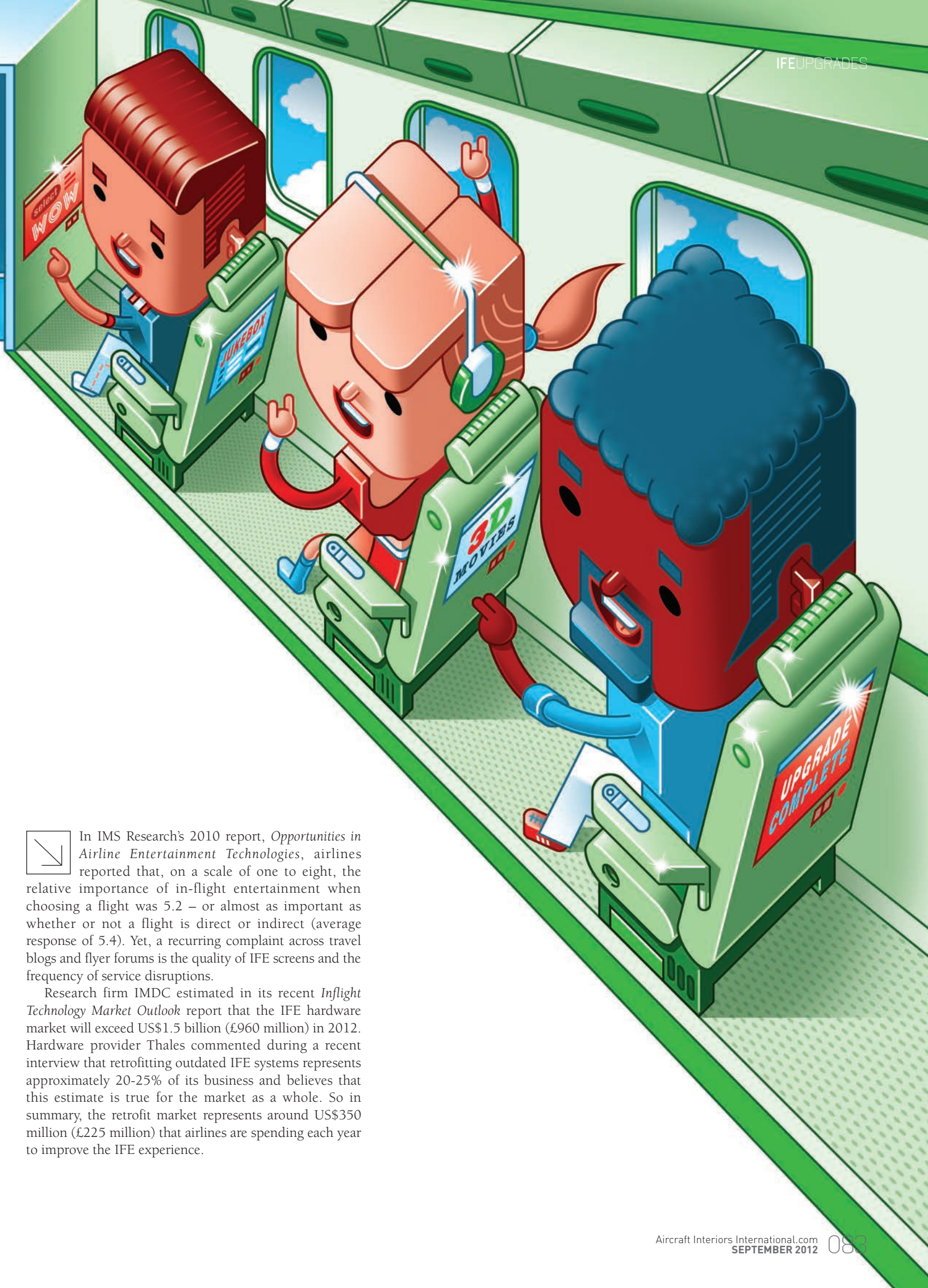
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retrovision

Upgrading an ageing IFE system can improve the passenger experience and open up new revenue streams, but the upgrade process is not without difficulties

ADAM WILLIAMS, AIRCRAFT INTERIORS INTERNATIONAL



In IMS Research's 2010 report, *Opportunities in Airline Entertainment Technologies*, airlines reported that, on a scale of one to eight, the relative importance of in-flight entertainment when choosing a flight was 5.2 – or almost as important as whether or not a flight is direct or indirect (average response of 5.4). Yet, a recurring complaint across travel blogs and flyer forums is the quality of IFE screens and the frequency of service disruptions.

Research firm IMDC estimated in its recent *Inflight Technology Market Outlook* report that the IFE hardware market will exceed US\$1.5 billion (£960 million) in 2012. Hardware provider Thales commented during a recent interview that retrofitting outdated IFE systems represents approximately 20-25% of its business and believes that this estimate is true for the market as a whole. So in summary, the retrofit market represents around US\$350 million (£225 million) that airlines are spending each year to improve the IFE experience.

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COST CONSIDERATIONS The most obvious barrier to upgrading is the upfront cost. In addition to the hardware and installation costs, certification such as the supplemental type certificate (STC) adds expense. Depending on the provider, the STC cost is already included in the price of the hardware, and the cost reduction from less maintenance and lower weight helps reduce the time to return on investment.

Much of the expense and strain of an upgrade is wrapped up in the time the aircraft is out of revenue service. An upgrade can take anywhere from one night to one week, so pulling a aeroplane out of service just to update the IFE can be costly. Many airlines schedule an IFE upgrade at the same time as another upgrade such as the seats.

Additionally, analogue aircraft use analogue multiplexes for the interface between the IFE system and the rest of the aircraft's systems. According to Thales, 'the Boeing 747 most notably has an issue where they have to be converted to a standard interface first'. In order for a new digital system to communicate with the analogue system, extra equipment must be inserted that interfaces with the two systems. Some vendors can include that interface as part of an upgrade package. This problem is less of an issue for overhead systems as they do not control other systems such as lighting.

WHY UPGRADE? The main reason to consider upgrading is the passenger experience. Think of it this way: a passenger's opinion of a given airline is most affected while



01-03. With 20 aircraft variants on its fleet, Delta has used new IFE systems to create a consistent experience and brand message



MUCH OF THE EXPENSE AND STRAIN OF AN UPGRADE IS WRAPPED UP IN THE TIME THE AIRCRAFT IS OUT OF REVENUE SERVICE



01



02



03



ILLUSTRATION BY LEE HASLER



A POSITIVE RATHER THAN A NEGATIVE FLYING EXPERIENCE IS, AT TIMES, TEETERING ON AN EDGE, AND CAN BE EASILY TIPPED IN EITHER DIRECTION BY THE IFE SYSTEM



flying. Although the booking process and other preflight interactions are important, they often do not offset a negative inflight experience.

Passengers' emotions are already heightened by the mere fact that they are travelling and the stress that brings. That's why the colour and brightness of cabin lights are designed as such – to calm and pacify. A positive rather than a negative flying experience is, at times, teetering on an edge, and can be easily tipped in either direction by the IFE system.

A Thales representative explains further: "It's frustrating as a passenger to find out after boarding your flight that the in-seat screen in front of you doesn't work. What makes matters even worse is when the screen in the seat next to you works just fine. And you paid full fare."

CREATING CONSISTENCY In January 2010, Delta Air Lines started the first of several phases of a large service

and product enhancement. As part of the project, Delta is seeking consistency across its IFE systems. Paul Skrbec, a Delta spokesperson, says, "Delta has more types of aircraft in service than most other carriers. With so many types of aircraft, we wanted a consistent product for our customers across our fleet. So the primary driver for upgrading the IFE systems, from Delta's perspective, is to provide a solid and effective customer experience that we can make consistent."

Having spent some US\$3 billion (£1.92 billion) on the retrofit project, in a bid to save money Delta included the IFE upgrade as part of the wider overhaul effort on products such as seats.

Announcing the upgrade completion of 32 A330s in April 2012, Bob Kupbens, Delta's vice president of marketing and digital commerce, commented: "Delta continues to offer new technology and innovation that improves our customers' inflight experiences while they travel with us."

COMMERCIAL GAIN Airlines have been using IFE systems as an advertising medium for a long time. The effectiveness of an advert is absolutely influenced by any friction in the medium. For example, a tattered billboard is less effective than a well-kept and lit billboard. Make it a digital billboard, broadening the capabilities, and it is even more effective. IFE systems work in much the same manner. The friction created from colour banding, flickering or poor viewing angles devalues the medium. Replace the medium

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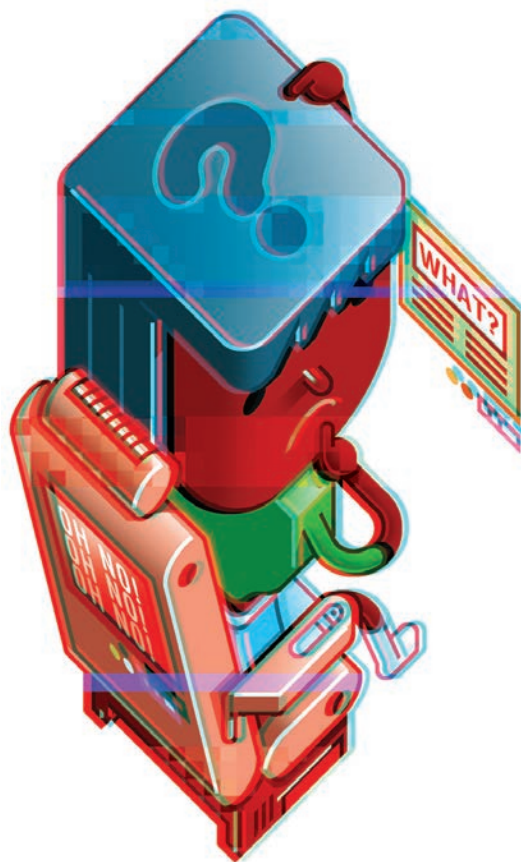
with a new digital system, and it becomes more effective and more valuable.

Spafax, a London-based content marketing agency, has demonstrated the value of integrated marketing campaigns that include, for example, sponsored IFE channels. Such was the case with client Wolf Blass. “Our objective was to create a unique campaign with multiple touch points to help educate the consumer about the Wolf Blass wine brand and the story behind the legendary Wolfgang Blass,” explains Rob Glover of Foster’s Wine Estates Canada. “Spafax presented and executed a unique and well-themed multimedia campaign that included print, integrated inflight content, online media and contesting. As a result, the contest element had an overwhelming response in the first 14 days.”

If the capabilities of the new system allow, even greater advertising opportunities can open up. Advertisers need systems with sufficient capabilities and processing power to create interactive campaigns or take advantage of better targeting techniques. For example, many advertisements today are created using Flash or comparable browser technologies. Ads can also be contextual or targeted to specific routes and cultural centres.

Katrin Kopvillem, executive vice president of media at Spafax, says, “Today’s AVOD platforms have made inflight advertising easier for advertisers to understand and the captivated airline audience with its affluent demographics have made inflight advertising a very attractive option.”

Airlines also use IFE for advertising – in the form of self-promotion. For example, take a flight on Delta and in addition to running third-party advertisements, Delta runs multiple ads promoting its services, products and direction



as a company throughout the entertainment. Thinking again of the passenger experience, if an airline presents its message while the passenger is having a positive experience, then those positive emotions are incorporated into the passenger’s views of the airline. However, negative emotions are wrapped in just as easily. So if self-promotion is a key objective, then the contrasting message that a poor platform sends must be considered.

SERVICE AND MAINTENANCE In some cases, airlines are nearly forced to upgrade due to the challenge that component part availability poses with older systems. Chris Colgrove of IFE Products, which services existing

- 04. Overhead systems are simpler to upgrade as they do not control other systems
- 05. Features such as server redundancy ensure a positive inflight experience



04



05



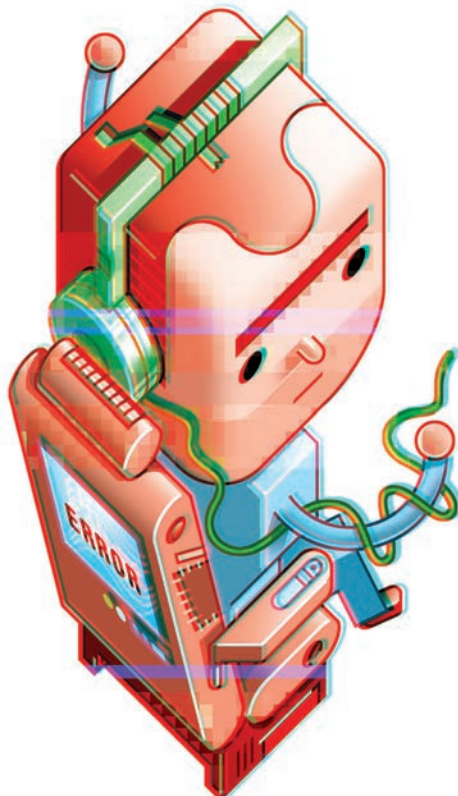
06



07



IN A HYPER-COMPETITIVE MARKET...
THE INFLIGHT EXPERIENCE IS CENTRAL
TO MAINTAINING BRAND LOYALTY



06. The Thales TopSeries Avant lets passengers multi-task with two touch-screens

07. In the future, Thales may even offer gesture control for premium class IFE systems

systems for airlines worldwide, explains: “Finding parts for entertainment systems older than seven years is difficult. Finding parts for systems that are older than 10 years is pretty well impossible.”

ALL THINGS CONSIDERED... There are two other common considerations for airlines and IFE vendors. First, before incurring the cost of a hardware upgrade, it is essential to define precisely what is to be achieved by upgrading and then determine whether or not a software upgrade will achieve the desired results.

Skrbec states that usability and navigation through the user interface were components of Delta's upgrade, in addition to a hardware upgrade. Second, new systems are less complicated, lighter and more efficient. Advantages such as fuel-burn savings, power savings and improved flight attendant satisfaction may shorten the return-on-investment period.

Obviously, there are many considerations – aircraft age and cost being chief among them – that must be taken into account before investing in an upgrade. But in a hyper-competitive market where consumers generally have multiple alternatives, the inflight experience is central to maintaining brand loyalty. And as consumers become more accustomed to the rapidly advancing technologies in smart devices, entertainment systems play an important role in passenger expectations. ☒

CONTACTS

www.imsresearch.com; www.thales-ifs.com
www.spafax.com; www.ifeproducts.com



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widechoice

Launch customers have already made their Airbus A350 XWB business-class seating choices from a catalogue offering a range suitable for installation four, six or seven abreast

BERNARD FITZSIMONS, AIRCRAFT INTERIORS INTERNATIONAL





01

“

IT IS VERY IMPORTANT TO BE
FOCUSED MORE ON THE SUPPLIERS
OFFERING SEATS THAT USE NEW
TECHNOLOGY ”



02

01. Since its launch in April 2011, the Equinox full-flat seat has been included in the A350 and B787 catalogues

02. The Arcus model from Sicma weighs just 56.7kg



Airbus has changed its approach to interiors for the A350 XWB. Galleys and lavatories are now seller-furnished rather than buyer-furnished equipment, and seats and IFE will come only from Airbus Contracted Suppliers.

The choice of business class seats so far includes the all-new Journey from Jamco America, the Solstys and Equinox models from EADS Sogerma, and two models from Sicma Aero Seat: the Cirrus, for installation in four-abreast herringbone configuration; and the seven-abreast Arcus, designed for regional rather than long-haul business class operations. So how did Airbus go about selecting the business-class seats for its new wide-body twin?

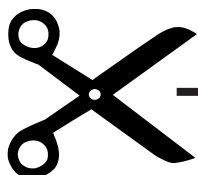
The first requirement, says Suzana Hrnkova, the manufacturer's head of aircraft interiors marketing, is that the vendor needs to be an Airbus Contracted Supplier (ACS). This means being able to fulfil strict ACS requirements, such as the ability to share digital mock-ups using the Catia V5 computer-aided design, manufacturing and engineering application. Robustness of supply chain

control is another consideration, along with quality, reliability and customer service performance.

Then the supplier has to offer a suitable business class seat that meets requirements in terms of comfort and efficient use of the A350's extra-wide cabin. "And of course the business class product needs to fulfil passenger and airline requirements – and appeal," says Hrnkova.

Weight is important too, she adds: "It is very important to be focused more on the suppliers offering seats that use new technology – lighter materials, more carbon, more composite pads – as they are lighter in weight. And we will also measure maintenance aspects, because the airlines will be focused on a seat that is robust, future proof, and that will not require a lot of maintenance interventions." Ease of access to the seat motor is very important so that maintenance personnel can reach it during turnarounds.

Another criterion Airbus looks at is IFE integration, and it is particularly important that seats meet the cabin integration requirements. "It has to be compliant with the integration specifications," she emphasises.





