

# Aircraft *interiors* INTERNATIONAL

JUNE 2013

THE INTERNATIONAL REVIEW OF AIRCRAFT INTERIORS FOR DESIGN AND COMPLETION



**seatingfocus**  
AN IN-DEPTH LOOK AT THE  
LATEST BUSINESS AND ECONOMY  
SEATS AND CONCEPTS

**personaleffects**  
HOW TO TAILOR THE PASSENGER  
EXPERIENCE TO INDIVIDUAL  
PREFERENCES

## maximumimpact

VIRTUAL SEAT TESTING MAY  
BE GAINING IN POWER, BUT  
THE CRASH TEST DUMMY  
STILL REIGNS SUPREME

## BEST IN CLASS

The new RECARO economy class seat CL3710



A new benchmark for long-haul economy class seat design: the RECARO CL3710. The various innovative features make this seat so unique.

**Less weight:** Weighing less than 12 kilograms, the CL3710 is the lightest seat in its class.

**Innovative design:** Among the seat's pioneering features is a new headrest with an exceptionally wide height adjustment range and extra neck support.

**More living space:** The CL3710 already offers maximum shin clearance at a seat pitch of just 29".

**Easy customizing:** The modularity is optimally suited to meet customer-specific requirements.



## takeaseat

A wise man once told me, “The seat is the heart of the offer of an airline. It is *the* most important part.”\* I couldn’t agree more. A bar, an art installation, crew doing magic tricks, even, are all a great way to get people talking, enhance the experience and grab some column inches in the travel press, but the real value lies in the seat, the element that you will be using – and, hopefully, enjoying – for many hours.

Hence, seating is at the very heart of this June issue, with a special feature looking at the latest models on the market. While they might have different styling, different configurations and different ways of tackling density requirements, they are all designed with the same key requirements in mind: maximising passenger comfort, optimising passenger density and, of course, reducing weight. There is a major category not covered in the review, though: first class. Sadly, no new first class seats have been revealed over the past 12 months – none that we can talk about anyway. That’s not to say that first class is losing popularity; indeed, airlines such as Garuda Indonesia and Saudia are currently rolling out new first class product.

This is an exciting time to be involved in the aircraft seating sector – or even just observing it. A recent report from MarketsandMarkets entitled *Global Commercial Aviation Aircraft Seating Market, Forecasts & Analysis* states that “the global commercial aviation aircraft seating market size is expected to grow to US\$4.86bn (€3.74bn) by 2017”. An impressive number, which explains the rash of new entrants to the seating arena. We have a strong start from Jamco, which has already entered the A350 catalogue with its Journey business seat and has developed an exciting new business concept, the DoveTail. ST Aerospace is also about to enter the seating world with the Ergo long-haul economy model, and complete newcomers such as Expliseat are entering the fray with new ideas for economy seats. It must be daunting to enter a sector with such big, established players, but when you see the success other newcomers are enjoying after just a few years in the market, it is also a compelling proposition – just look at Pitch and Acro. They might never reach the sheer scale of Recaro, B/E Aerospace or Zodiac, but they are exploiting market niches to their full.

The thing that will always separate the players from the wannabes is the testing and certification process. The exacting standards of aviation safety mean that a large investment has to be made in product development. Of course, a good way to reduce the time and costs of seat testing is to use computer-aided engineering, which is becoming evermore accurate and enables designs to be virtually designed, altered and optimised very quickly. But will it bring about the demise of physical test devices such as the crash test dummy? Find out in Christine Negroni’s fabulous feature on page 26.

Hit the recline button and enjoy the issue!

Adam Gavine, editor

COMPLETE NEWCOMERS SUCH AS EXPLISEAT  
ARE ENTERING THE FRAY WITH NEW IDEAS FOR  
ECONOMY SEATS

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## regulars

### 008 news

Airlines go the extra mile to pamper elite flyers; KLM employs strong Dutch design to create a softer business class; the statistics that define the second quarter of 2013; a bold new first class for Garuda Indonesia; premium lounges to match premium cabins; and domestic bliss at Qantas

### 023 design briefs

Disposable economy tableware that not only looks great, but also satisfies environmentalists; and vertical thinking in economy seat configuration

### 085 crystal cabin awards

Meet the winners of this year's Crystal Cabin Awards, the industry's biggest accolades for aircraft interior design

### 091 products and services

The latest product news from our advertisers

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### 104 face space

Jaime Moreno, CEO of Mormedi and the designer behind Iberia's new seats, discusses cabin design and trends





# features



**fightforflight**  
While virtual disaster technology and digital damage assessment are helping to make seat certification faster and less costly, the crash test dummy will not be going any where soon.

**026** seat certification testing

A battle is being waged in the seat test labs between digital packages and dummies. Which will be victorious?

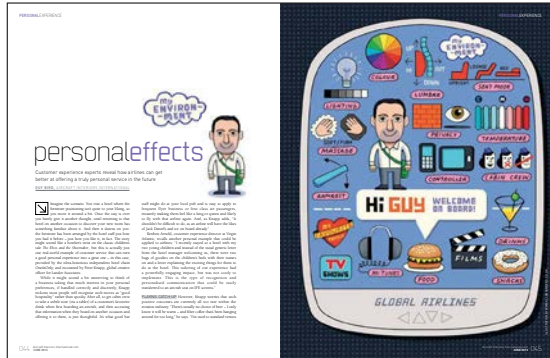
CHRISTINE NEGRONI,  
AIRCRAFT INTERIORS INTERNATIONAL

**034** trendy hotel trends

The aircraft interiors industry is influenced by many other sectors, with hotels being a big player. What is being learned, and how is it being translated on board?