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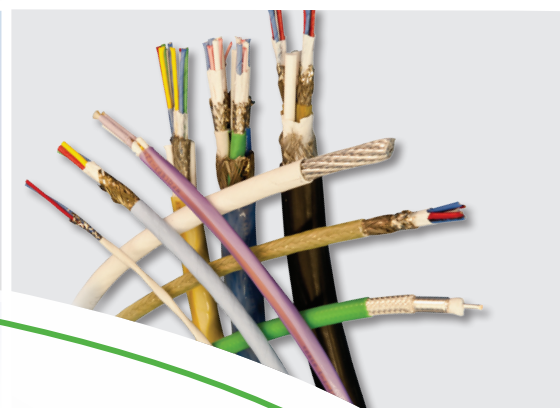
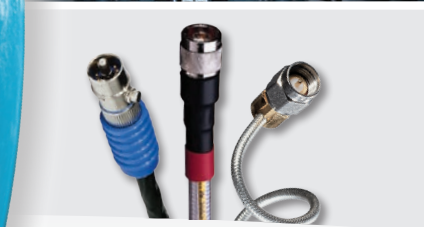
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AIRLINE OPTIONS Features requested by the airlines vary according to their profile and the market segment they are addressing. “We can cluster the airlines into two categories: trendsetters and followers,” says Hrnkova. Their requirements will differ accordingly: “Some airlines will be more focused on a high-comfort, full-flat business class seat with direct aisle access for all passengers, individual privacy, and comfort factors such as the size of the IFE screen, the length of the bed, massage features, and so on.”

Some airlines want to provide both enhanced privacy and the opportunity for companionship, she continues: “That would cover passengers looking for more privacy, as well as colleagues travelling together who want the opportunity to share a dinner or work together. Others may focus on more efficient solutions.”

The clear trend for long-haul business class is to have a full-flat, completely horizontal bed, she says, but there is scope for more efficient configuration and installation in the cabin. A high-comfort-driven seat offering direct aisle access for all passengers would imply a four-abreast configuration on the A350, as in the case of the EADS Sogerma Solstys and the Sicma Aero Seat Cirrus herringbone seat. Alternatively, for airlines that are more

catalogue enrichment

To keep the A350 catalogue contents attractive and in line with the latest trends, suppliers are encouraged to propose new developments and innovations, and even new products. “We are open and we are working very closely with the seat suppliers through a supplier council,” says Suzana Hrnkova at Airbus.

“There are multilateral meetings between Airbus and different seat and IFE suppliers in order to be aware of and follow up innovation. So suppliers are encouraged to innovate, and we are working together on innovation, on the method and the procedure of how to follow up and be able to introduce the latest innovations.”

Meanwhile, Airbus is working with the seat suppliers to develop a premium-economy seat offer. “There is a new cabin product segment that is called the premium economy seat,” says Hrnkova. “This is a market segment that the airline customers asked us to address through various customer focus groups. So we are following this up and working together with the suppliers to add a premium-economy seat to the catalogue.”

Airbus has issued a request for information to the seat suppliers and is targeting an eight-abreast configuration for premium economy. “That offers a seat width of around 19in between armrests, so it’s in line with airline expectations,” she comments.



WE CAN CLUSTER THE AIRLINES INTO TWO CATEGORIES: TRENDSETTERS AND FOLLOWERS. THEIR REQUIREMENTS WILL DIFFER ACCORDINGLY ”

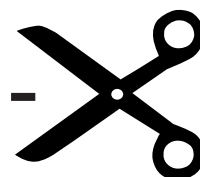
concerned about efficiency, the EADS Sogerma Equinox, which uses the vertical space to create a full-flat bed in a pitch range equivalent to current lie-flat products, can be installed in six-abreast configuration.

For regional operations, a full-flat or lie-flat seat in seven-abreast configuration would be more appropriate. “For flights lasting less than six hours, the airlines will probably be looking for a seven-abreast, lie-flat angled bed, or even full-flat horizontal bed,” says Hrnkova. Jamco America’s Journey and Sicma’s Arcus are the seven-abreast options. Airbus plans to display the Journey and Equinox seats in a revision of the catalogue expected by the end of this year, along with the Cirrus and Arcus from Sicma.

03. Panasonic’s eX3 IFEC system has already been selected by TAM and Etihad for their A350 orders



03



'bus journey

A350 XWB buyers have an exciting new option available to them: the Journey premium business class seat from Jamco America. This is the company's first foray into aircraft seating and its new status as an Airbus Contracted Supplier and the Journey's entry into the A350 catalogue was officially signed at Aircraft Interiors Expo in Hamburg back in March, where it was also shown in private to potential customers.

The following months have seen Jamco remain tight-lipped about the seat, with the only details emerging being that it is aimed at the long-haul business segment and offers a six or seven abreast forward-facing seat. Journey provides an extra option beyond EADS Sogerma's Equinox full-flat business seat, which can only go up to six-abreast.

Journey will also offer a full-flat bed featuring an original kinematic system for smooth transitions between seat and bed positions.

Look out for further details later in the year, when the revised A350 catalogue is released. We are also keen to find out if further Jamco products such as lavatories, galleys, stowage or bars are added to the catalogue. And if the company's existing supplier status with Boeing will extend to the new seats.



04

from an Airbus Contracted Supplier. "As a contracted supplier, they will already know the integration requirements for the seat," explains Hrnkova.

"That means we have reduced the risk of issues at the final assembly line for seat integration, so no more bad surprises will occur there that can delay integration and installation," she adds.

If a customer selects a non-catalogue seat from an Airbus Contracted Supplier, she says, the lead time will vary as a function of the amount of development required: "For example, if an operator decides to develop a completely new BFE seat with one of the ACS suppliers, the lead time will be longer. However, customers can select a BFE seat that is already pre-developed and just needs to be reworked and some of its features customised in order to reinforce their branding or achieve higher differentiation. In that case the lead time will be shorter than the new seat development."

The additional lead time, then, will depend on the development stage of the chosen seat, the main milestone in the process being the pre-certification of the seat prior to the contractual definition freeze stage of the aircraft development programme. "This is a must-have," stresses Hrnkova, "but if the seat has been pre-developed and pre-certified by the supplier, the lead time would be very close to our target." ☒

CONTACTS

www.jamco-america.com; www.sogerma.eads.net;
www.sicma.zodiacaerospace.com

04. Jamco has released this teaser picture of the Journey. Full details will follow shortly

SHORTER LEAD The main benefit of the catalogue approach is to reduce lead time and to offer no-risk solutions for customers, says Hrnkova: "Our target lead time, if a customer selects a catalogue seat, is eight months." The A350's launch customers have already chosen their seats – although the selections remain confidential.

Premium-class seats are the only A350 cabin equipment that can be buyer furnished, although they must still come

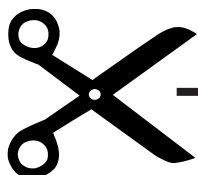


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01. B/E's Essence
Inserts were designed with Teague to create a more domestic feel in cabins and aid branding



Seller-furnished galleys have become the norm on new aircraft programmes. Boeing pioneered the approach in 2005, when it awarded Jamco a sole-source contract to supply the galleys for the 787. Airbus followed suit with B/E Aerospace for the A350 XWB. New narrowbody programmes do not mean just galleys, but entire interiors from single companies: C&D Zodiac in the case of the Bombardier CSeries and UAC MS-21; and Austria's FACC, now owned by AVIC subsidiary Xi'an Aircraft, for the COMAC C919. And future A320s will have SFE galleys from Driessen-Zodiac Aerospace.

INDUSTRIAL STRENGTH B/E Aerospace has built a new factory in the Philippines to make the galleys for the A350. Craig Cunningham, vice president and general manager of galley structures, says the sole-source contract has enabled

the company and its suppliers to make major investments in manufacturing processes. The result, he says, should be a more robust and repeatable process that can guarantee the volumes that the aircraft manufacturers require with more consistent on-time delivery.

"We have an automated front-end manufacturing process with single-piece flow control at the back end," he explains. "It's driven off digital data and tied all the way back to the geometric models from the design specs, which gives us configuration control. We use a single product lifecycle management system to do configuration management and keep control of that to ensure that what we've designed is actually what's manufactured."

The supply chain, too, will be more integrated. "We can give the supply chain the benefit of secure and long-term contracts with known volumes," Cunningham says.



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02

The combination should add up to “far higher quality, repeatable products”.

Early involvement in an aircraft’s development has been key, he says. “We’ve worked closely with Airbus to ensure that the design of the galleys is closely integrated wherever possible into the aircraft, to maximise functionality and space.” He cites the forward door area, where galley and cockpit wall – “and the regulations these days require that wall to be a bullet-proof panel” – are integrated. “It’s much more space and weight efficient,” he says.

For the rear cabin complex aft of door four, “we have tried to maximise flight attendant space,” Cunningham explains. “Space is a key challenge when they’re trying to create services for large numbers in economy class. So we pushed the galley out as far as we can, working between the aircraft frames to push the systems back and provide as much flight attendant space as possible.”

The galleys are all based on the ARINC standard, but with ATLAS rotables, so they still have standard units. “But by working with Airbus we’ve been able to maximise interchangeability,” he says. Any supplier’s equipment that meets the ARINC 1, 3 or 4 standards will fit the compartments: “That was something we worked through with Airbus very hard to give the airline that flexibility.”

ARINC 2 ovens and fridge freezers require different air extraction levels or water supplies in the case of steam ovens, so they are not totally interchangeable, says Cunningham. “But you can still change between different vendors for the same piece of equipment.”

the spice trail

Airbus has moved on from the SPICE concept, which set out to reinvent the galley around the dimensions of the ATLAS standard tray.

“There is a broad consensus that SPICE is an ingenious concept offering significant benefits to onboard service and airline economics,” says Suzana Hrnkova, head of aircraft interiors marketing at Airbus. “Credit is due to the Airbus teams, collaborating airlines and other stakeholders, who have developed SPICE into a concept whose operational and technical feasibility has been demonstrated.”

Despite its advantages, she says, bringing SPICE to market was a challenge given the deeply embedded nature of existing catering systems in today’s fleet and support services. The latest step in the project was to study the various aspects of making SPICE available, and how SPICE-enabled economies could repay the cost of change.

Regretfully, Hrnkova says, “the current picture, taking into account improved ATLAS system weights, and the latest industrial and commercial inputs, doesn’t show a clear business case when all parties are considered. So we are now focusing on other projects to bring efficiency improvements in the near future.”

One example is the Space-Flex option, officially launched in July with a Farnborough Airshow order from TAM Airlines, which fits two lavatories and a new galley configuration aft of the cross aisle. “We expect this efficiency and comfort-enhancing option to prove very popular,” she says.

“The main airline benefit is the extra space made available for revenue seats: typically three, but possibly more in the context of a cabin retrofit,” Hrnkova adds. “The frequency with which we discuss Space-Flex with airlines tells us that TAM will be the first of many customers.”

Such standardisation was not possible under the BFE model, where airlines specify their own equipment using the interface documents for the aircraft: “You’ll end up with different solutions because the airlines are very specific about how they want it to look.” The catalogue solution focuses on maximum functionality with built-in flexibility: “There may be some minor compromise along the way, but functionally they don’t lose a lot.”

More hard work with Airbus went into harmonising the galleys with all the other interior cabin aspects, he adds: “We’ve done a lot of industrial design and it should be harmonised with the lavatories, the overhead bins and the crew rests. There is a common industrial design language, which should improve the whole look and feel of the cabin,” adds Cunningham.

02. Airbus is looking beyond SPICE at concepts such as Space-Flex



03



AS A SUPPLIER ONE HAS TO BE
ADAPTABLE. NEW AIRCRAFT MODELS
REQUIRE INNOVATIVE CABIN CONCEPTS



03. German engineering has been a key selling point in Sell making its 40,000th galley delivery in 2010 and taking more than half the widebody market

There is also an ongoing effort with Airbus to identify ways of enabling airlines to customise the galleys in the door zones in support of their branding: “Passenger perception is very important as you enter the cabin, so we do have solutions working with Airbus to offer to the airlines there as well.”

The selection process that saw the contract awarded to B/E was thorough, Cunningham says. “We understood the concept very early on with Airbus and we were able to develop a model where they could see the realisation. But we also demonstrated what our industrial process would be, how we would ensure that we were able to deliver at Rate 13 [aircraft per month], and our supply chain process.

“So we leveraged the whole B/E supply chain processes and we brought a lot of innovation to the industrial process. We also demonstrated how we could be flexible in the design solution, and how we would execute the programme from a project management perspective. They did a lot of assessments and, from our perspective, we gave

them a high level of confidence that we would go through the development process and the industrial process successfully to deliver an on-time quality product.”

By early August, B/E had shipped the Cabin 0 systems for the ground test aircraft and was building the validation galleys for structural testing at its Leighton Buzzard, UK, facility and preparing to build the first development aircraft galleys.

More work has gone into ensuring that the galley is mature before installation begins, says Cunningham. “We’re working with a digital mock-up of the aircraft so it has been digitally demonstrated not just that it fits from the space allocation and interface perspectives, but also looking at the maintenance aspects, installation aspects, and also how it interacts with the LOPA.”

Everyone involved is excited about the programme, he adds, including the suppliers: “We’ve held two vendor conferences already where we’ve invited all our vendors down to show them what we’re doing, and they’re very excited as well.”

BALANCING ACT The galleys for the A380 remain BFE, and Germany’s Sell, which claims more than half the wide-body market, has secured a 70% market share on the Airbus double-decker. “As a supplier in the aircraft industry one has to be adaptable,” says marketing manager Sonja Naumann. “New aircraft models require innovative cabin concepts.”



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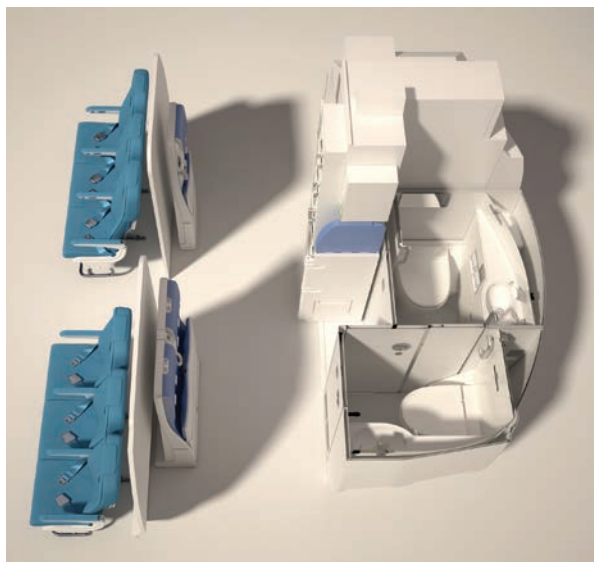
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04

Examples of the increasing customisation required include elliptical and curved forms, and the integration of lighting configurations. “Airlines today want to integrate their corporate image and brand values into the design and styling of the galley through the implementation of illuminated logos, invisible revolving catches installed behind the trolley doors, or the use of roller blinds with logos. Galleys shall be unique but also modular. For galley suppliers, managing this is quite a balancing act.”

Another aspect of innovation is finding new applications for old and new materials. One example, Naumann says, is a highly innovative adhesive that Sell developed with 3M: “The FST adhesive enables us to realise new designs and appearances of cabin interior monuments. The adhesive also offers improved passenger safety by complying with the latest and future fire, smoke and toxicity requirements, as well as with the standards from regulators and OEMs.”

Sell has also designed and developed a lightweight panel material, which leads to weight savings in galleys of around 8% on a typical wide-body configuration. “We are developing new ideas and technical innovations on our products for future use,” she says. “At the same time, lean manufacturing methods help us to efficiently reorganise our processes with tangible benefits for our customers.”

Cost of ownership is another crucial consideration, and Naumann says Sell’s galleys and galley inserts are designed and produced for lifetime value: “We invest a lot of effort together with our customers during the design phase considering all the technical requirements that make our products last. We produce all of our products in Germany,

single-aisle sfe

Driessen’s MaxFlex2 galley, already used in the Boeing Sky Interior that applied 787 interior concepts to the 737, makes a compelling case for its A320 selection. Reducing weight by 15%, it halves the time required for installation on the final assembly line and cuts lead time by 25%, while enhancing aesthetics and ergonomics and supporting configuration flexibility.

The galley is scalable to meet the needs of operators ranging from low-cost carriers to full service airlines, and can be reconfigured in line with seasonal demands using pre-qualified modification kits. Driessen says it is also easier to access, clean, inspect and repair, with smart system routings and catalogue-wide parts commonality.

The SFE model, Driessen adds, means that airlines benefit from supplier support conditions covering customer support requirements, including worldwide support, lead times, initial provisioning, pricing, repair times, guarantees, warranties, administration of supplier warranty claims, MRO-recognised training and documentation, and vendor service bulletin policy.

Perhaps most important, the manufacturer is confident that having refined and fully optimised the initial MaxFlex concept for a modular, flexible galley in the light of customer experience, the new version should have a service life of at least 15 years.