GUY BIRD,  
AIRCRAFT INTERIORS INTERNATIONAL





044 making the personal journey

One product does not fit all. Experts from around the industry give their thoughts on how to make a flight a far more personal, tailored experience

GUY BIRD,  
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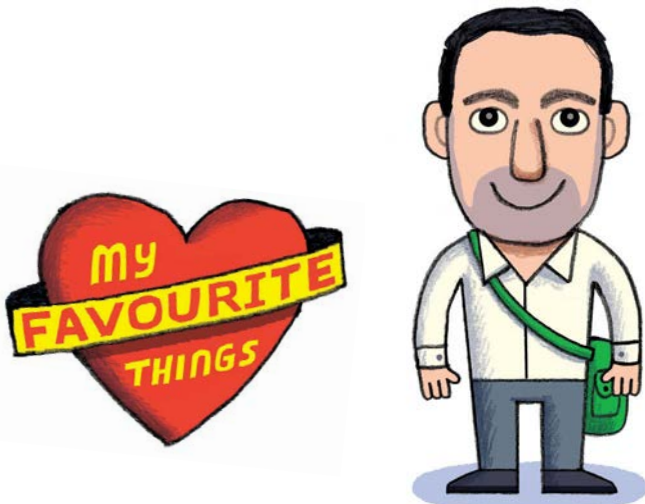
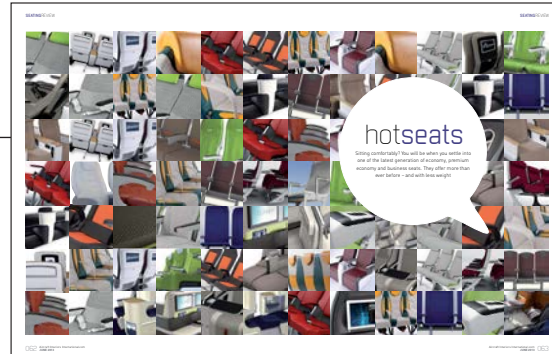
054 iberia's design fiesta

Iberia is readying itself for an economic upturn with new long-haul cabins, designed to immerse the passenger in understated Spanish style

ADAM GAVINE,  
AIRCRAFT INTERIORS INTERNATIONAL

seating focus 062

You're in for a treat this year, as a fantastic range of new seats has been developed, all with an eye to passenger comfort, optimised LOPAs and light weight







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# littleextras

With lie-flat seats becoming the norm in premium travel, airlines are going the extra mile to attract elite flyers. Here are five of the more inspired offerings



Frustrated your Learjet won't fly across the Atlantic? Fear not, commercial airlines can almost match the experience



**1 For the fast set**  
 Many airlines now offer a pick-up service, whisking passengers from home to terminal in a Volvo or Mercedes saloon. Very nice, but a few airlines have grasped the opportunity to make more of a statement. For example, Delta's elite flyers who need to make a quick connection in Atlanta can do just that thanks to a fleet of Porsches that will take passengers from jet to jet with speed and style, with no trains or queues to worry about. Similar luxury car transfers are also offered by Lufthansa at its Frankfurt first class terminal, and by Air France in Paris.

**2 VIP terminal**  
 First-class lounges are always a pleasure, but Lufthansa has really made a statement by creating an entire first-class terminal at its Frankfurt hub. Guests will want to maximise their time in this 1,800m<sup>2</sup> two-storey temple to the elite flyer, so after you pull up outside, valet staff attend to your car. Step inside and a personal assistant will ensure your journey through check-in and security is stress-free. Once through, a world of luxury awaits, whether you fancy a spot of shopping, a bath, gourmet meal or a puff in the cigar lounge. Or, if you insist, you can even work in the office units.

**3 Nice and trim**  
 You may want to look your best when you spend a few hours with the glamorous Virgin Atlantic cabin crew. Luckily, business passengers flying from London Heathrow or New York JFK can enjoy a complimentary haircut from famed New York hairstylists Bumble & Bumble, or a spa treatment with Cowshed or Dr Hauschka. These services add to a truly great lounge experience, with all Virgin Atlantic's spaces having benefitted from a massive upgrade programme that offers a range of spaces to explore, whether you want to eat, drink, relax or work.

**4 An entertaining crew**  
 Cabin crew have one of the toughest jobs in the sky, so you have to admire Asiana's team for going the extra mile – and then some. Premier passengers can enjoy everything from inflight violin performances, lessons in coffee making and latte art, magic tricks and fashion shows performed by the crew, to make-up sessions, expertly mixed cocktails, caricatures and tarot reading. Children can even have their picture taken in a crew uniform. Surprisingly, economy passengers can also request many of these services. It's certainly a unique take on the idea of inflight entertainment.

**5 Landing gentry**  
 If you consider the Virgin lounges a bit *nouveau*, British Airways' Concorde Rooms at Heathrow T5 and NY JFK may be more your understated style. You should feel like the lord or lady of the terminal in these first-class facilities as butlers await a discreet nod to bring a bottle of champagne, sumptuous meal or even a high tea to your private booth. Should the BA elite feel rather tired after these exertions, private cabanas are available where one can take a nap on the day bed and use the en-suite bathrooms. Other luxuries include a private terrace and viewing area, spa and boardroom. Spiffing.

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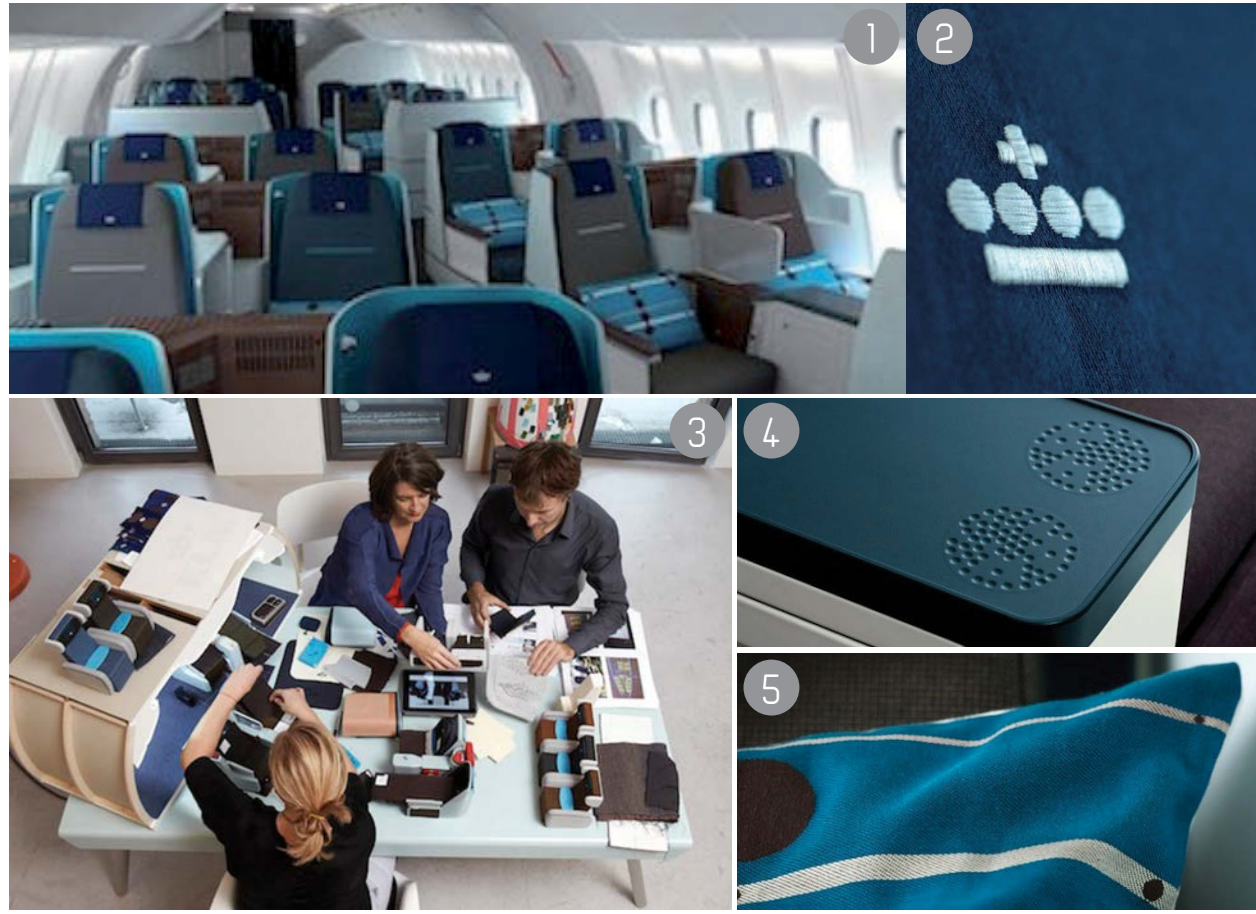
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**BAE SYSTEMS**



Could a small piece of chinaware influence your choice of airline? It just might for KLM business passengers on intercontinental flights, who are given Delft Blue houses in a tradition that has been running since the 1950s.

The miniatures are replicas of historic Dutch buildings, and since 1994, the number of houses in the collection has matched the age of KLM. Each year, on 7 October, a new one is added to the collection. KLM CEO Peter Hartman said, "Our Delft Blue houses are popular collectables. Around the world collectors do all they can to complete their collections. And I can promise, they can't stop collecting yet, because KLM will be presenting these houses for many years to come. We have faith in our future and plan to celebrate many more birthdays."



## double dutch

There are big changes afoot in KLM's business cabins, as Dutch design and Diamond Seats enhance the experience

01. A homely look, though the IFE cooling vents have an industrial feel
02. Meet a new KLM blue: midnight blue
03. The Jongerius Lab team used scale models to experiment with CMF
04. The dimpled glass holders could raise cleaning issues
05. The cushion designs tie together the new cabin palette

To ensure its new World Business Class cabin oozes Dutch flair, KLM Royal Dutch Airlines has teamed up with Dutch top designer Hella Jongerius. Her style – a fusion of industry and craft, high and low tech, and tradition and contemporary – infuses the atmosphere, furnishings and style of the cabin.

The key elements of the brief were customer comfort and privacy. Both demands are answered with the seating choice of the B/E Aerospace Diamond, complete with privacy divider. Being fully flat, the seat is a big step up from the outgoing recliner, although the new configuration has reduced business class capacity from 42 to 35 on a B747-400.

Jongerius also strived to create a domestic feel to the cabin, achieved through the greater comfort of the seat and a warmer colour palette. The 'KLM blue' still features, but it is far less overpowering than in the outgoing design, where it dominated through the seat fabrics and carpet. Instead, the blue is limited to items such as the inside of the seat shells and the cushions, alongside a new, warmer palette of aubergine, dark brown, midnight blue, cobalt and dark grey.

"It is truly remarkable that KLM is open to this kind of approach," said Jongerius. "Aircraft interiors have to meet an unbelievable range of technical requirements. We achieved this by simplifying the seat, changing its

colour and upholstering it with high-quality textiles."

Environmental sustainability is a key factor in many projects today, and the KLM cabin was no exception – the carpet, created with Desso, was manufactured partly from uniforms previously worn by KLM's female crew.

July 2013 will see the inaugural flight of the first KLM aircraft with the new interior. KLM's B747-400 fleet, comprising 22 aircraft, will be redecorated first. It is expected that the entire B747 fleet will have been redecorated by April 2014. Work on KLM's 15 B777-200s is planned for the summer of 2014.

Peter Hartman, CEO of KLM, added, "KLM continues to invest in customer comfort. I am proud of this superb and unique result: an entire business cabin created by a leading Dutch designer. In this way, we aim to give our passengers that warm, at-home feeling."