05

and German quality and engineering skills are growing selling arguments for our customers.”

DSM INNOVATION Two years ago Diehl Service Modules, as the former Mühlenberg Interiors (MI) was renamed at the beginning of this year, exhibited the MI Pacific galley, which integrated anti-rattling devices for containers and trolleys, as well as damping of door and drawer-locking mechanisms.

Diehl mounted the galley on a vibrating platform at Aircraft Interiors Expo 2010 to illustrate the effectiveness of the damping technology, and spokesman David Voskuhl

- 04. Space-Flex for the A320 takes advantage of previously unused volume at the rear of the cabin
- 05. Driessen’s MaxFlex2 for the A320 is designed as an integral part of the cabin to support corporate identities



06



07



AIRLINES SHOULD BENEFIT FROM INTEGRATION
OF INSERT FUNCTIONS INTO THE MAIN GALLEY/
AIRCRAFT RECORDING SYSTEM ”



08



09

- 06. B/E's Essence Inserts are designed to create a common, clean and simple design and consistent user experience. The range includes...
- 07. Wine chillers
- 08. Convection and steam ovens
- 09. And beverage makers

says representatives of airlines have considered integrating these features in current or future galley projects.

Meanwhile, DSM also offers the MI-STaR galley, which has applied the concept of a technically 'dry' galley by using insulating food and beverage containers to provide all the amenities of a fully system-equipped galley. The result, Voskuhl says, is that airlines can benefit from full catering provisions at a significantly lower price of ownership in terms of initial price, plus maintenance and power consumption. There are also remarkable weight savings, he says.

For the future, Voskuhl says, DSM is focusing on several improvements that should be of direct benefit to airlines. They include further progress in modular design to cut down on development and production cost, and in material concepts to reduce weight and enhance durability. The company is also working to

reduce the galley's footprint in order to generate additional passenger space in the aircraft, while a catalogue approach will enable galleys to be specified individually from pre-developed options.

Airlines should also benefit from integration of galley insert functions into the main galley/aircraft recording system – an intelligent galley, as Diehl terms it – and reduction of galley power consumption, since galleys are the main onboard users of electrical power. Improvements made in hygiene, noise, appearance, style and lighting, meanwhile, are intended to enhance the well-being of crew and passengers, with indirect benefits to the airlines. ☑

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Only a few film studios specialise in creating airport and aircraft environments. One of the most well known is Air Hollywood, where more than 500 films, and even more commercials and promotions, have been shot since it opened in Burbank, California, 11 years ago. It is presided over by a businessman whose name is Captain – although he is not a pilot.

Operating from five hangar-sized buildings, Talaat Captain offers a choice of eight aircraft; narrow- and wide-

body models that, with a little doctoring, can be made to look like any one of a number of airliners. He has not yet had a request for the Boeing 787 Dreamliner with its larger windows or the double-decker Airbus A380, but when the request comes in, Captain says they will be ready to make it happen.

“It takes an aircraft manufacturer 15 years to design an aircraft; we can replicate what it looks like in 15 weeks,” he says.

Stashed in Air Hollywood’s warehouses is a collection of all the accoutrements necessary to reproduce the air travel experience, from ticket counters to food service carts. Captain estimates he has between US\$3 million and US\$4 million in airline-related props and sets.

01. It took 12 trucks to transport this 767 to a Californian desert for a crash scene in NBC’s *The Event*



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02



03



04



05

“

YOU CAN TRANSITION FROM A REAL AIRCRAFT INTERIOR AND WALK OUT AND LOOK AT THE EXTERIOR OF A VIRTUAL AIRCRAFT ”

Among the movies made at Air Hollywood are the comedy hit *Bridesmaids*, and the suspense thriller *Red Eye*. Brad Pitt has been assigned a seat on an Air Hollywood aircraft, as have Tom Hanks and Tom Cruise.

Captan says demand for his services is due to the fact that increased aviation security makes it difficult for movie makers to work in airports and airplanes, and it is extremely expensive for a filmmaker to recreate these scenes from scratch.

Captan explains, “You will never get permission to shoot in a TSA facility, but you can definitely shoot in our facility because we have all the x-ray machines and security checkpoints.”

Still, even the best-equipped studio cannot create a line of airliners waiting for take-off, especially if the airport is supposed to be set in the past.

That was required for the short-lived television show, *Pan Am*, a soap-opera-styled re-creation of the world's most glamorous airline in the 1960s. Sam Nicolson, chief executive of Stargate Studios, said his company was responsible for scenes that could not have been made without computer-generated photo techniques. “There are 10 707s waiting to take off. That was undoubtedly

something you would have to rely on computer-generated materials to accomplish. There's no way someone is going to line up 10 707s on a runway, and secondly, there's no other way to do it.”

In the television show, stewardesses and passengers were filmed walking along a scaffold at the height of the boarding door of a Boeing 707. The finished product showed them walking alongside what looked to be a real aircraft in Pan Am livery, but in fact they had only been walking in front of a green screen.

“There are lots of films about aircraft, but this was unique,” Nicolson says. “We relied more on the computer-generated duplicates than anyone has in the past, so you can transition from a real aircraft interior and walk out and look at the exterior of a virtual aircraft.”

02. A scene from TV series *Pan Am*. This is what the eye sees...

03. ... and this is what the viewer sees

04. Don't tell anyone, but the 707 cockpit in *Pan Am* is actually from a 727

05. 707s waiting at JFK's Worldport. This scene would be impossible without computer trickery



06



07

“

THE LOGISTICS OF SOME OF HIS LARGER ASSIGNMENTS COULD BE THE SUBJECT OF A SEPARATE ADVENTURE DRAMA ”

06. Some of the movie industry's biggest names have been filmed in Air Hollywood aircraft sets

07. This narrow-body model is one of eight available

For the scenes of the pilots, the producers of the series turned to a third kind of aviation specialist to construct a cockpit that was accessible to cameras.

Doug Scroggins' unusual background seems to have prepared him for this job. For years, Las Vegas-based Scroggins was a member of the camera operators' union and a producer of low-budget films. Then, in 2002, he began working for an aircraft salvage company dismantling some airliners, and retrieving others from crash sites.

The assignment to locate, modify and ship a 707 cockpit to New York required all that experience. He made the flight deck hinge open from the front to enable the face-forward filming of the pilots and flight engineer.

"I know how important it is to get a camera angle and a cockpit is too small," he told the *Pan Am* producers. "I said, 'we can cut this thing into sections, pie cut it. We can do that and still make sure it functionally works'."

As it turned out, slicing the cockpit wasn't as difficult as finding a 707 to work on. Scroggins had to improvise.

Cue the soundtrack – and this is a Hollywood secret – the cockpit in the television show is from a 727.

"We had to gut it to get it down to a 707. We had to change out the breaker panels and the flight engineer station," Scroggins says. "I had to break up three of them to make one."

For all its complex details, the *Pan Am* cockpit was one of his smaller jobs, Scroggins says. The logistics of some of his larger assignments could be the subject of a separate adventure drama. For the US television show, *The Event*, producers needed a Boeing 767 to crash in the desert. Scroggins was responsible for finding the aircraft, sawing it into transportable pieces, and reassembling it 320 miles (515km) away. It took 12 trucks to deliver the aircraft from Las Vegas to California. The final result appears in two episodes of the weekly programme.

This autumn, yet another film featuring Scroggins-supplied airliners will open in theatres. The movie, titled *Flight*, stars two MD-80s and, oh yes, Denzel Washington.

In the movie, Washington plays a pilot who, with movie star pilot heroics, saves the day when his airliner crashes, but he soon encounters a reversal of fortune. The plot could be a metaphor for the business of creating art from the daily dramas of air travellers. While passengers and airlines may be increasingly frustrated with crowded cabins and declining profits, all this angst appears to be inspiring new storylines and that, in turn, becomes more business for the people who know how to make a journey by air picture-perfect. ☒



06



07

“

THE LOGISTICS OF SOME OF HIS LARGER ASSIGNMENTS COULD BE THE SUBJECT OF A SEPARATE ADVENTURE DRAMA ”

06. Some of Hollywood's biggest names have been filmed in Scroggins' aircraft sets
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SHOWPREVIEW

Aircraft Interiors Expo Americas 2012



More than 120 industry suppliers are expected at this year's Aircraft Interiors Expo Americas, which will be held on 25-27 September in Seattle, Washington, USA. Airlines registered to attend include American, Delta Air Lines, United, Air France, Air New Zealand, Austrian, British

Midland International, Cathay Pacific, Condor, El Al, Emirates, Japan Airlines, JetBlue, Saudi Arabian Airlines, SkyWest and US Airways. The organiser is also reporting a high level of interest from airlines serving South America, such as TAM, which follows predictions from Boeing and Airbus that the

area's demand for new aircraft will surge over the next 20 years.

In this preview we speak to some key exhibitors about their plans for the show, and

we have also cherry-picked just some of the many aircraft interior innovations that will be on display – from seats to IFEC solutions, galley equipment to materials and components.



Long-term sitting comfort

The conflicting needs to reduce aircraft weight while increasing passenger comfort present a real challenge for aircraft interior suppliers, especially seat manufacturers. Although a seat may feel comfortable for the first 20 minutes of a flight, the real test is how it feels after two hours or even 20 hours. Because the majority of the comfort comes from the seat's padding, seat manufacturers need a highly efficient cushioning material.

An alternative to foam cushioning, Supracor's seat cushions made from Stimulite honeycomb provide long-term sitting comfort in a low profile that is lightweight and gives passengers more living space. A flexible form of aerospace honeycomb that is fusion bonded without the need for adhesives, Stimulite relies on the proven optimum strength-to-weight attributes of structural honeycomb to deliver uniform load distribution at a fraction of the thickness of foam cushions. Perforations in the cell walls circulate air to prevent heat build-up,

while the 'footprint' of the cells and their flexing action promote circulation.

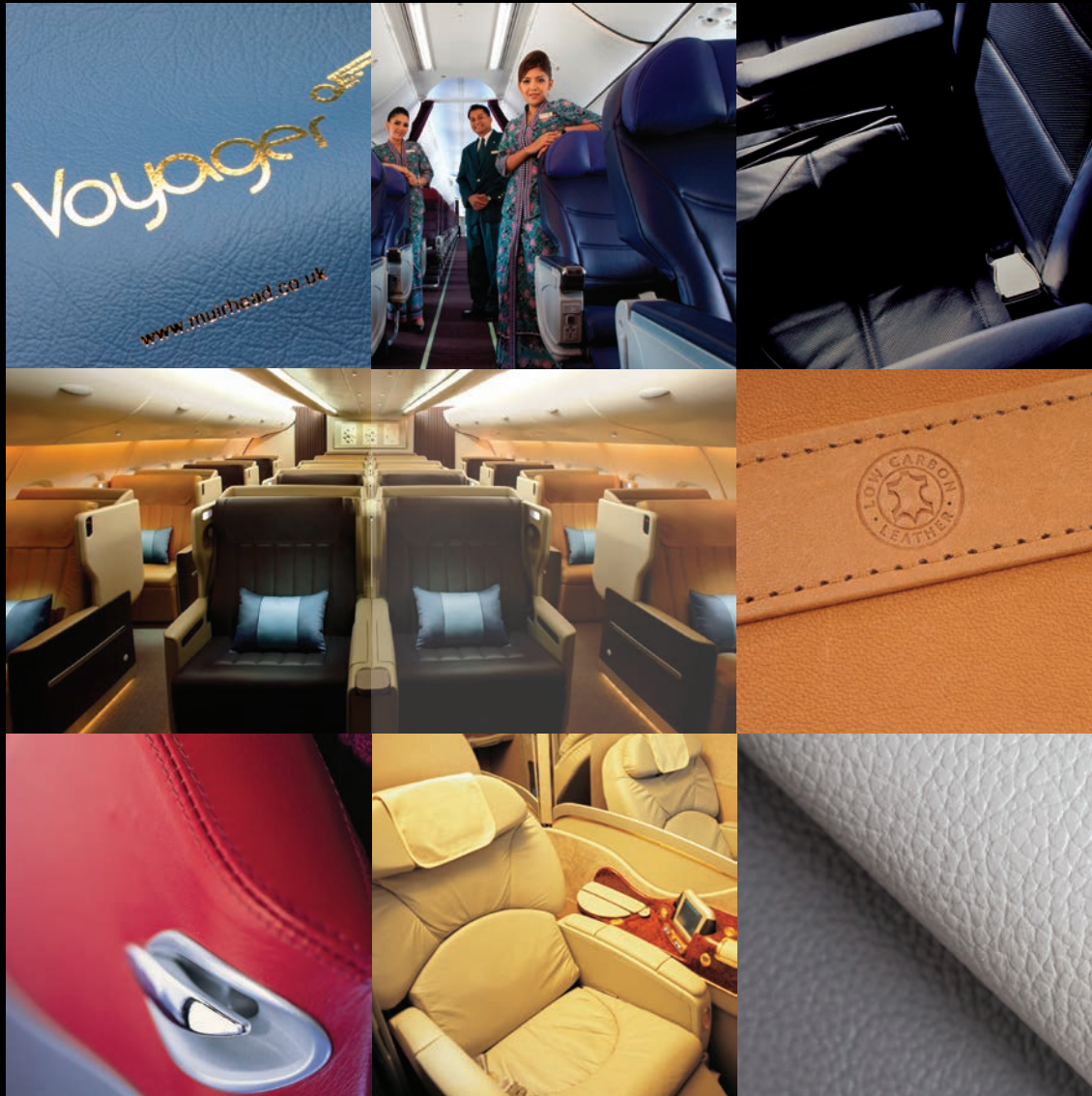
For more than 20 years Stimulite honeycomb has been providing long-term sitting comfort to wheelchair users, who can sit for up to 16 hours a day and are at risk of pressure sores. More recently, military jet pilots, including those of F-18 Hornets, have relied on Stimulite cushions to ensure comfort on long-haul missions. Such high-performance applications demand a material that is robust and durable, and Stimulite has delivered long-lasting comfort.

Made in California from non-toxic thermoplastics that are completely recyclable, Stimulite meets all flammability requirements and is certified by Boeing, which features Stimulite mattresses in the crew rest of the 787 Dreamliner

and 747-8 aircraft. A finalist for this year's Crystal Cabin Award for Passenger Comfort, Stimulite is setting new standards for aircraft seat comfort.



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Five minutes with...

RONN CORT WAS MADE PRESIDENT OF KYDEX LLC IN JULY. WE CAUGHT UP WITH HIM TO LEARN THE LATEST IN THERMOPLASTICS

How are you enjoying your new role?

It has been a whirlwind but it's an exciting time as we evaluate the continued evolution of Kydex. I believe design is an integral part of our business and we will continue our mission to be a design-led technology company. Now that I'm settled in the new role, I've had an opportunity to more closely engage with our production employees. I continue to be overwhelmed and inspired by the passion of the employees on our production floors, in our quality group, in our designLab, and in our sales and customer service groups.

What trends are you seeing in aircraft interiors?

The industry is focused on innovations in cabin lighting, especially transitional lighting that enhances the cabin environment throughout the flight. There is an exciting focus on the interplay of this lighting and interior finishes. As new colours, textures and finishes for thermoplastics are in development, aviation designers are leveraging materials that better integrate with cabin design, creating an atmosphere that promotes passenger wellbeing and helps airlines better integrate their brand identities into the cabin environment.

What are the biggest challenges in the aviation thermoplastics industry today?

As the demand for increasingly complex and aesthetically

demanding interior components increases, thermoplastic processing technology is evolving to meet the new demands. Materials that meet the aesthetic requirements of airlines are reaching the marketplace, and although manufacturing infrastructure to convert these materials into innovative and detailed components is rapidly being developed, there is still much progress to be made. Processing for medical device components and automotive interior parts is now transitioning to aviation, which we believe will make a powerful impact on thermoforming capabilities in the aviation industry.

What exciting news will you be sharing with visitors?

We're excited about the show, as we'll be introducing our new Kydex FST-CTL coloured translucent sheet to the industry. Complementary to advanced lighting systems, the translucent material allows light and colour to achieve their greatest effect. The material is fully compliant and is the first translucent thermoplastic offered in colour for aviation. We'll also have thermoforming demonstrations at our booth, so visitors can see first-hand how the process forms components.

What's next for Kydex?

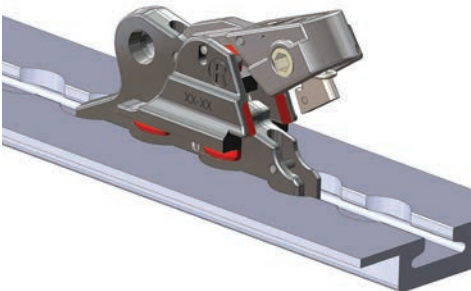
We'll continue to push the boundaries, developing design-forward solutions that meet the unique needs of the industries we serve. As designers and manufacturers collaborate more closely, we're excited to engage in a more robust dialogue with the design community to help drive new innovation. We also recently launched the designLab, a collaborative workspace where we partner with our clients to solve problems and bring their concepts to commercialisation.

QUICK-RELEASE TRACK FITTINGS

Attax, which has designed and manufactured aircraft track fittings for many years, is now introducing a new generation of automatic quick-release fittings. The fittings have been developed in reply to the growing demand for cost reduction during installation at the final assembly line, and also during the life of the aircraft for maintenance purposes.

The new concept affords time savings, and an ultra-light version may also create weight saving opportunities.

Attax can adapt the fittings for all applications, with different interfaces according to your technical specifications.



CRANE INKS SOUTHWEST RECLINE DEAL

Crane Aerospace & Electronics will be celebrating its selection by Southwest to provide the Hydrolok Seat Recline System for the airline's fleet of Boeing 737-700s. The order came on the heels of Southwest's announcement of Evolve: The New Southwest Interior, an eco-friendly retrofit of the cabin interiors. The retrofit increases seat capacity from 137 to 143. Southwest began the retrofit programme in March, with completion expected by the end of 2013.

"Southwest Airlines was looking for the most reliable seat recline system with the lowest cost of ownership in the industry," says Chris Cook, vice president of cabin system solutions at Crane. "We are very proud to provide them with our AL series Hydroloks, which are rugged, virtually maintenance-free, and easy to install. They are a drop-in replacement for almost all current recline locks in commercial service, and they are backed by the longest standard warranty in the industry."

TOUCH-UP REPAIRS

Visitors to the expo will be introduced to a new tool for fast retouching of aircraft interiors. AkzoNobel Aerospace Coatings will be presenting and demonstrating a unique new Dab2Fix paint application system at the show.

Quick and easy, the Dab2Fix touch-up tool allows controlled application to interior surfaces, correcting surface damage in a simple and effective way.

The sponge applicator ensures small areas can receive a touch-up repair to maintain the overall appearance of the aircraft interior.

Easily resealed, Dab2Fix can be reused numerous times, is highly efficient and minimises waste.

This environmentally friendly touch-up concept is ideal for the application of Aerofine 8250 Topcoat, offering an all-round reliable, fast-drying touch-up system to maintain the appearance of aircraft internal surfaces.

HUMIDITY FOR COMFORT

CTT has secured a deal to equip Boeing's 747-8 aircraft, as well as the Airbus A350, with its Cair cabin comfort system, which is designed to increase the relative humidity within the cabin to avoid air dryness during long flights.

The Cair system is a combination of humidifiers and a zonal drying (ZD) system. The ZD system prevents the humidifiers from creating condensation on the inside of the aircraft fuselage by providing dry air with a dew point lower than the temperature on the inside of the aircraft skin. Around 500 retrofit ZD systems have been sold to airlines whose operations are sensitive to fuselage condensation.

An airline can also select three cabin humidifiers, the so-called First Class, Business 1 and Business 2. This means that humidifiers can be selected for three temperature zones. If one or more cabin humidifiers are selected, two zonal dryers must be installed.

The Airbus contract is the first time that an aircraft manufacturer has ordered such a system directly from the supplier.

747-8 SLEEPING BERTHS PASS TEST

Greenpoint Products and Services (GPS) has announced that it has completed load testing and started kit deliveries on the 747-8 Aeroloft product.

The Aeroloft is a modular product designed specifically for the Boeing VIP 747-8 aircraft, providing eight private sleeping berths located above the main deck in the aft section of the aircraft. It allows passengers a private rest area adorned with custom-designed interior furnishings and a forward entry staircase. GPS has four confirmed orders and started shipping to the installation facility in March 2012.

The Aeroloft withstood loads of 9g using 18,000 lb of lead weight during flight and abuse load testing.

"We are very pleased with the results of the test," says Tim Abuhl, director of operations at GPS. "This is a significant milestone for the company and we look forward to supporting the installations."

"Our VIP clients required a solution to offer guests a comfortable and relaxing rest area during long, transcontinental flights," adds Bret Neely, vice president of sales for GPS. "The Aeroloft addresses those needs



by providing utility, safety and luxury all in one product."

**Five minutes with...**

MARIO SCHISA, CEO OF AVIOINTERIORS SPA

What do you see as the main trends in aircraft interiors?

Trends are different for each class. It is my opinion that with regards to the economy class, a lightweight design is nowadays mandatory to fulfil the market's requests. Moreover, a modular design is necessary to integrate different options in accordance with the various operators' requirements.

On the other hand, with regards to business class, it's important to find the right combination between privacy and interaction between passengers. For first class, the trend is to reach VIP quality in all details.

What are the biggest challenges in the industry?

These days the offer for the market is limited due to the fact that the two big airframe manufacturers select a limited number of suppliers, forcing customers' choice. The challenge is to keep the cabin interiors market up to standards and on-trend with new and advanced products, without inhibiting customers' freedom of choice.

What news will you be sharing with visitors?

We are now developing a new family of economy-class seats

in accordance with the market trends. We want to challenge the conventional way of designing an economy-class seat by offering a similar model obtained with the minimum weight possible for every dedicated operation. We think that this is the right approach to serve our customers by giving them the most appropriate tool to optimise costs and satisfy passengers.

Signed any new contracts recently?

We are proudly counting Boeing Capital among our customers, for whom we are currently delivering 20 seat ship-sets for Volotea's 717.

We also have confirmation from Transaero that we will be supplying our seats for their B777-200 fleet, while still delivering for their B777-300s. Also, we will develop new concept seats for their business class in 2013.

Aviointeriors is still continuing its successful collaboration with many completion centres, one of them being Singapore Engineering.

What's next for Aviointeriors?

Creativity and style are the main characteristics of the 'made in Italy' label; we intend to face our future challenges through the strength of our culture as well as our transparent new insight in order to deliver exclusive and appealing products.

Aviointeriors is a solid family business full of tradition and proven performances. Continuous organisational improvements together with new resources will win the trust of our customers.

feel the difference

Our philosophy is to challenge what has become habitual, and to never be satisfied with anything less than the best. We seek perfection each and every day and ensure that our leather meets all international quality requirements and technical specifications. We contribute to long-term and sustainable development while continuously reducing the impact on the environment. You will feel the difference!

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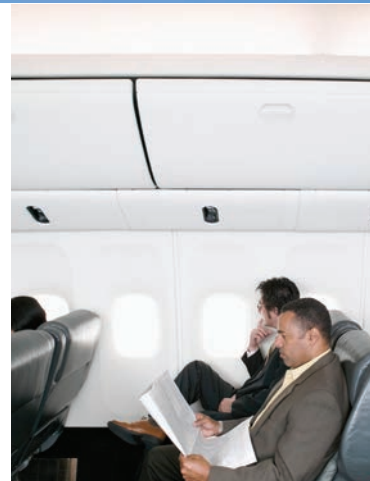


High performance Lexan® XHR sheet specifically designed for aircraft interiors that can reduce weight by up to 11% vs. traditional PVC/PMMA products to conserve fuel and lower emissions; meet tough flame, smoke, toxicity and heat release regulations; reduce overall system costs; and enhance the aesthetics, safety and comfort of the cabin environment.

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- Heat release (OSU65/65) - FAR 25.853 (d) Appendix F Part IV
- Smoke Density FAR 25.853 (d) Appendix F Part V
- Toxicity requirements of AIRBUS ABD0031 and BOEING BSS7239

Contact us at sfs.info@sabic-ip.com



VISIT US at the Aircraft Interiors Expo in Seattle, Stand 828

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Five minutes with...

BILL PERRONE, PRESIDENT OF AEROSPACE LEATHER AND TEXTILE COMPANY PERRONE AEROSPACE

What trends are you seeing in aircraft interiors?

Trends vary by region and market. For example, airlines in Europe and the Middle East are driven by providing a premier customer experience and specify primarily premium leathers. In Asia and North America, there is greater focus on weight and cost savings. In these regions we are seeing a shift to lightweight leather, laminated covers that require less foam, and even faux leathers, especially in the US commercial airline markets.

What challenges are you facing in the textile industry?

One of the biggest challenges we are faced with is trying to get the larger, legacy airlines to be more innovative and responsive to implementing new product innovations. Major carriers tend to be risk averse when considering adopting new products. Another challenge, which we have successfully addressed, is being diverse enough to offer the breadth of products that meet all of the above requirements across regions and markets.

What news will you be sharing with visitors?

We now have more EnduraLite Leather products in-service, and are continuing to gain momentum with this advanced new product in the US and abroad. By the end of the year we will be finalising our move to a new, "green", lean manufacturing facility, which will further enhance our ability to meet customer deadlines.

Any new contracts on the horizon?

With our proven product line such as Featherweight leather, which has now been flying commercially for more than 10 years, and the addition of our latest innovative new products such as EnduraLite Leather, and "Select" leather for laminated foam applications, we continue to see new growth internationally in commercial aviation.

What's next for Perrone?

Our growth strategy continues to be expanding our product offering with leathers and synthetics that pass 65/65 heat release, in addition to launching new products into the growing corporate and VIP markets.

LIGHTING SOLUTIONS

2012 has been a busy year for STG Aerospace. A record first quarter for sales of the SaftGlo product was followed by the installation of its 8,000th aircraft kit, as part of a major order from Southwest Airlines. The deal, made at the end of 2011, will see SaftGlo ColorMatch retrofitted to the Dallas-based airline's fleet during its normal maintenance schedule over the next few years.

STG has also revealed the first in a planned range of new lighting solutions, an aftermarket LED cabin lighting system for Avro RJ 100 aircraft. The long-life LED units directly replace conventional fluorescent tubes, which have to be renewed frequently.

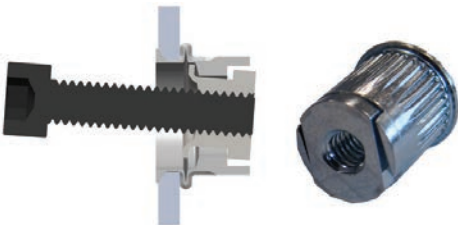
In addition, the company's new WhiteHawk lighting offers a swap-out/ swap-in solution for an LED system, which, until now, has proved expensive to retrofit. Swiss International Air Lines has become the first customer.



RIVET NUTS

Easy, accurate and fast attachment of components in off-centre applications are the claimed benefits of Riv-Float Short from HW Eckhard. These rivet nuts were developed for use in applications such as replacing riveted nut plates in aircraft interiors; they allow manufacturers the benefit of accounting for tolerance stack up, and resolve alignment issues during product assembly. This saves costly reworking of components and the expensive downtime associated with stripped or cross-threaded fasteners. The design also allows installation from the front side of the work piece, which improves assembly time by allowing the fasteners to be installed post paint, powder coat or other surface treatment.

Riv-Float Short is being used in aircraft interiors to attach the structures of the galley, overhead bins, armrests and the lavatory. This family of rivet nuts is RoHS compliant and can provide higher thread strength than regular rivet nuts.



GREEN AND CLEAN CARPETS

Mohawk Aviation Carpet will be announcing a new version of its AkroBak backing, which produces improved smoke, toxicity and burn testing results that exceed all requirements established by Airbus, Boeing and the FAA.

This improved latex, when applied to the back of Mohawk Aviation's woven nylon aircraft carpets, produces excellent safety, durability and low total cost of ownership results.

An additional innovation that Mohawk Aviation plans to introduce is the chain and stuffer backing yarns in all carpet grades, which will now contain 100% post-consumer PET made from recycled plastic bottles. These new backing yarns are extruded internally and make up between 10% to 20% of the total weight of Mohawk's new, environmentally friendly aircraft carpets.



CONTOUR SIGNS BA 767 UPGRADE DEAL

Celebrations have been taking place at Contour Aerospace Limited, which has been chosen to work with British Airways on its 767 fleet upgrade. Contour has been selected to refurbish BA's Club World Dusk Seats and cabin interior sidewalls.

In addition to the new-look seats, this project has seen Contour extend its portfolio to include the repair and refurbishment of sidewall panels – a feat that can be achieved in a turnaround time of just 10 days to coincide with each aircraft's maintenance schedule. The first 767 has been completed and has entered into service.

Contour Aerospace has provided premium cabin interiors for leading airlines over the last 75 years, and worked with British Airways to launch the first horizontal flat bed in First Class in 1995 as well as the first truly flat bed in Business Class in 2000.

Carl Bullock, director of services at Contour, says, "We are delivering a high-quality refurbishment service for British Airways and are thrilled that Contour was chosen for this prestigious programme."

PNEUMATIC DRINK CART

Stand by to see what is claimed to be the world's first pneumatic airline drink cart system. The Dynamo Drink Cart is designed to reduce in-flight beverage service costs by up to 50%, while decreasing storage, ground handling and warehouse expenses by up to 75%, and eliminating shrinkage by nearly 100%.

Backed by 30 years' experience in the hospitality and aerospace industries, and design approved by the FAA, EASA and Transport Canada, the Dynamo Drink Cart streamlines in-flight and ground handling costs and operations while enhancing passenger satisfaction.

GALLEY INNOVATIONS

Altitude Aerospace Interiors specialises in helping airlines differentiate through the aircraft interior by translating conceptual design into physical products.

The company will use the expo as a platform to demonstrate its increased focus on galley innovations. Altitude is investing heavily in galley technologies to position itself as a vendor of an entire suite of monuments throughout the cabin. The company aims to provide airlines with flexibility in their galley configurations to meet the needs of all the galley's users.

Project Amber gets trial run

Heath Tecna's newly developed retrofit cabin interior, code-named Project Amber, will be flying with launch customer Qantas Airways in the fourth quarter of 2012. Project Amber is a pivot bin interior designed to replace the OEM interior on B737s and 757s, bringing contemporary styling, increased baggage capacity and more openness to maturing narrow-body cabins. Heath Tecna will supply the first shipset of its new interior to the airline for a trial run on a 737-800NG aircraft, and will obtain an STC for the new interior configuration. Retrofit equipment for the launch aircraft will include a ceiling panel rework kit, overhead bin valances, a uniquely configured pivot bin system, a bin assist system, passenger service units and underbin class dividers.

Gary Chris, VP of sales and marketing for Heath Tecna explains, "By installing Project Amber's patent-pending pivot bin system, Qantas passengers will enjoy

a 30-40% increase in overhead stowage capacity, allowing additional roller bag space for customers. Furthermore, the bin assist system will help to close fully loaded bins more easily, new PSUs will offer an intuitive layout, and travellers will enjoy extra head room as the new pivot bins arch upwards."

Qantas domestic CEO Lyell Strambi says, "Qantas is pleased to be the first airline in the world to partner with Heath Tecna to trial new overhead stowage bins for our Boeing 737-800 fleet. The easy stowage of carry-on baggage is important for our customer experience and the trial will allow us to test a new design."

It's not just existing aircraft that will benefit from the innovative pivot bin designs of the new interior, as other airlines have reportedly approached Heath Tecna about outfitting new Boeing 737NG aircraft with Project Amber rather than the Boeing Sky Interior overhead bins.

**DISABLED CHILDREN CHAIR**

An innovative new chair for disabled children for use in passenger aircraft will be on show to expo visitors. The TravelChair 2012 has been designed by the children's disability charity MERU and will replace a version designed in 2002. Virgin Atlantic has already placed orders for the TravelChair 2012 and MERU is participating in negotiations with several other major airlines.

The TravelChair provides postural support to physically disabled children on board aircraft. The chairs are portable however, and can therefore be securely installed on board the majority of types of aircraft (including helicopters) on request.

Dame Deirdre Hutton, chair of the CAA, explains, "There are nearly 500,000 disabled children in the UK. For all of us, flying opens up worlds of possibility. For disabled

children its significance can be even greater. It can mean life-changing experiences – like swimming with dolphins – or life-changing treatment. MERU deserve the utmost credit for developing the TravelChair, with its potential to enhance so many young lives."



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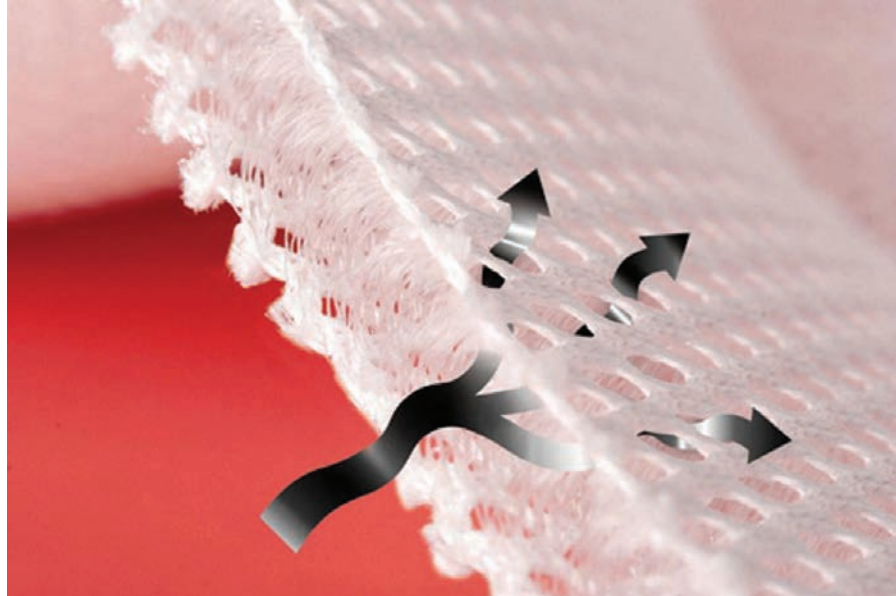
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Famotex offers extraordinary benefits for a widening range of market applications. The product technology centres on the 3D construction, which reduces heat build-up, allows consistent air circulation and provides high moisture transfer. Additional benefits include comfort cushioning and shock absorbency with excellent recovery properties. Famotex has many different properties that can be incorporated and as a one-piece structure provides many additional advantages in comparison to traditional foams and multi-layer fabrics and it can be heat-moulded and shaped.