# COMPLIMENTS



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By 2015, **90%** of airlines will offer mobile check-in – up from 50% today  
 Flying into the Future report, SITA



# roamingnumerals

From wi-fi use to lighting, these are some of the key industry statistics gathered during Q2 2013

**30%** of passengers have accidentally left a PED turned on during a flight, and 61% of those devices were smartphones. When asked to turn off electronic devices:

- 59% of passengers turn their devices off completely
- 21% switch to airplane mode
- 5% sometimes turn their devices off completely

Portable Electronic Devices on Aircraft study, APEX/CEA



**73%** of US passengers are not in favour of allowing pocket knives on aircraft  
 Travel Leaders Group survey

Shipments of commercial aircraft seats are forecast to almost double over the next decade, rising to 840,000 in 2022, up from 430,000 in 2012  
 IMS Research

## RECLINER RAGE!

If someone reclined their seat so much that the person behind was unable to lower their tray table or open up a laptop, what would US passengers do?

- 55.4%** Say something directly to the person in front
  - 21.8%** Call a flight attendant and let him/her handle the situation
  - 15.1%** Sit quietly and say nothing
  - 7.7%** Not sure
- Travel Leaders Group survey



**26.04** million bags were mishandled in 2012 compared with 46.9 million in 2007 – a fall of 53.2%, saving the industry US\$2.1bn (€1.6bn)  
 SITA Baggage Report

Only **28.8%** of travellers have purchased an upgrade or add-on via an airline's app or mobile website in the past 12 months. More than 80% would, however, consider purchasing these upgrades if the airline pushed the offer to their mobile device before boarding:

- **58.7%** would consider purchasing inflight wi-fi
- **54.3%** would consider upgrading to a seat with extra leg room
- **41.8%** would consider upgrading to business or first class
- **40.1%** would consider purchasing early boarding privileges

FlightView survey

**79.2%** of US passengers are against allowing passengers to make mobile phone calls during flights  
 Travel Leaders Group survey

On wi-fi-enabled flights lasting longer than one hour, passengers who use a PED on board spend, on average, over **40%** of their flight time on it. Approximately **8%** spend more than **80%** of their time on at least one of their devices.

Passenger Survey – In-flight Connectivity Usage and Experience (2012 Edition report), IMS Research

**84%** of passengers oppose inflight wi-fi charges  
 Holiday Extras survey

The global commercial aircraft cabin lighting market is expected to grow to US\$1.25bn (€963m) by 2017  
 Global Commercial Aviation Aircraft Cabin Lighting Market (2012-2017) report, Research and Markets

### The most commonly used PEDs during flights are:

Smartphones	28%
Laptop computers	25%
Tablets	23%
Digital audio or MP3 players	23%
e-readers	13%

Portable Electronic Devices on aircraft study, APEX/CEA

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The first-class experience begins long before the elite passengers reach their suite, as they can enjoy the services of dedicated contact centre representatives, a limousine journey from their pick-up point, and the attentions of a personal assistant and butler at the airport. They can also enjoy Garuda Indonesia's new first-class lounge at Soekarno-Hatta International Airport in Jakarta, as well as accessing the premier lounges of airline partners worldwide such as Etihad and China Airlines.



Want to experience the new Garuda 777 for yourself? Try the cabin fly-through on our website

firstrate

Garuda Indonesia is getting better and better, including an all-new first class

- 01. Guests in the centre seats can lower the partition for some quality time together, or raise the partition to enjoy a private suite
- 02. The aisle-side walls also incorporate wardrobes

It's always exciting to see new first-class services appearing, especially when they're an ultra-luxurious offering such as Garuda Indonesia's latest suites, installed in the airline's newest B777-300ER. The airline embarked on a 'Quantum Leap' programme in 2012, with the aim of dramatically upgrading its passenger offerings, and it seems it has really delivered. Impressive progress considering the airline was already named World's Most Improved Airline at the Skytrax 2010 World Airline Awards.

Eight pampered passengers can enjoy the suites, arranged 1-2-1. For extra exclusivity, the cabin is split into two four-passenger cabins. The B/E Aerospace super first-class seats offer a decadent 84in pitch and 22in width, which the crew tops with a mattress when converted to bed mode. The Priestmangoode-designed cabin is trimmed in relaxing neutral tones, a mix of textiles and leather that create visual and tactile interest, with wood elements adding to the luxury feel. Splashes of colour are introduced through the IFE monitor surrounds, the IFE welcome and menu screens, and items such as the cushions. As you would expect, there is extensive stowage within the suites, complete with integral wardrobes.

The IFE is first class too, with a range of entertainment available on the Panasonic AVOD system displayed on a 23.5in monitor. For those looking to stay

connected with the ground, GSM connectivity is available, as is complimentary wi-fi.

The Quantum Leap work also extends further back in the 777, as business and economy have also been enhanced. The 38 business passengers enjoy a dedicated check-in area and lounge and, once on board, get direct aisle access in the EADS Sogerma Solstys seats, arranged 1-2-1. With a 73in pitch and full-flat beds (again with mattresses), this is a comfortable offering, enhanced by a wide AVOD selection on 15in touchscreens, as well as GSM and wi-fi, and comfortable fabrics finished with a subtle pattern.

To the rear, the 268 economy passengers get a generous 32in pitch, a 9in AVOD system, and GSM and wi-fi availability. To help them get into the holiday spirit, the seats have been enhanced with a vibrant fabric, reflecting Indonesia's stunning flora.