A Famotex cushion structure is 45% lighter than a foam seating structure

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Innovative plastics

Global aerospace OEMs and tiers need compliant, safe and fuel-efficient solutions to cost-effectively design and manufacture next-generation aircraft interiors. Sabic endeavours to work side by side with aerospace customers and invest to develop newer, more advanced materials solutions to help meet these challenges and drive long-term customer success.

The Lexan XHR (extremely low heat release) 6000 sheet provides weight-out of up to 12% compared with traditional polyvinyl chloride/acrylic products, while fully complying with FST requirements (FAR 25.853) of airlines for seating, cockpit linings and other interior components.

Sabic is now expanding its portfolio with the Lexan XHT 5000 sheet. This new co-extruded product with a pigmented white cap-layer over a black base is a flame-retardant thermoplastic, designed specifically for aircraft window shade applications, which require compliance

with the stringent FAR 25.853 regulation. The co-ex construction of this product provides excellent opacity and eliminates carbon powder mark-off. The A surface is designed for lamination with a decorative film and the product can be thermoformed for maximum design flexibility, offering improved surface colour and finish after thermoforming. Lexan XHR sheet offers FST and OSU65/65 heat release compliance with choice of colours.

Geven SpA, the aircraft seating and interior solution provider, has chosen Lexan XHR sheet for its new aircraft seating for Caribbean Airlines' interiors, designed by Giugiaro.

Lexan XHR sheet was the solution to the challenging goal of limiting the seat weight to a maximum 9kg (19.8 lb) due to the material's light weight, and compliance with FST regulations and Airbus toxicity requirements. It also provided excellent processability with thermoforming.



PLACARDS AND NAMEPLATES

With AHW's business continuing to expand into the aircraft interior market, the company will be highlighting its recent acquisition of World Marketing at this year's expo. World Marketing specialises in the manufacture of custom placards and nameplates for the aerospace industry.

Located in a newly expanded facility adjacent to AHW's HQ in Long Beach, California, World Marketing is looking to increase business 100% over the next year.

AHW's sales and operations manager Krista Ioffrida explains, "Aircraft Interiors Expo is the perfect arena for AHW to expose World Marketing's exceptional product line to the industry." AHW is confident that World Marketing's September debut at the 2012 Aircraft Interiors Expo Americas in Seattle will greatly improve World Marketing's visibility as a leader in specialised aircraft interior placards

SICMA WINS ANA AWARD

Visit Sicma to find out more about its award-winning work. ANA (All Nippon Airways), with whom SICMA has been working for many years, has officially rewarded all the efforts provided by all SICMA's teams by awarding the company a Best ANA Supplier of the Year award.

Fifteen months ago, an MOU was signed between the two companies, engaging SICMA in an imperative return of good performances in terms of lead-time, quality and submission of documents for seats and spares.

SICMA's transparency, availability and reactivity in relation to ANA requests have thus contributed to the improvements in quality of BFE business-class seats to meet ANA's requirements.

IFE DEPLOYMENT ARM CONCEPT

Bucher Aerospace believes in the idea of partnership and open communication, and has therefore collaborated with Thales to introduce an innovative IFE deployment arm concept.

The arm features a unique mechanism allowing the accommodation of large-format IFE displays, such as Thales' 12.1in SVDU Gen IV display, under a standard or premium economy seat with a reduced swing radius. After extensive research, prototypes and testing, combined with input from customers, the mechanisms of the arm have been updated to improve installation, performance and maintenance. The advances made on this product are now being leveraged in new product development for the airline industry across the USA.

GALLEY CONFIGURATOR

ITS GmbH will be presenting a new solution to visitors: the Galley Configurator. This system will assist R&D engineers in generating a galley from scratch into a 3D model, providing details such as systems (electrical, water, air-conditioning), using standard parts libraries to assist the sales process and later on the design process (CATIA, Pro-Engineer, SolidWorks) of a galley.

ITS Group provides the worldwide aviation industry with R&D engineering services supporting the design of cabin products for interior projects include galleys, stowages, ceilings, crew rests, bins and wiring diagrams.

FULL POLYMER TROLLEYS

The AeroCat team will be looking for further orders for the polymer Atlas trolley. Based on the 'TheEAZYway' concept, including full polymer, RFID-equipped catering trolleys, RFID infrastructure and software, the trolley has already found a customer in Aer Lingus for 3,000 trolleys.

AeroCat's CEO Theo Alsemgeest says, "We fully agree with our market competitors that customers are in favour of composite or full polymer trolleys if we could offer those in a more attractive economic way. That's why we created our EAZYway concept, offering a full operational catering lease concept at a cost level even more attractive than buying a low-priced lightweight aluminium trolley. That's our vision on catering innovation and customer convenience: A greener and optimised catering operation without additional investments."

PASSENGER BAR CONCEPT

Take time out at the show to visit AIM Aerospace, which will be displaying a new passenger bar concept it developed with styling input from the French design company JCE. This highly attractive yet minimally space-intensive concept is designed for business class cabins, and includes multi-use stowage that promotes a social area while minimally infringing on precious cabin real estate.

AIM Aerospace is a specialist in interior monument structures and first/business class seat furniture. With over 20,000 passenger places of lie-flat seat shells flying today, AIM products can be found on aircraft operated by Air China, TAM, Air France, KLM, American, China Air, Korean, Malaysia, Xiamen and Thai.



Dream weaver

Botany Weaving has become one of the largest aircraft seat fabric manufacturers in the world following investments into its three manufacturing plants of over €4 million.

The company can supply 100% wool, wool/nylon or 100% Trevira CS materials, and can also supply lightweight seat fabrics that save on airline fuel burn costs, as well as anti-static fabrics. Chenille fabrics come in wool or Trevira CS, and all fabrics meet vertical burn test standards.

Being an approved fabrics supplier for Boeing and Airbus, Botany Weaving works with over 120 leading airlines, including Air Canada, Air France, BA, Cathay Pacific, United Airlines, Qantas and Virgin Atlantic.

The company has also received 'approved supplier' status for carpets, which is a young and growing part of the family-owned business.

The company's most recent project has been to supply Malaysia Airlines with a new range of textured fabrics for its flagship A380 (pictured below). See page 42 for more details.



SEAT RECLINE SYSTEM

The GAs-LOX seat recline system designed and developed by General Aerospace brings innovation into the interior of the cabin with a lightweight, durable recline mechanism offered for all classes of travel, utilising a wide range of strokes.

Economy class can have up to 30mm of usable stroke, premium and business class can have up to 45mm to 66mm of usable stroke, and executive class can have up to 81mm to 95mm of usable stroke.

The seat recline systems are installed in the horizontal position of the seat pan without the need for any special tools. They are either fixed stroke or have a variable adjustment setting to meet the seat OEM and airline's needs.

ADHESIVE TAPES

Biolink Tape Solutions is developing and gaining approval for a series of new solvent-free, pressure-sensitive adhesive tapes, films and foils for aircraft flooring. Sales are going well for its 'relink 2318', an Airbus-approved and specified carpet tape that offers quick installation, lift-free fixation across all backing types, and rapid residue and damage-free removal, in one piece.

Thus Biolink is now in the process of developing and gaining approval of several new 2318 variants, including a non-textile floor tape (NTF) and a flame-retardant carpet tape. The NTF tape is designed to provide residue and damage-free removal from moisture liquid barrier films and from composite directly.



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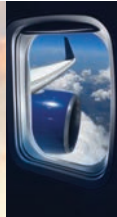


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Find out more about Divinycell F at: www.diabgroup.com

Divinycell® F

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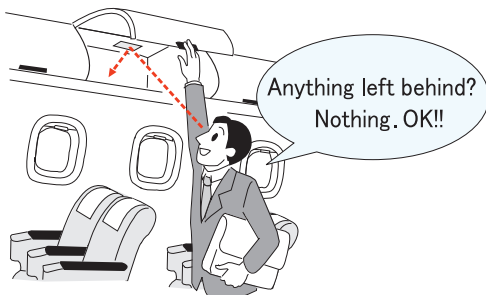
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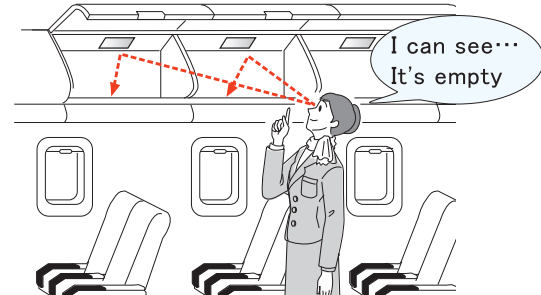


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Bright ideas

STG Aerospace has completed the first five aircraft installations of its new long-life WhiteHawk replacement LED lighting system as part of a major order from Swiss International Air Lines.

The deal, signed earlier this year, means the industry's first ever 'swap-out/swap-in' LED lighting system will be retrofitted across the airline's fleet of 20 Avro RJ100s, replacing existing fluorescent tubes.

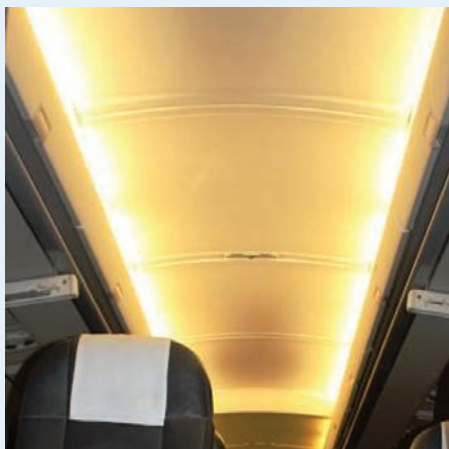
Richard Moore, chief executive of STG Aerospace said: "The first Avro RJ 100 aircraft kit installation was completed by two engineers in just two hours with no problems and with complete client satisfaction. It was all so straightforward and the benefits so immediately obvious to Swiss that they have asked to accelerate the remaining installations."

The long-life LED units directly replace conventional fluorescent tubes, which require frequent replacement. Installation simply involves removing the fluorescent tubes and fitting the WhiteHawk LED tubes, with no modification to the existing ballast units or lamp holders, meaning the benefits of LED are accessible to all.

For operators, WhiteHawk offers low power consumption and increased reliability, with the added benefit of removing the maintenance requirements of fluorescent tube replacement.

For both passengers and crew, the LED lighting creates a better quality and consistency of light when compared with fluorescent lighting, offering better cabin ambience.

György Filep, aircraft systems engineer at Swiss International Air Lines, said: "WhiteHawk is a real breakthrough in cabin lighting for us. We carried out a thorough evaluation of all available systems and were impressed by the reduction in maintenance burden and improved cabin appearance delivered by STG's new product. WhiteHawk has already demonstrated its benefits, so we look forward to completing the changeover in our RJ100 fleet".



CABIN DEVELOPMENT SEMINAR

The 2012 event will introduce a series of seminars that will take place throughout the show. The seminars will explore three critical areas of cabin development: the economy cabin and its variants; innovations in cabin ambience and real estate; and leveraging the cabin to deliver profitability. The sessions will offer insights into how manufacturers, airlines and suppliers can benefit from contributing to a heightened passenger experience.

Sessions will include 'Delighting your passengers'; the best way to drive extra revenues from the cabin experience, including what facilities and features passengers will and will not pay for inside the cabin; how to improve satisfaction and comfort in the economy cabin; how to stack up the economics of the connected cabin; and looking at whether airlines can extend branding across more touch points in the passenger journey.

POLYMER PIPES

A polymer-based pipe system for the cargo drainage system on the Airbus A350 XWB has been developed in order to reduce weight. Created by Victrex Polymer Solutions, a polyaryletherketones expert, together with PFW Aerospace AG, an aerospace tubing systems specialist, the lightweight, thin-wall pipe system is the first alternative to metal tubing introduced to the aerospace market.

"Given the increasing demands of the aerospace industry to reduce weight we needed to identify alternatives to metal," explains Rupert Kästel, vice president of sales and marketing at PFW Aerospace. "We worked closely with Victrex for over three years, involving them in every stage of the product development phase through to the qualification. Together we have successfully delivered an alternative to metal tubing and a next-generation solution for commercial aircraft."

EXPANSION NEWS

Having completed its acquisition of Anolis Interiors GmbH, Bucher Group will now be known as Bucher Interiors.

Bucher will remain in its current location outside Frankfurt, Germany, though it has taken over Anolis' facilities and will gain approximately 2,500m² of production and office space and over 80 permanent employees. This acquisition supports Bucher's long-term strategy in providing cutting-edge products and solutions in the aerospace industry, and allows Bucher Leichtbau to expand the primary focus of its aluminium-based galleys to the newly acquired production of composite interiors like its honeycomb panel galleys.

TRANSLUCENT VIEW

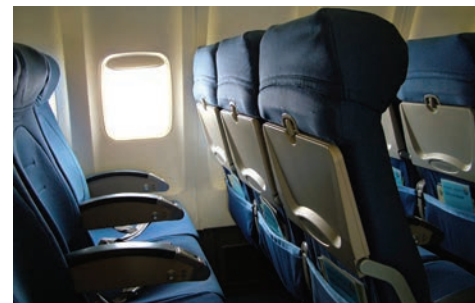
At AIX Seattle, Kydex will be showing new fully compliant coloured translucents, a long sought-after industry first. The company will also present new colour additions to its aviation palette and host thermoforming demonstrations.

POLYMER PIPES

Barrday Composite Solutions is planning to display its prepreg products and adhesives, for laminators, moulders, and end-users in applications such as crew and passenger compartments, seating, galleys, stowage bins, and partitions/panels.

The new LC294 and LC296 family of high-performance interior prepreps provide sub-30/30 OSU heat release, combined with low smoke, self extinguishing, and good self-adhesive properties and surface finish. Additionally, LC296 is a snap-cure (10-17 minutes at 265°-280°F/130°-138°C), toughened, phenolic-based prepreg system.

These materials provide extremely low OSU heat release properties allowing engineers much more design freedom and still provide an end product that conforms to FAA guidelines. The new prepreg offerings have already been qualified at a major manufacturer of interior components, while others are in process.



and if you're taking time out...

While you're in Seattle, why not take some time to explore the city; there is no shortage of things to see and do.

FLYING VISIT

Pay respects to the origins of today's jetliners at the Museum of Flight, one of the largest air and space museums in the world. More than 400,000 visitors from around the world flock to the museum every year to see its collection of more than 150 historically significant aircraft and spacecraft, as well as the largest aviation and space library and archives on the West Coast. The 12-acre museum campus is situated off the runway of King County Airport and Boeing Field, and offers indoor and outdoor exhibits and activities. The museum is also home to the Red Barn, Boeing's original manufacturing facility.



ALL THE SEVENS

Why not take a tour of the Boeing Everett factory, which produces the 747, 767, and 777. It's worth visiting for the building alone, which is the largest in the world by volume (472 million cubic feet). On the Boeing flight line, you can see aircraft in various stages of flight test and manufacture for airline customers around the world.



UP IN SPACE

OK it's a cliché, but how can you visit Seattle and not go up the iconic Space Needle? Take a 41-second lift journey and you're 520ft above the city, with landmarks like Puget Sound and Mount Rainier becoming mere specks. Complimentary Swarovski telescopes let you watch the seaplanes landing, or you can even sneak a peek at a baseball game at Safeco Field, home of the Seattle Mariners.



BENEATH THE SURFACE

After looking down on the city, you can venture below it, courtesy of the Underground Tour. The 90-minute guided walking tour offers a humorous stroll through subterranean storefronts and sidewalks entombed when the city rebuilt on top of itself after the Great Fire of 1889.



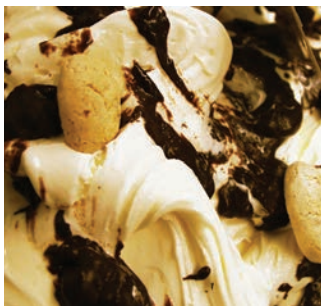
FLYING FISH

Ever endured a corporate training video? Chances are it included footage from Pike Place Fish Market, where famously when you buy a fish, the fishmongers throw it through the air to be wrapped. It is rumoured some people buy a fish for the performance, rather than for dinner.