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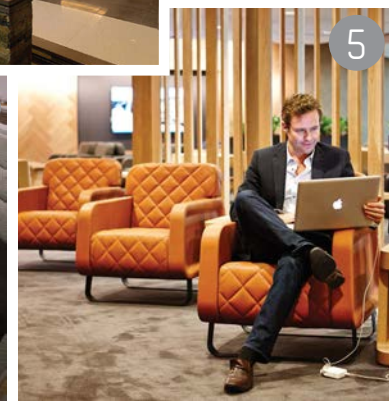
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United is not alone in embracing Scottish spirit, as BA has just opened a 'Glenlivet Whisky Bar & Snug' at its Glasgow lounge



## spaceodyssey

As airlines strive to extend the passenger experience, we look at the most exciting premium lounge openings so far this year

- 1 Up on the roof**  
Delta has opened its largest lounge yet – the Terminal 4 Delta Sky Club at New York JFK. While the design is conventional Delta fare, the emphasis is on superior amenities and a unique experience. Those planning on a long sleep on board can eat their fill of cuisine such as sushi and charcuterie, accompanied by fine wines by the glass chosen by Delta's sommelier. Passengers looking for a little privacy for a meeting or just downtime, can also reserve the Ciroc Lounge, which offers a private space with seating and entertainment. A striking feature of the Sky Club is the Sky Deck, a 185m<sup>2</sup> rooftop terrace that will offer runway views and an al fresco experience akin to a hotel pool area – albeit with a whiff of jet fuel.
- 2 Home from home**  
If you saw the amazing new TAM first class we featured in our March issue, you will understand why it deserves a suitably stylish and vibrant lounge to complement it. Continuing the 'home from home' brief, the new TAM VIP Lounge at Guarulhos Airport in São Paulo, Brazil offers a 540m<sup>2</sup> space that 174 passengers can call home for a while – especially with the furniture, materials, textures and colours chosen to reflect contemporary residential interiors rather than cold, corporate environments. Family travel is also important to TAM – and indeed to Brazil – so the space also includes a family area where children can occupy themselves with computers.
- 3 How refreshing**  
United Airlines' revamped 566m<sup>2</sup> lounge at Seattle-Tacoma International is the second to feature the airline's new design concept. Passengers will enjoy the new interior, offering views of the Cascade mountains, 'refreshed' bar and lounge areas overlooking the United terminal, improved furnishings to aid relaxation, and additional workstations and power outlets. United is investing more than US\$50m (£33m) this year to renovate several of its 49 United Club locations. Additionally, select United Clubs in hub cities will offer members a guided tasting of Glenfiddich single malt whisky, with a dedicated area to enjoy a pre-departure dram while learning about whisky.
- 4 Fashion capital**  
Emirates' new lounge at Milan's Malpensa Airport is the first international lounge to feature the airline's contemporary new interior designs. The airline sought not to reflect its location in the design, but rather its luxurious lounges in Dubai. It also aimed to create a seamless transition to its elegant first and business suites, using the same neutral colour palette. The 929m<sup>2</sup> area offers seating for 158 customers, with an array of luxurious facilities and amenities that include LED TVs, comfortable leather armchairs, a choice of formal and relaxed seating, a quiet area, a dining area, shower facilities, a business centre, a water feature, bespoke artworks, and a prayer room.
- 5 Singapore swing**  
With no shortage of luxury lounges in the Far East, Qantas needed to create something striking for its new Singapore Lounge. While the 460-capacity space is designed to give a real Singapore feel, to ensure a Qantas feel, the airline worked with Sofitel to create an experience consistent with its First Lounges in Sydney and Melbourne. To complement the Qantas International Sleep Service, passengers looking forward to a restful sleep on board can clean up in the 20 showers, catch up with world events on the 80in TVs or in the technology pods, and prepare for the next day's meeting with the shirt pressing and shoe shine services, or enjoy many preflight supper options.

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Regional subsidiary QantasLink is also improving its product, with the interiors of five of its B717s being upgraded to include a business class, and IFE for all passengers. QantasLink's executive manager John Gissing said, "QantasLink will introduce a full business experience on these aircraft, including market-leading seats, premium food and drinks, and exceptional onboard service. We will also be providing individual IFE for all customers – both business and economy – and are currently testing the latest technology."



Be quick if you want to try this interior: Qantas will have replaced its B767 fleet with A330s by mid-2015

# wizardinoz

With enhanced interiors across its domestic fleet, Qantas hopes to delight Australian flyers

- 01. Business passengers can also recline and view the iPad on a seatback mount, due to a special feature of the case
- 02. The seatback iPad IFE is also an option in economy

Following the completion of the 15<sup>th</sup> B767 interior upgrade, Australian carrier Qantas has concluded its US\$19m (€14.5m) programme to refresh its domestic Boeing wide-body fleet. The refurbished B767 fleet now offers more contemporary interiors, with leather-clad reclining seats in business, iPad IFE for all passengers, and new carpet, lighting, curtains and dividers. The retrofit work on each aircraft, which was carried out at Qantas's Brisbane maintenance facilities, took approximately two weeks per aircraft.

"Passengers travelling on Qantas's fleet of Boeing 767 aircraft can enjoy updated cabin interiors and in-flight entertainment streamed direct to iPads in every seat," said Qantas domestic CEO, Lyell Strambi.

"We have partnered with Panasonic to provide over 200 hours of on-demand IFE content across business and economy," he added. "We plan to increase this content even further to up to 350 hours by the end of the year, giving customers 20 movies, 350 TV programmes and a wide selection of music to choose from."

The streaming IFE installation has followed a successful trial of the QStreaming service in the fleet, and Strambi said feedback from customers has been very positive already. "Our customers wanted greater comfort, better onboard entertainment and a more modern design; our multimillion dollar investment in upgrading the fleet has delivered on this. Customer

feedback has shown great support for the introduction of iPads. Passengers have been very impressed with the variety of in-flight entertainment that is provided on each flight."

The B767 project was undertaken as part of a wider investment in Qantas's domestic customer experience, which includes the retrofitting of Amber Interiors pivot bins from Zodiac Airline Cabin Interiors on selected B737NGs. This project forms part of a trial, originally named Project Amber under the company's previous name of Heath Tecna. The retrofit equipment includes 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, creating a 30-40% increase in overhead stowage capacity, as well as additional headroom and greater ease of use.