FAT CHANCE

And what better dessert after your fish than cheddar cheese ice cream? Head to one of Molly Moon's four ice cream parlours and you can sample this dubious delight, the secret of which is 19% butterfat. The parlour says the taste is "almost vanilla until a nutty tang finally hits the palate". Do let us know if you try it...



A MODEST COLLECTION


For the ultimate toy chest, visit the Flying Heritage Collection, Microsoft co-founder Paul Allen's personal collection of beautifully restored WWII aircraft. These are not just hangar queens, as the ultimate aim is for them all to take to the air once again.



COME BY FOR SCI-FI

Culture? OK, just a little bit. The EMP Museum is another attraction that comes courtesy of Paul Allen, and specialises in music and science fiction. The Frank Gehry exterior alone is worth a visit, but if you venture inside during Expo week, you'll find the 'Icons of Science Fiction' exhibition, featuring iconic artifacts from sci-fi literature, film, television, and art, including an Imperial Dalek from *Doctor Who*, the command chair from *Star Trek*, and Neo's coat from *The Matrix Reloaded*.





From the publishers of Aircraft Interiors International magazine

transportation weight loss diet conference 2012

The Transportation Weight Loss Diet Conference is a unique event that will bring together key innovators from across the automotive, aerospace and rail industries, as well as leading academics, to highlight major breakthroughs in mass reduction.



OVER 60
SPEAKERS

CONFIRMED SPEAKERS TO DATE:

Matt Zaluzec manager Materials Research Advanced Engineering Department, Ford Motor Company • Dr John Fish senior manager Airframe Technology Lockheed Martin Aeronautics Co • Tomasz Krynski chief engineer PSA Peugeot Citröen • Robert McIntosh chief engineer - Weights Boeing • Jacques Belley, Director R&D, Standardization and Innovation Bombardier Transportation North America • Oliver Walter Responsible Product Manager BMW i3 BMW • Dr Srikanth Ghantae senior technology specialist - Plastics Volvo Trucks North America • Dr Ley Richardson principal application research associate - Aerospace DuPont Protection Technologies • Pradeep Kumar Manager - Global Bus & Coach Programme Ashok Leyland Limited • Toru Yamanaka General Manager Automotive Center Toray Industries Inc • Ramkisan Gite PAT lead - Weight Reduction Tata Motors • Phillip Bell product line manager Corning Incorporated • Scott Blake president Assembly Guidance • Byron Bloch director Auto Safety Expert LLC • Jonas Braam research engineer Sapa Technology • Mike Brock market development manager Rogers Corporation • Daniel Buckley manager of R&D AGFM • Ravi Chilukuri director EASi • Antonio Coelho R&D director Amorim Cork Composites • Freddie Colsohl account manager LMS North America • Prof Glenn Daehn professor Ohio State University Materials Science and Engineering • Nico Den Ouden sales and marketing director E-Leather Group • Dr Jorge F. dos Santos head of department Helmholtz-Zentrum Geesthacht • Ramkisan Gite PAT lead - Weight Reduction Tata Motors • Neil Gross president Acme Mills Company • Phil Hall managing director Caterham Composites • Georg Heidelbergmann president Adapt Laser Systems • Prof Santiago Hernandez professor University of Coruna • Prof Pete Hylton director of Motorsports Engineering Indiana University Purdue University Indianapolis • James Jones CCG manager - Americas Composites Consulting Group • Greg Kolwich manager Value Engineering Services FEV Inc • Prof Konstantinos Kontis professor and deputy director The University of Manchester and Industrial Engineering University of Toronto • Dr Mohammad Moniruzzaman product development engineer SABIC • Dr Dries Moors innovation manager Bekaert • John Mowrey CEO ZD Metal Products • Anthony Norton senior director Global Automotive & Off-Highway Vehicles Altair • Ms Gulsen Oncul A350 Ailerons EPM TAI • Tony Padula product manager Amphenol Pcd • Vasant Pednekar senior engineer Application Development Lanxess Corporation • Gregory Peterson senior technical specialist Lotus Engineering Inc • Alexander Pozzi vice president Advanced Design Group Seating Products B/E Aerospace • Paul Priestman director Priestmangoode • Javier Rodriguez Director Vehicle Integration & E/E EDAG Inc • Alasdair Ryder business unit manager - High Volume Manufacturing Umeco Structural Materials • Greg Schroeder research analyst Manufacturing Engineering & Technology Center for Automotive Research • Gary Seale managing director Cobra • Steven Sopher technical director JSP • Richard Strout president Leading Edge Motorsport • Gerret Suhl head of Sales Car Trim GmbH • Manoj Surana manager - Engineering Research Centre Tata Motors Ltd • Ashutosh Tomar senior researcher Jaguar and Land Rover • Dan Williams product manager - Automotive Granta Design Ltd • Ingo Wuggetzer vice president Cabin Innovation and Design Airbus Operations GmbH • Dr Robert Yancey senior director - Global Aerospace Altair Engineering

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Transportation Weight Loss Diet Conference 2012

OCTOBER 24-25, 2012
BOSTON, MA, USA

The Transportation Weight Loss Diet Conference will bring together designers, engineers, program leaders, and heads of industry from the global aerospace, automotive, and rail industries for a two-day conference dedicated to cutting-edge research and technologies aimed at reducing weight and

decreasing overall carbon footprint, without compromising safety, efficiency, or operational ability.

Presentations will include real examples of how challenges and compromises can be overcome and avoided through intelligent design choices and initiatives, as well as new materials and engineering practices.

The conference provides an unparalleled opportunity for a transfer of ideas between transport sectors, highlighting the best new approaches with the greatest potential to reduce weight, save fuel, enhance performance, and lessen environmental impact. Don't delay – make sure you book your place in Boston this October!

PRELIMINARY CONFERENCE PROGRAM

DAY 1 Wednesday, October 24

Setting the scene: the future of mass reduction

The opening session of the conference will highlight key trends and motives for mass reduction in the automotive, aerospace, and rail sectors, as well as examining potential future supply issues for lightweight materials.

Keynote presentation

Matt Zaluzec, manager, Materials Research and Advanced Engineering Department, Research and Advanced Engineering Center, Ford Motor Company, USA

Lightweight rail transportation at Bombardier

Jacques Belley, R&D director, Standardization and Innovation, Bombardier Transportation, USA

Less is more: automotive downweighting opportunities with mixed materials

Greg Schroeder, research analyst, Manufacturing, Engineering & Technology, Center for Automotive Research, USA

Lightweight materials

This session will look at a range of materials for use in vehicle mass reduction applications. New-generation meta and para aramids, intermetallic replacements for Ni-based superalloys, magnesium alloys, metal matrix composites, and 'fuzzy fiber' will all be profiled. The session will also cover manufacturing CFRP parts.

Advanced lightweighting materials: Nomex, Kevlar, and beyond

Dr Ley Richardson, principal application research associate - Aerospace, DuPont Protection Technologies, USA

Gamma Ti alloys: commercial solutions for carbon reduction

Cameron May, director, GfE Materials Technology Inc, USA

How metal matrix composites have been redesigned for more machinability and lower cost

Patrick McGowan, vice president, GT Alloys, USA

Magnesium applications for lighter-weight vehicles

John Mowrey, CEO, ZD Metal Products, USA

Passenger environments

Transportation needs to be attractive and easy to use. Transportation operators and manufacturers need to satisfy passengers and customers. Consumers must view mass reduction as an improvement to their transport experience. This session will look at how this can be achieved.

Designing efficient passenger environments

Paul Priestman, director, Priestmangoode, UK

Cabin Concept 2050 based on a bionic structure

Ingo Wuggetzer, vice president Cabin Innovation and Design, Airbus Operations GmbH, Germany

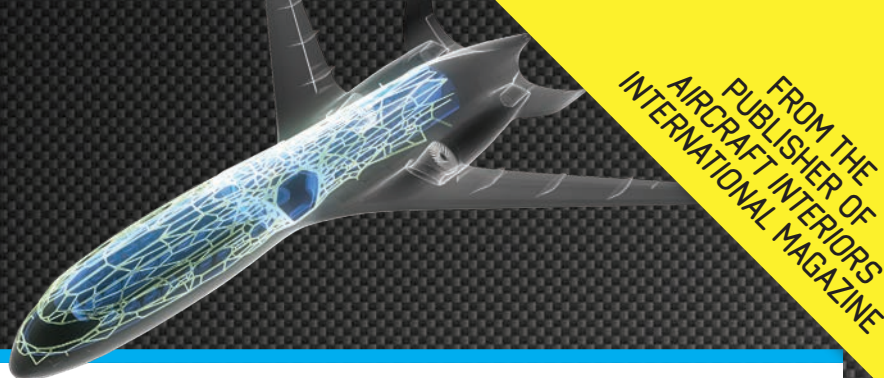
Employing new design techniques to deliver lightweight seats

Alexander Pozzi, vice president Advanced Design Group, Seating Products, B/E Aerospace, USA

Low-calorie light infotainment

Ashutosh Tomar, senior researcher, Jaguar and Land Rover, UK

transportation weight loss diet conference 2012



FROM THE
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INTERNATIONAL MAGAZINE

Low-cost multifunctional-use composite to reduce weight

Prof Khalid Lafdi, professor, Department of Chemical and Materials Engineering University of Dayton Research Institute and Wright Brothers Institute Endowed Chair in Nanomaterials, USA

Developing volume manufacturing processes for carbon-fiber reinforced automotive body structures

Donald Lasell, president and chief engineer, Think Composites, USA

Manufacturing with lightweight materials

This session sees presentations covering high-speed automated manufacturing processes and techniques using composites; and looks at how smartphones may deliver new, strong, lightweight glazing solutions to transportation, as well as new mixed materials.

High-volume, high-speed preforming for structural composites

Daniel Buckley, manager of R&D, AGFM, USA

The development of effective prepreg solutions for the transport sector

Alasdair Ryder, business unit manager - High Volume Manufacturing, Umeco Structural Materials, UK

Strong, lightweight glass laminates for transportation weight reduction

Phillip Bell, product line manager, Corning Incorporated, USA

EASI: steel cord reinforcement for injection molded parts

Dr Dries Moors, innovation manager, Bekaert, Belgium

Lessons from aerospace: integrating lightweight materials information into engineering workflows

Dan Williams, product manager - Automotive, Granta Design Ltd, UK

Objective composites manufacturing process control: reducing uncertainty, overdesign and weight

Scott Blake, president, Assembly Guidance, USA

Lightening the way ahead

Phil Hall, managing director, Caterham Composites, Germany

Lightweight design of composite structures

Dr Robert Yancey, senior director - Global Aerospace, Altair Engineering, USA

Technologies for lightweight design and performance verification

Ravi Chilukuri, director, EASI, USA & Michael Lee, project manager, EASI, USA

Polyetherimide-carbon fiber as metal substitute in aircraft food tray arms

Dr Mohammad Moniruzzaman, product development engineer, Sabic, USA

Innovative solutions for railway floors and interior panels using cork

Antonio Coelho, R&D director, Amorim Cork Composites, Portugal

Automotive case studies and applications

What are the major vehicle manufacturers achieving in terms of mass reduction? This session looks at specific case studies of vehicles and programs.

VSL Project: sustainable and affordable technology for CO₂ emission

Tomasz Krynski, chief engineer, PSA Peugeot Citroën, France

Weight reduction lessons and achievements: product development

Ramkisan Gite, PAT lead - Weight Reduction, Tata Motors, India

The BMW i3: a battery electric vehicle - right from the beginning

Oliver Walter, responsible product manager BMW i3, BMW, Germany

Using alternative plastic materials for weight reduction on heavy trucks

Dr Srikanth Ghantae, senior technology specialist - Plastics, Volvo Trucks North America, USA

Use of composites in bus structures for significant weight reductions

Mukul Mitra, program manager, Ashok Leyland Limited, India. Pradeep Kumar, manager - Global Bus & Coach Programme, Ashok Leyland Limited, India

Weight reduction through value engineering

Manoj Surana, manager - Engineering Research Centre, Tata Motors Ltd, India

Light-duty vehicle mass reduction and cost analysis: midsize CUV

Greg Kolwich, manager, Value Engineering Services, FEV Inc, USA

Reducing vehicle weight with composite materials

James Jones, CCG manager - Americas, Composites Consulting Group, USA

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transportation weight loss diet conference 2012

DAY 2 Thursday, October 25

Simulation and integration

The design and engineering challenges of integrating composite materials into structures and parts is addressed in this session, with presentations focusing on simulation, design optimization and process control techniques.

Intelligent adhesive bonds that provide an early warning system for structural failures

Prof Shaker Meguid, professor and director Engineering Mechanics and Design Laboratory, Department of Mechanical and Industrial Engineering, University of Toronto, Canada

Design and fabrication of multi-material structures

Prof Glenn Daehn, professor, Ohio State University, Materials Science and Engineering, USA

Laser cleaning pre-treatment for bonding of lightweight metals

Georg Heidelmann, president, Adapt Laser Systems, USA

Achieving weight reduction through design, material selection, and application-specific products

Tony Padula, product manager, Amphenol Pcd, USA

Mechanical performance of friction spot-welded joints in 2198-T8 alloy

Dr Jorge F. dos Santos, head of department, Helmholtz-Zentrum Geesthacht, Germany

Aerospace materials for aircraft lightweighting applications

Dr Ralph-Dieter Maier, manager, Aerospace Technologies, BASF Corporation, USA

Design-driven innovation and cross-pollination for lightness

José Rui Marcelino, design manager, Almadesign, Portugal

Parametric study and topology optimization for platform concepts

Anthony Norton, senior director, Global Automotive & Off-Highway Vehicles, Altair, USA

Lord UltraConductive film and coatings for lightning strike protection

Ross Zambanini, senior global market segment manager, Aerospace & Defense, Lord Corporation, USA

Experiences with the electrical use of carbon fiber

Walter Kiersch, CEO, Carbon Conduction Technologies (CCT) GmbH, Germany



Automotive case studies and applications

Edison2's Very Light Car: a new automotive architecture

Oliver Kuttner, CEO, Edison2 LLC, USA

Half-weight vehicle with new materials: chassis, body, and driveline

Mogens Løkke, CEO, ECOmove ApS, Denmark

Full vehicle lightweight designing based on CAE techniques

Javier Rodriguez, director Vehicle Integration & E/E, EDAG Inc, USA

Prospective view of CFRP as a technology for weight reduction of automobiles

Toru Yamanaka, general manager, Automotive Center, Toray Industries Inc, Japan

HiAnt simulation: simulating structural continuous fiber-reinforced thermoplastics parts

Vasant Pednekar, senior engineer Application Development, Lanxess Corporation, USA

Automotive safety

One of the key concerns in downweighting vehicles is the issue of safety. This session looks at the issue not from the perspective of how far we can compromise safety for mass reduction, but rather how mass reduction actually increases safety and what lessons may be learned from motorsport.

Enhancing vehicle safety and crashworthiness with weight-loss improvements

Byron Bloch, director, Auto Safety Expert LLC, USA

Designing a lightweight body structure meeting federal impact requirements

Gregory Peterson, senior technical specialist, Lotus Engineering Inc, USA

Characterization of crash properties in aluminum extrusions

Jonas Braam, research engineer, Sapa Technology, Sweden

New materials and design technologies for motorsports

Prof Pete Hylton, director of Motorsports Engineering, Indiana University Purdue University Indianapolis, USA



OCTOBER 24-25, 2012
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Aerospace design developments

Looking specifically at aerospace, this session considers specific examples of mass reduction developments and the lessons learned in significantly increasing composite percentages in aircraft structures, as well as some interesting designs for drag reduction and innovative uses of carbon fiber.

Future aircraft composite weight savings opportunities and challenges

Dr John Fish, senior manager Airframe Technology, Lockheed Martin Aeronautics Co, USA

Challenges, and opportunities, of introducing composites into the 787 airplane design

Robert McIntosh, chief engineer - Weights, Boeing, USA

Weight opportunities of wide-body aircraft composite ailerons

Gulsen Oncul, A350 Ailerons EPM, TAI, Turkey

Multimodel structural optimization of commercial aircraft

Prof Santiago Hernandez, professor, University of Coruna, Spain

Understanding weight reduction relationships for rotorcraft

Dr Daniel Schrage, professor, Georgia Tech, USA

Drag-reduction technologies for low-speed applications

Prof Konstantinos Kontis, professor and deputy director, The University of Manchester, UK

Multi-disciplinary optimization of a pylon for mass and drag reduction

Freddie Colsoul, account manager, LMS North America, USA

CLOSE

Lightweight seating

Safe, comfortable seats – sometimes in large numbers – are a key requirement for most vehicles, especially aircraft and trains. Hence seating can add significantly to vehicle weight. This session is dedicated entirely to looking at this critical area for mass reduction with a range of approaches and products discussed.