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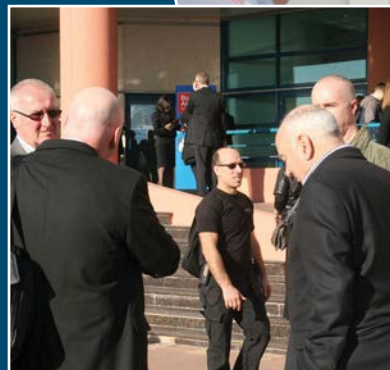
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# airdinner

**BRIEF:** Most airline meal trays feature several different disposable items, and given the sheer volumes involved in the worldwide airline catering industry, this can put stress on the environment as they get landfilled or combusted at the end of their life. How about an alternative that is kinder to the environment, while also offering further passenger and airline benefits?

**DESCRIPTION:** Rikard Rehnmark from the Chalmers University of Technology in Sweden tackled these issues with his Air Dinner concept, which is a complete set of airline tableware featuring: a six-compartment tray; paper cover; cup; large container; two small containers; and a fork, knife and spoon. Everything on the tray, with the exception of the paper cover and any condiment sachets, can be reused around 30 times, thus reducing waste. Better still, the design is very space efficient, at 270mm wide (the slot width of an ATLAS trolley), 192mm deep and 53mm high. This is around half the size of regular trays, yet that standard width means there are no special trolley requirements, giving airlines the option of using smaller, lighter galley carts. In addition, by manufacturing the tray from PET, it can be a mere 2mm thick, for a modest weight saving that will soon add up. Further benefits include ABS cutlery, which creates a better perception of quality than typical disposable items for those all-important touchpoints, while the paper cover is a blank canvas for brand expression or even advertising revenue.



**VERDICT:** We like the idea, especially since the potential weight savings and advertising revenue can help offset catering costs. However, if really aiming for rotability, why not make the cover an integral part of the tray, further reducing waste? Also, for hygiene reasons, many passengers may prefer the feeling of opening a brand-new package of cutlery, even if it is less environmentally sound. But as a cost-effective way to enhance the perception of quality, and as a way to frequently change colours, patterns or advertisers, this could be a winner. ☒



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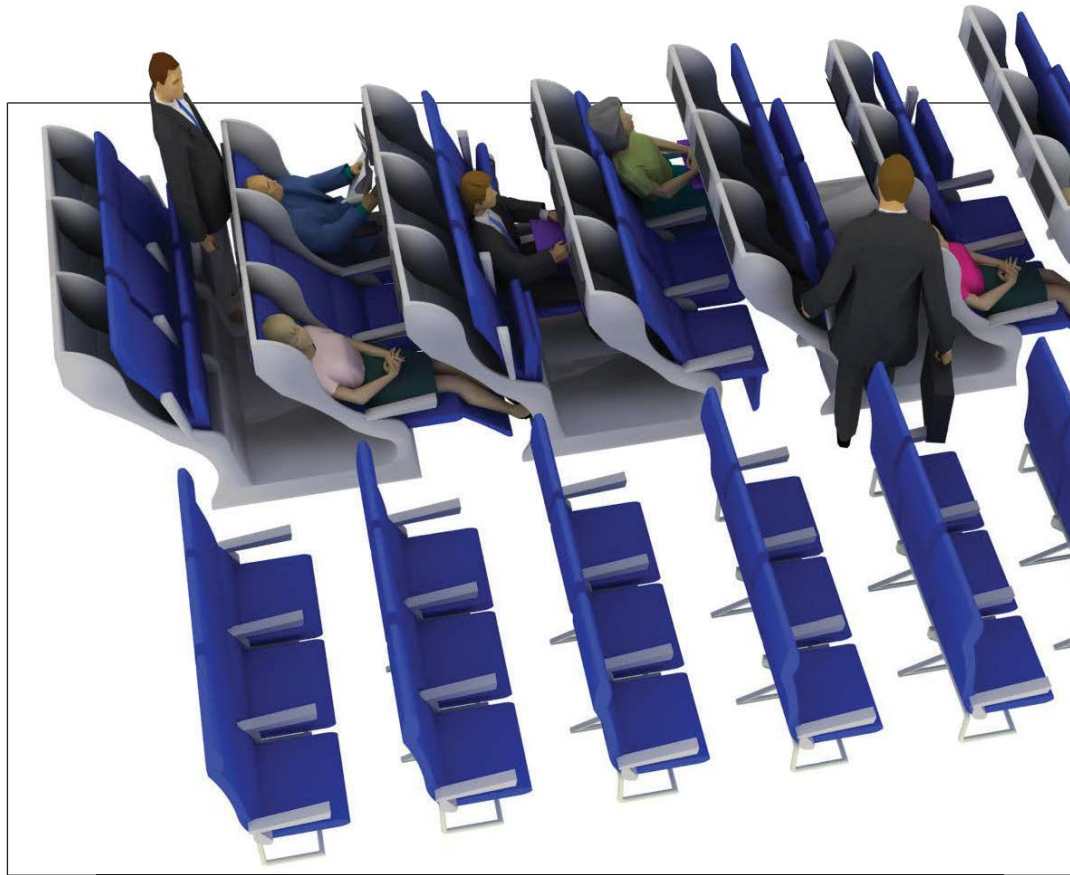
# what'sup

**BRIEF:** With airlines configuring economy cabins for maximum return, and many operating at the minimum pitches as set out by aviation authorities, there seems to be little opportunity to raise comfort levels for economy travellers. It's time to try a new direction...

**DESCRIPTION:** With the StepSeat Economy, aircraft interiors concept company Jacob Innovations has eschewed the usual lateral thinking, instead creating an economy seating idea that uses the available vertical space to enhance comfort.

The idea is simple and elegant: by mounting alternate seats on 'steps' – basically small platforms the height of a conventional step – legroom is increased and the occupant can recline to around 45° within the fixed shell, with no cabin density penalties. An optional leg rest further aids comfort, making this one of the best economy seats available for stretching out and possibly sleeping.