Weight reduction in seat cushions

Mike Brock, market development manager, Rogers Corporation, USA

The use of high-strength polymers for metal replacement

Gary Seale, managing director, Cobra, UK

Lightweight structural solutions for transportation seating using expanded polypropylene (EPP)

Steven Sopher, technical director, JSP, USA

Weight savings through the use of suspension textiles

Neil Gross, president, Acme Mills Company, USA

Weight-saving possibilities on dress covers

Gerret Suhl, head of Sales, Car Trim GmbH, Germany

Win, win, win: lightweight leather

Nico Den Ouden, sales and marketing director, E-Leather Group, UK

CLOSE

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Concept to completion from MacCarthy

PRODUCTS SERVICES

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Colour evokes our first emotional response in any environment. The Kydex 6503 palette for aviation has no shortage of hues that elevate the visual language of cabin design with new options. But the timeless tones that comprise most cabin material choices can be just as powerful when employed artfully. In fact, 70% of Kydex colour match requests come from the neutral grey-shaded palettes communicating tone-on-tone effects that rely on texture. That is why Kydex expanded the aviation palette with eight new colour choices of subtle gradation. This enables designers to create quiet contrasts that whisper sophistication and never go out of style.

"Unlike fashion, you're not looking for the trend of the season. If everyone is doing blue this year, it might be purple next year. We're helping create business investments that span years, not ephemeral statements," explains David Scott, a design consultant at Kydex.

Some customers find exactly what they need in the Kydex 6503 palette, and that's important validation of the painstaking process that informed the choices. But for many, it is the starting point for collaboration at the Kydex designLab™ on a palette of custom colours that fulfil the designer's vision. And that vision is of a fully formed part, not a flat sheet or sample chip. How LED lighting will affect the look of a colour and its visual texture can only be seen in that formed part. The difference is night and day.

That's why Kydex thermoforms parts in the designLab – often right in front of the customer. It brings the material to life, altering colour, texture and form. That lets customers see the product's attributes immediately, and make endless colour

course corrections en route, rather than being disappointed on delivery.

"The colour reference and formulation will not tell you how the texture affects colour. Once it is formed into a part, the sheet transforms, and something new is created. The forming makes all the difference," adds Scott.

Kydex is striving to cover the diversity of brands with limitless choices based on the Kydex 6503 palette. Airlines that spend millions of dollars on marketing their branding should have that perfectly reflected in their passenger experience. Kydex never loses sight of that goal.

The Kydex 6503 pearlescent palette offers endless options for designers. But it's not a flight of fancy. It exhibits mechanical qualities that are a hallmark of Kydex thermoplastic solutions, such as durability, mouldability and cleanability – all delivered with design-forward colours that fulfil limitless design direction. And it exceeds the compliance standards of the FAA and carriers.

"Everyone has a way of expressing themselves when it comes to colour. Communication is really important when determining the direction a customer wants to go with colour. That creative collaboration really gives us the edge over our competition," says John English, Kydex colour specialist and designLab supervisor.

Fitting or refitting an airline fleet is an enormous undertaking, with a lot of decision makers involved from inception to installation. The Kydex palette and approach to collaboration and professional presentation inspire outstanding design and confidence, with an imaginative approach to colour combined with buttoned-down business principles.

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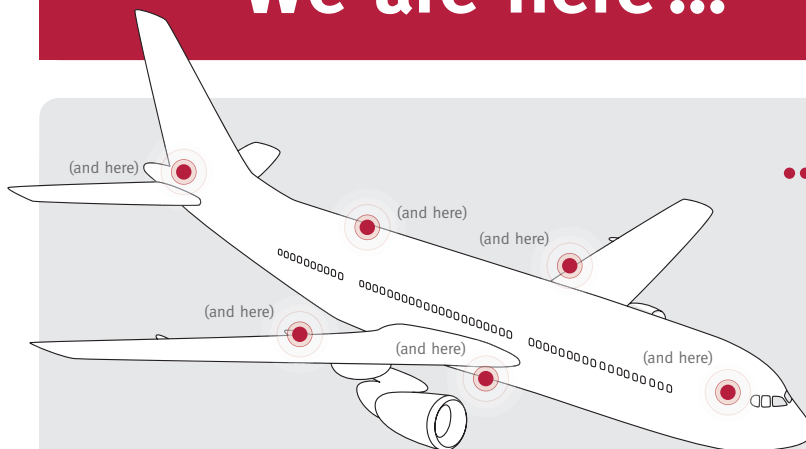


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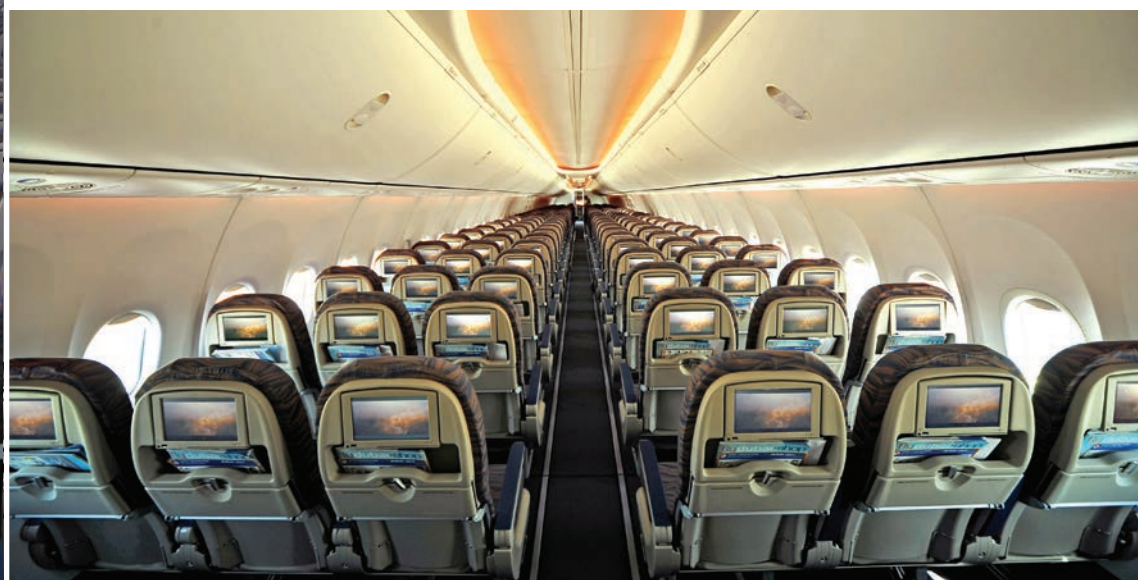
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The airline industry's first fibre-optic IFE operator has completed a full maintenance cycle

fibreoptic|IFE

The first airline in the world to install a fibre optic IFE system, flydubai, has successfully completed its first major maintenance check without incident.

The Dubai-based carrier became the launch customer for the Lumexis 'Fiber-To-The-Screen' (FTTS) IFE in November 2010 and has now completed a full inspection of the system, as part of the C Check process, carried out after every 6,000 flying hours, on four of its Boeing 737-800NG aircraft. Since day one, speculation has remained around the efficiency and reliability of the system, but flydubai's chief operating officer, Ken Gile, says it has passed with flying colours.

"This is the first time the system has undergone such rigorous maintenance and the fact that each aircraft's system has passed without incident proves just how robust fibre optic cabling is for an aircraft entertainment system. This further demonstrates that we made the right decision in choosing Lumexis. It has proved extremely well suited to our operation," explains Gile.

"We chose this system in part due to it being ultra-light weight, but also because of its high definition and increased content capability. As a low-cost carrier, it was vital that FTTS met its committed 2.3kg per seat fully installed weight. Not only is it even lighter and more reliable than promised, but the improved quality of the high-definition elements have also been well received by our passengers," Gile adds.

flydubai launched its operations in June 2009 and introduced IFE on its aircraft in November 2010 to coincide with becoming the launch customer of the Boeing Sky Interior. At the time of going to press, flydubai has 17 aircraft fitted with IFE and it will take delivery of more than 20

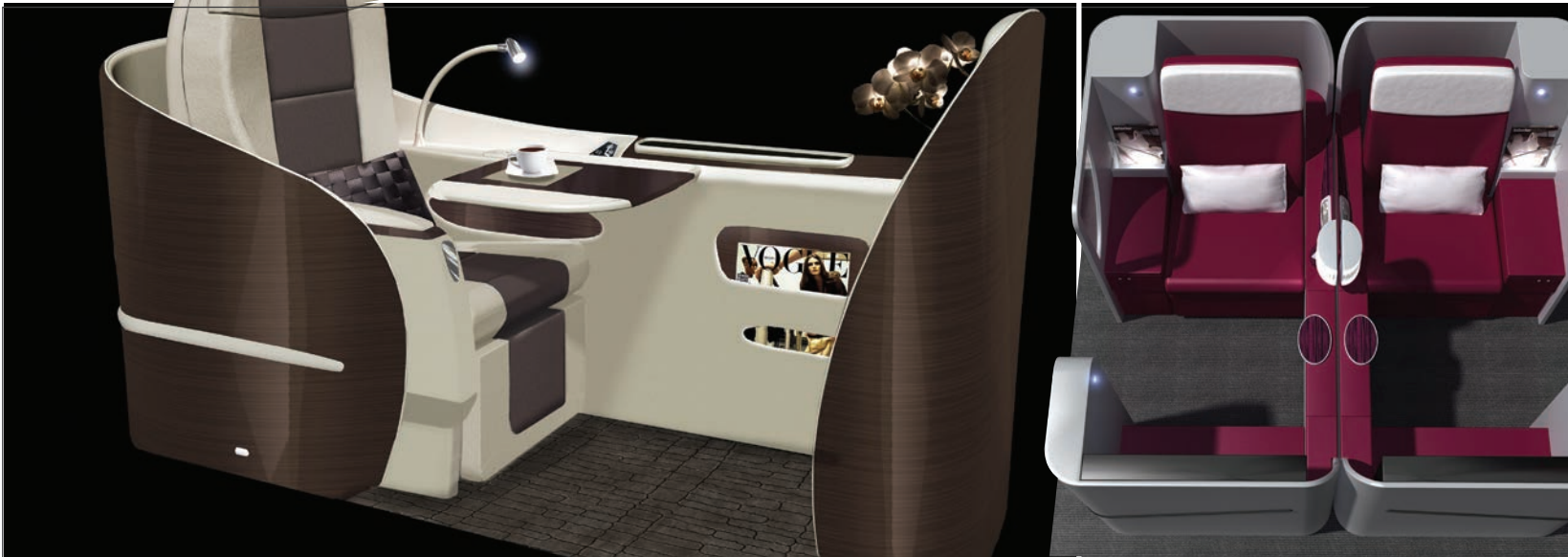
additional aircraft by 2016, following an order placed at the 2008 Farnborough Airshow. The IFE, which involves running fibre cables from sidewall to seat group in raceways above the floor, is installed during a three-day, post-delivery modification at Aviation Technical Services in Everett, Washington, USA.

Since flydubai became the first airline in the world able to show movies in high definition thanks to the 1Gb/sec bandwidth offered by the new technology, Transaero and Pacific Royale Airways have also followed suit, expanding Lumexis's customer base across Russia and the Far East. But the Dubai carrier has continued to set new benchmarks through adding more content. Recent developments include offering more Hollywood movies than any other airline among its 185 titles. flydubai also has more than 160 TV shows and 260 music albums available on the 189 all-economy class seatback screens.

"The system has grown steadily in reliability from its first installation," reports Mick Hills, divisional head of maintenance and engineering at the airline. "We calculate the seat-availability of the IFE system at the end of the flight – not the beginning – and are today experiencing 99.7% availability across more than 600 flights per week, which is almost unheard of in the industry."

As with many of flydubai's services, IFE is offered as an optional extra. Passengers can choose the Basic package, which includes all TV programmes, music and games, or the Premium package, which includes everything in the Basic offering, plus films. News and information, including a number of UAE-based newspapers, meanwhile, are free of charge.

Lumexis
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www.lumexis.com
Reader Enquiry No. 502



topclassbusiness

EADS Sogerma has already celebrated several successful business developments during 2012, beginning with becoming the leading seat supplier to Airbus and winning its award for Customer Support, presented at Aircraft Interiors Expo 2012. At the same time, Sogerma's Equinox high-density business class seat was selected by Airbus for inclusion into the A350 XWB ACS (Airbus Contracted Supplier) catalogue, thus giving the company two business class products in the catalogue, with Equinox joining the Solstys premium business class seat as the first two business class products to be listed by Airbus.

Following the signing in March this year of the contract for Equinox to become listed in the Boeing B787 business class seat catalogue, the company is now going through technical viability with Boeing for the conclusion of the catalogue listing by the year end.

"We are continuing the development of the EADS Sogerma brand and product with our customers worldwide, and are making sure we continue to meet our world-class reputation for 100% on-time delivery for all our seating programmes for the sixth year without one day of delay," states Jeffrey Forsbrey, vice president of sales and marketing at Sogerma. "We are also making continuous improvements in reducing quality defects on our products, with a goal of having less than 0.5 defects per seat over a period of one year."

2012 has also seen the expansion of Sogerma's cabin interiors production, engineering and support facilities, to meet a growing market and order book.

The growth will not stop there, as Sogerma has grand plans for 2013, beginning with the expansion of its new production, engineering and support facilities in Rochefort, France, by Q2 2013, to enable the company to keep up with its growing customer base and orders.

"We are working to have a couple of concept seats ready for Aircraft Interiors Expo 2013 in Hamburg that are totally new in design, in an effort to continue to support the innovation and development of the EADS Sogerma product portfolio," adds Forsbrey. "Furthermore we are looking at developing our in-service support capability and services in 2013 to ensure we can offer the best solutions available to our customers to support their premium branded first and business class seats worldwide."

Sogerma's mid-term strategy is to continue marketing its brand of premium first class and business class seats, both with buyer-furnished equipment offer, and with Airbus A350 and Boeing 787 catalogue offers, to expand and grow its global market position in the premium seating market segment, and to look at ways to expand its portfolio in line with company and customer expectations.

The company is also aiming to maintain its delivery performance to both airlines and OEMs, which is currently at 100% on time, and to develop increasingly innovative designs within the boundaries of ISO 14001, looking at the impact of the environment in its designs.

Finally, Sogerma is launching, building and creating sustainable support solutions for its customers and their premium products, and also developing the skills of its workforce.

EADS Sogerma reflects on a successful 2012, and looks at its aims for 2013

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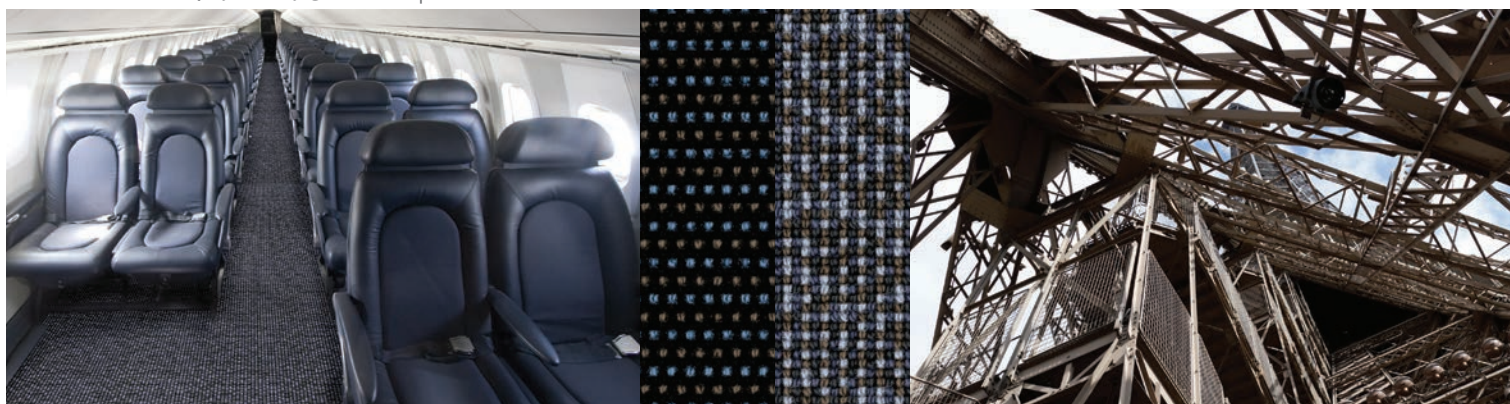


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Aerolux has developed a comprehensive range of products to offer a full kitchen in the air

firstclasscooking

Founded in 1988 on the northwest coast of the UK, a company called Aerolux has become synonymous with producing quality custom-engineered galley inserts for commercial and corporate/business aircraft.

Standards of air travel have become more and more demanding, with customers being especially discerning about onboard experiences such as the quality of food and beverages served. For breakfast, lunch or dinner, galley equipment is essential to meeting the needs of customers.

From Nespresso coffee to chilled chardonnay, from the perfect slice of toast to frozen ice cream, the range of equipment has to be right for the job.

Starting off in the early days with a range of refrigeration products, and in particular a wine chiller, Aerolux, at the request of its customers, has developed some very specific products to enable a differentiation of the cabin service, not only for the standard and premium galleys, but also from airline to airline. These products include an award-winning espresso coffee maker, a toaster, a skillet, a rice cooker, warming ovens and fridge/freezers.

Wherever possible, Aerolux has designed its galley equipment to meet industry standard configurations such as 'ATLAS galley'. Key features of all Aerolux galley products include 115/200vac, 400Hz aircraft power, safe and hygienic operation, and ease of cleaning.

The Aerolux coffee maker is a self-contained unit specifically designed for inflight preparation of espresso coffee. This is the only coffee machine

approved for aircraft use to carry the Nespresso brand name, using their patented coffee capsules.

Aerolux has also specifically designed a unit to provide toast or even a toasted sandwich for preparation in the galley. Just like at home, the Aerolux toaster will toast two or four slices of bread, lightly toasted or dark. The unit has been designed and built from food-grade materials. It allows for easy cleaning for hygiene purposes and minimises the amount of crumbs with its removable crumb tray.

For the complete breakfast in the air, Aerolux has developed the Aero-Skillet – a safe and easy-to-use hot-plate, which is suitable for cooking eggs or hash browns.

Initially designed for the preparation of rice on Asian routes, the rice cooker unit has also been adapted for heating liquid food such as consommé soup. The unit has been designed and built to maintain hygiene and be easy to clean, especially in an aircraft environment.

Designed to warm bread rolls or plates, the warming oven is adaptable to suit the particular requirements of the airline. A range of ovens is also available to heat prepared food, from high-speed convection ovens to steam ovens.

To keep food chilled or liquids cold before serving, the fridge units have also been adapted to keep medical supplies cold for long-term use. To keep ice cream frozen or to stop ice from melting, Aerolux's freezer products have been designed to meet the exacting requirements of airlines the world over.

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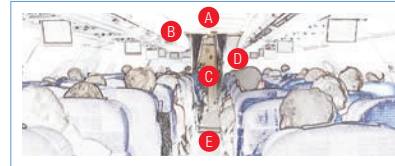
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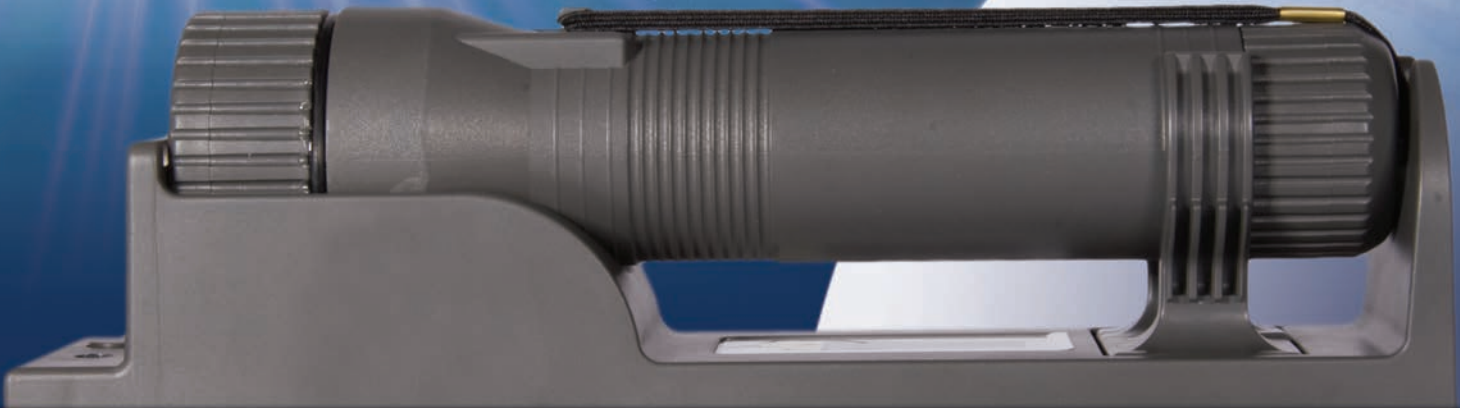


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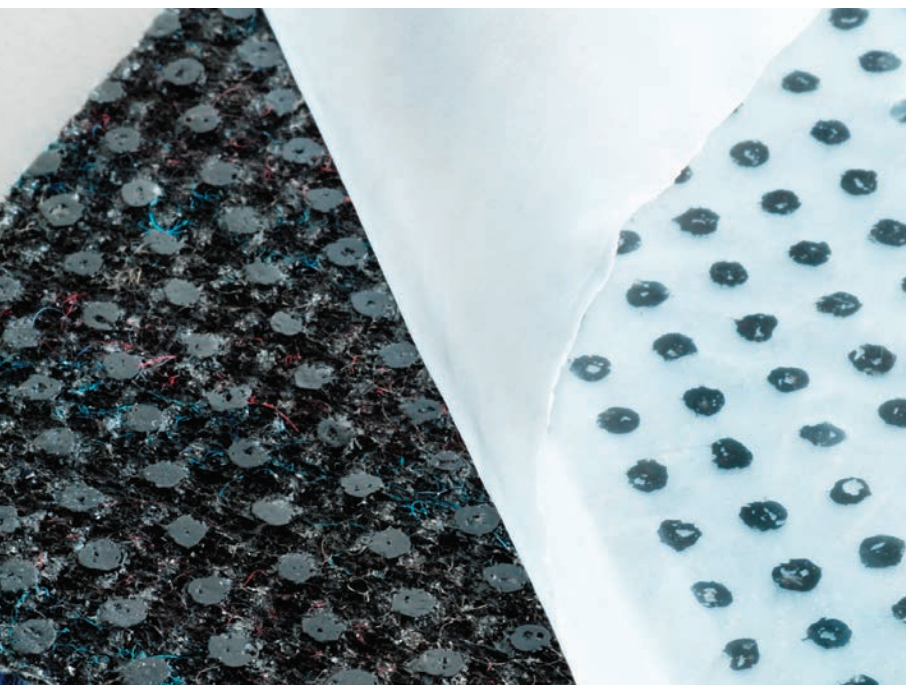
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dreamcarpet

A totally new approach to carpet installation for Boeing's 787 Dreamliner has been developed by Lantal, a global aircraft interior solutions provider based in Switzerland. It expedites fitting and replacement, while perceptibly reducing costs.

Lantal's innovative technique has meanwhile been deployed for launch carrier All Nippon Airways, as well as Japan Airlines, which took delivery of their first 787s in the autumn of 2011 and the spring of 2012, respectively.

It works much like post-it notes. Precision-cut carpet parts with self-adhesive backings protected by peel-off films are easily and swiftly affixed to the cabin floor. The adhesive is very tolerant with regard to the need to clean the floor panels. At the end of the carpet's lifecycle, the parts can be removed without leaving adhesive traces behind. The backing, certified by Boeing for the Dreamliner, fulfils all airworthiness requirements and can be applied to all types of carpets.

Developed to simplify and speed up the installation process, the new technique totally eliminates the need to use adhesive tape. The result: the time needed to install the carpet in an entire 787 cabin was slashed from 97 to less than 20 hours. The logistics effort is minimised as well: Lantal delivers the carpet shipsets to Boeing in up to 130 precision-cut parts that virtually fall into place. The installation work is reduced to positioning the parts, removing the protective film and patting the parts down.

"Lantal is successfully simplifying, expediting and streamlining cabin projects," says Peter Kämpfer, the executive vice president of markets at Lantal. "Airlines benefit from a single point of contact, vastly reduced paperwork, lower costs and less complexity in process management. This also applies to other fit-and-fly parts such as seat covers, ultra-light literature pockets and pleated curtains."

waterfeature

Mapaero was among the first companies to offer qualified water-based coatings to aircraft cabin interior manufacturers a decade ago.

The new fire retardant (FR) generation, which implements the latest fire-retardant technologies, is already approved by Airbus. This new system is claimed to reduce drying time and weight by allowing thinner paint layers. This new generation of water-based coatings comprises a pore filler, a primer, a topcoat and a clearcoat. Mapaero will assist in the introduction of this system worldwide, with local technical and application support from their team, pictured below.

Mapaero has also designed innovative packaging for its paints that can be mixed where and when required in volumes of 45ml (1.6oz). The company says that the touch-up kit offers a "much quicker, cleaner and cost-effective method than existing solutions" and is a process that can be used across the Mapaero paint range. The kit was designed in response to the unnecessary buying of large tins of material during the parts assembly process or during maintenance operations where paints are applied with a brush or roller. A spray applicator can be adapted to the can for optimal application.

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naturalstyle

Elmo Sweden has developed a bespoke aviation leather in conjunction with Virgin Atlantic Airways for the airline's new Upper Class Suite, and it goes way beyond the simple choice of colour.

The result of an intense three-year development programme, the unique Elmorex espresso-coloured leather will now be rolled out across much of the fleet.

Elmorex is a natural full-grain, semi-aniline leather. This enables the designer to include the natural features and character of premium leather into an environment so often made uniform by heavily pigmented finishes, and bring a luxury look and feel to the flying experience.

There is no compromise on the required aviation industry standards.

Elmo Sweden had a clear vision of authenticity and high quality for the seat upholstery of the new Upper Class Suite. Nik Lusardi, lead designer of the Upper Class Suite, says, "Working closely with Don Tucker and Elmo's Swedish design team, the company developed a luxurious semi-aniline hide with a natural look and feel, which beautifully compliments our brand-new seat comfort system and suite aesthetics."



The exceptional environmental pedigree of Elmo and its commitment to continual improvement enabled all this to be achieved using chrome-free tanning methods, an area in which Virgin Atlantic Airways takes the lead.

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raisingstandards

Already compliant with all other main aviation manufacturing standards, WASP has now been awarded AS9100 Rev C – the quality management standard specifically written for the aerospace industry.

The current version of AS9100 aligns the standard with ISO 9001:2008 and has extra requirements regarding regulatory compliance and a number of aerospace-sector specific requirements, which include configuration management, design phase, design verification, validation and testing processes, reliability, maintainability and safety, product identification throughout the product's lifecycle, inspection and testing procedures, and the verification of the purchased product.

Many of the new disciplines required to achieve this qualification came as a result of WASP's move to a purpose-built manufacturing facility and investment in the new equipment required to meet the needs of modern design, manufacture and testing.

WASP's managing director Roy Middleton states, "Achieving this standard is another step forward for WASP. We have always known through our achievements that our products were what the aviation industry wanted. Now we have the highest of qualifications to back them up."

First published in August 1997, AS9100 was written with input from a number of large aerospace prime contractors, including Lockheed Martin, Northrop Grumman and GE Aircraft Engines. The first revision was published two years later by the Society of Automotive Engineers (SAE International) with input from the American Aerospace Quality Group (AAQG) and support from the International Aerospace Quality Group (IAQG) and the Society of British Aerospace Companies (SBAC).

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allinone

MacCarthy Aviation specialises in the design, manufacture, refurbishment and retrofitting of aircraft seats, galleys, lavatories, stowages, bulkheads and accessories for all types of aircraft. The company has extensive expertise in design engineering, stress analysis, finite element analysis, electrical systems design, modifications to existing equipment, and cabin enhancements. These skills enable the company to offer customers a complete 'concept to completion' service.

MacCarthy Aviation has supplied galley units to a wide variety of aircraft and operators, with functionality and equipment including; refrigeration, extraction, electrical load analysis, bespoke oven installations, and fire-contained waste bins and worktops in both metal and composite material. MacCarthy also modifies galleys on all types of aircraft from KSSU to ATLAS standard, and is certified to EASA Part 21 G & J and Part 145 in all aspects of work.

MacCarthy is also an expert when it comes to designing and refurbishing aircraft seating, in particular business and first class seating.

Working in partnership with DuPont Corian, MacCarthy has also produced a lightweight and longer-lasting Corian worktop and steel basin for B737, B767, A330 and A340 lavatories. These ready-to-fly products are a solution to older stained and scratched Vericore models, and with removable sink basins they have lower maintenance lifecycle costs than more commonly used products. The worktops and basins can be fitted to all types of Airbus aircraft.

MacCarthy offers a huge catalogue of stowages, bulkheads and class dividers across a wide range of aircraft. Cabin bulkheads can be designed to incorporate customer-specific requirements such as LCD monitors, literature pockets, pictures and windows.



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nigelgoode

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

In this issue, meet Nigel Goode, co-founding director of design consultancy Priestmangoode. The London-based studio blends its experience in aviation, transport, branding, hospitality and product design to improve the passenger experience, as with Malaysia Airlines' new A380



between products that people use in everyday life, such as smartphones and tablets, and products on board the aircraft.

01 WHAT IS YOUR BACKGROUND? I studied industrial design at Central Saint Martins (CSM) in London. After that I worked for a number of large industrial design companies before co-founding Priestmangoode with Paul Priestman. We had met at CSM and had similar interests and ideas about how design could be used to improve everything from phones to aircraft, trains and airports. The foundations of the company are in product design, but we now work in many areas including branding, aviation, transport and hospitality design. We're based in London and recently opened our first overseas office in Qingdao, China. We've been working there for a few years already, and the scope of opportunities made it the perfect place to open a second base.

02 HOW DID YOU GET STARTED IN AIRCRAFT INTERIOR DESIGN? Our first project in this area was in the late 1990s, when we were asked to design the Upper Class seat for Virgin Atlantic. The industry was very different then; design was not widely used as a way to differentiate yourself from your competitors. In fact, the seat we designed for Virgin Atlantic was instrumental in highlighting the importance of design as a tool to gain a competitive advantage.

03 DO YOUR OTHER DESIGN PROJECTS INFLUENCE YOUR AIRCRAFT WORK? Absolutely. Our biggest strength is our ability to transfer skills we have learned in one industry to another. The company started out in product design, and to this day we still apply this kind of 'micro-approach' to every project, even large-scale ones like high-speed trains or cruise ships. For us, it's important that everything passengers touch and feel, from the seat fabric, to the call button or the IFE system, feels right.

We also use our experience in the hospitality sector. For instance, we recently designed the most cost-effective hotel room in Europe for Accor's budget brand ETAP. Our design for the room was very much influenced by our work in aviation, where each component needs to do five different things. It works the other way as well. We take a lot of inspiration from hotel design in creating cabin interiors, particularly in the use of new, hard-wearing, yet high-end materials.

04 WHAT IMPACT HAS NEW TECHNOLOGY HAD ON THE CABIN? The airline industry has to move forward with intuitive touch- and voice-sensitive technology. At the moment we're working with IFE vendors and suppliers to bridge the gap

05 WHAT PRINCIPLES DOES PRIESTMANGOODE WORK BY?

We believe that design is not just about aesthetics, but about making things better. We use design as a strategic tool to help businesses be more efficient and competitive on the global stage.

One of our principles – and our strength – is that we don't have a house style. Each project is tailored to the client. This means we're able to design for any market, taking into account local culture, customs and preferences.

06 IS THE DESIGN INDUSTRY REWARDING TO WORK IN?

Enormously. Industrial designers generally have a desire to improve the small details. It's something that I've been interested in since I was young, and I feel privileged to do it on a daily basis.

It's also rewarding in that it's very much a forward-thinking industry. Aside from our regular client work, we regularly develop concepts around ideas for future development, whether it's a new system of infrastructure for high-speed trains or a water-saving device for the shower. It's all about encouraging discourse and developing ideas for improving everyday life.

07 WHAT DO YOU DO WHEN YOU'RE NOT DESIGNING? I like travelling. With the work I do, it's good to travel as a consumer once in a while. It gives you a different perspective, and reminds you what it's like being a passenger. It enables you to take a step back, see what works, what doesn't, and which areas are crying out for innovative solutions.

On a recent trip for instance, there were two wheelchair users on my flight. I started thinking about what the passenger experience must be like for them. We've since been developing Air Access, a concept to improve air travel for passengers with reduced mobility.

08 WHAT IS YOUR PROUDEST ACHIEVEMENT? It's hard to pick one, as I've worked on so many projects. But I'm immensely proud of the company that Paul and I founded, and what we, along with our other director, Luke Hawes, have built.

Over the years we've worked on so many key projects around the world, a lot of which have been designs that are emblematic of their countries. It's immensely rewarding to design something that is used to represent a nation.

09 DO YOU EVER TIRE OF BUSINESS TRAVEL? Business travel is a great opportunity to take some time to look at the big picture. We're a busy studio, with numerous projects in various industries at any given time, so when I'm in the office, I'm very much hands-on. However, as a business, I think it's important to regularly scrutinise your activity, and analyse what your goals are and how to achieve them. Business travel offers me the time to reflect on these questions.

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