The inventors say that while access to the seat looks rather narrow, it is actually almost the same as a conventional economy seat at a tight pitch. More space, more comfort, with no density penalty – the only obvious downside is that with that deep recline, as an economy seat this concept would make an airline's premium economy offer redundant. Therefore we see it best used as a premium economy seat that provides the benefits of a conventional premium seat, but at the same pitch as economy.



**VERDICT:** The concept does show promise. However, while we like the use of vertical space, there are some potential downsides. Clearly, that step will add weight, and with two rows attached to each step, if one row develops a fault and needs to be removed from the aircraft, both rows will have to be removed. We could also imagine a few ingress mishaps occurring on night flights. ☒



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# fightforflight

While virtual disaster technology and digital damage assessment are helping to make seat certification faster and less costly, the crash test dummy will not be dying any time soon

CHRISTINE NEGRONI, AIRCRAFT INTERIORS INTERNATIONAL



To the first-time visitor, the Jasti Factory in Numazu, Japan, looks a little creepy. Body parts are stored in cardboard boxes organised by type – hands here, chests there. These are not the real things, of course; they are the component parts of the crash test dummies produced at the factory located in the shadow of Mount Fuji. And while new regulations allow aircraft seat manufacturers to begin conducting some crash tests and even to certify minor modifications with computer simulations, dummy makers such as those at Jasti are not worried about the imminent demise of their anthropomorphic creations.

On my visit to Jasti last autumn, engineer Yoshi Ozawa beamed over a part that was unidentifiable to me. He stroked a section of it and asked me to appreciate how it flexed. “Just like the way the spine bends forwards at the neck,” he explained. Ozawa holds the patent for this little piece of bio engineering, which he claims will give automobile and aircraft manufacturers “a backbone that can bend more like a real backbone” so that in a crash test, the movement of the upper torso will be more like the real thing.

A full-body anthropomorphic test device (as the dummies are officially called) can take a month to make and costs about US\$45,000. Most impressive, of course, is that ATDs are built according to specifications gathered

from real cadavers, so that in every possible way they mimic the physiology of passengers.

Airframers started using ATDs in 1946, although the first tests were on ejection seats and the customer was the US Air Force. The dummies were shaped like humans, but it wasn't until the 1970s that instrumentation was added and body parts became movable so that the ATDs could be placed in a variety of positions in the vehicle. Modern dummies capture all sorts of data, as well as photos.

Strapping a US\$40,000 to US\$100,000 dummy onto a sled and watching it go rocketing into a wall sounds like fun – and it is. But it's not easy and it's not cheap. Tests can take days or even months to set up and can cost several thousand dollars each to perform. Increasingly, engineers are taking the information gathered from dynamic tests and adding it to other mathematical and engineering data to create computer-generated virtual tests, a process the Federal Aviation Administration (FAA) welcomed in 2003.

By 2006, the FAA started encouraging the use of computer models as a way of reducing the cost of seat designs. An advisory circular issued that year urged seat makers to use virtual tests, “during the design phase of seat restraint/interior systems”, and for “understanding the performance of systems when used by various sized occupants, in estimating head-strike paths and velocities, and for many other uses”.



# CRASH!





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Still, the FAA has not determined if “analytical solutions truly represent dynamic test conditions”, according to Joseph Pelletiere, chief scientific and technical advisor for crash dynamics at the FAA. The research is ongoing.

However, Dr Gerardo Olivares, a senior research scientist at the National Institute for Aviation Research at Wichita State University in Kansas, is quite certain they do. And if done correctly, simulation testing can be better than the real thing – offering more data and an opportunity to suspend time during a test procedure. “There are limitations on the instrumentation; you cannot have cameras everywhere,” Olivares says of sled tests. And with a real test, there’s no stopping once it has begun. But with a virtual test, he notes, “I can stop a simulation halfway through. You cannot do that in the physical world. Simulation provides you with more information.”

Nevertheless, the FAA is proceeding with caution, while confidence builds in the predictability of the analytical methods. At present, the practice is to compare the findings from virtual tests with the results of actual smashing of dummy skulls and the compressing of dummy legs during tests of the restraint system, the seat-track attachment, and overall occupant movement.

When seat makers use virtual tests, they always begin with an actual test to validate it, says Robin van der Made, product manager of MADYMO virtual testing software at

“

IF DONE CORRECTLY, SIMULATION TESTING  
CAN BE BETTER THAN THE REAL THING

”

TASS International in the Netherlands. His company does the validation for its manufacturing clients.

Once you have the baseline, he says, some seats already certified can be modified and approved based only on the computer model. For example, under new FAA policies, if a new IFE system is installed on a seat already in service or a cabin interior is moved in a way that would affect the seats, those changes can be modelled, crash tested and certified using only computer analysis.

Still, certifying a seat from start to finish based only on virtual testing is many years away. Experts guesstimate anywhere from 20 years to never. But the value of computer-modelled crash testing is widely appreciated.

**SUPPLIER PERSPECTIVES** At Zodiac Aerospace, seats, restraints and attachment designs are tested virtually during development. “Crash testing is simulated using software,” says Rakibul Islam, vice president of engineering at Zodiac and a member of the SAE committee on seat design and certification standards. “The main benefit is that it helps us to design a better product quickly.” The simulation uncovers weaknesses and shortcomings much





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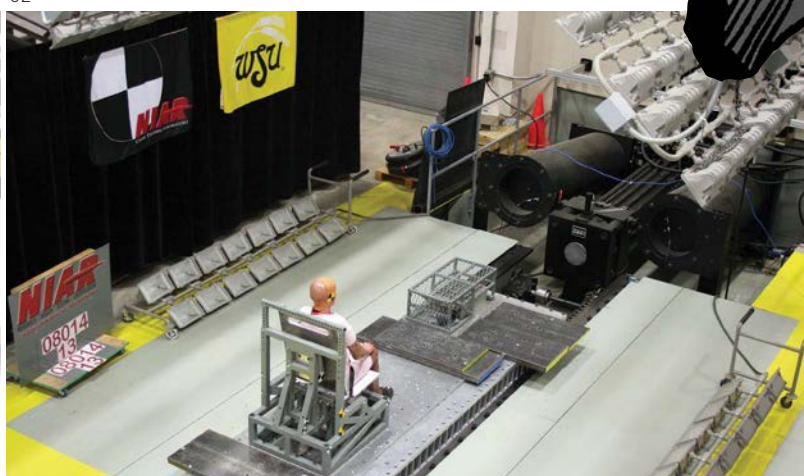
WHAT HAPPENS WHEN  
A PASSENGER IMPACTS  
ANOTHER PASSENGER  
IS NOT KNOWABLE ”

”

01



02



faster than conventional testing he says, “helping to reduce the time of new product development and reducing time to market”. Used correctly, virtual testing “could save up to 50% of cost and time”, Islam adds.

They tell a similar story at B/E Aerospace, where Tom Plant, vice president and general manager of seating products, says the company has been using three-dimensional simulations since 2007. This technology has helped designers come up with more creative seat concepts. “We had a number of highly complex, premium seats that were new and unique, and we were really struggling with test failure after test failure after test failure,” he says. “We said, ‘we’ve got to do something different here and we’ve got to try to not just break things by trial and error, because it is a slow and painful process.’”

During a visit to the company’s US office in Winston-Salem, North Carolina, Plant escorted me on a tour and we stopped by the desk of an engineer who was assigned to work on a particular aircraft seat. We watched his computer monitor as an animated seat got a virtual shove. The tiny green man’s arms and legs went flying outwards, but the virtual passenger remained secured.

**SOCIAL FAUX-PAS** Given how computer testing can ease the way for new designs, one has to wonder whether Southwest Airlines’ signature lounge seating would have survived had it been widely available 15 years ago. From

1971 to 1997, the airline offered sets of passenger-facing seats, five sets on every aircraft in the fleet, some two facing two and some three facing two. These social areas were popular with business and family travellers, says Chris Woodard, Southwest’s manager of engineering.

“Southwest capitalised on that,” Woodard explains, with adverts showing groups of passengers enjoying a cocktail and a good time on board. “We capitalised on that in our marketing of the fun, family atmosphere, the social environment of the flight, and that’s what the lounge offered.” Woodard speaks wistfully because the lounges are now, as he puts it, “an artefact of aviation history”.

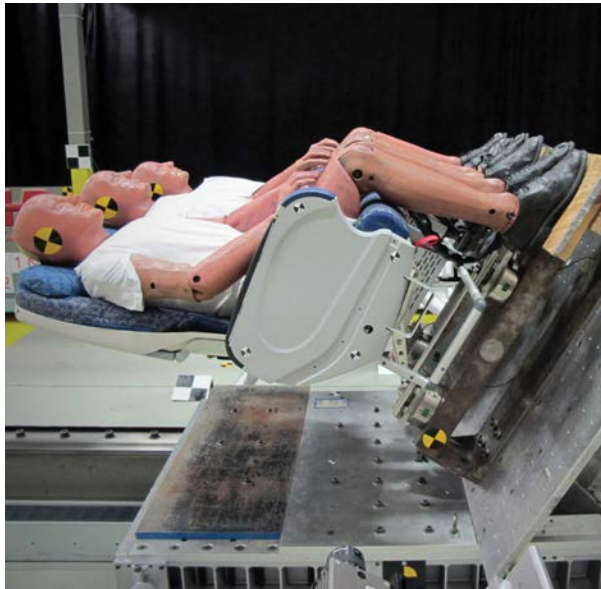
When the airline switched from B737-400s and -500s to 737-700s, the seats would have had to be certified to 16g in sled tests. The airline faced a dilemma, Woodard explains, “When an occupant hits the back of a seat, it’s easy to define and control when they’re looking at the seat in front. Then you have head path injury protection.”

So while seats are designed anticipating how a passenger will impact with the surroundings – seat backs, seat sides and armrests, as well as the cabin floor – what happens when a passenger impacts another passenger is not knowable. “That’s why the push was to making them forward facing,” Woodard explains of the airline’s decision to replace the lounges with conventional and crash-predictable seats. Southwest did not want to fly into uncharted certification territory.

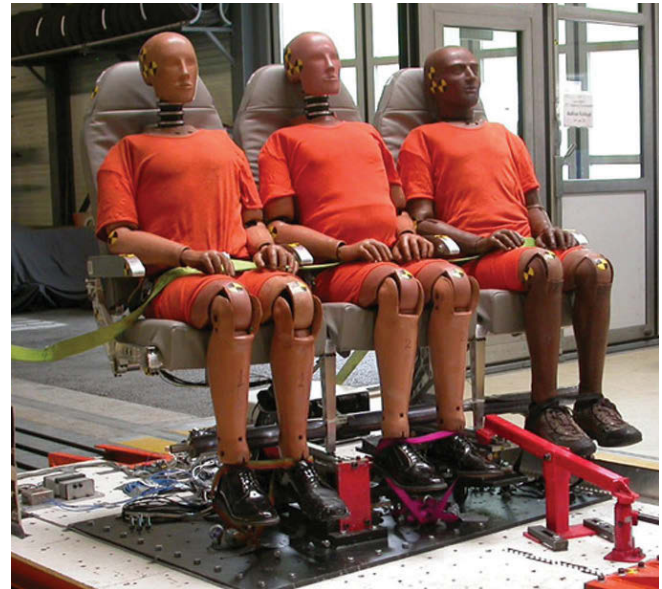
01. Jasti’s Yoshi Ozawa has created some of the world’s most accurate dummy designs  
02. The NIAR at Wichita State University, where testing is ‘better than the real thing’



- 03. Sled tests at NIAR can be stopped at any time to review progress
- 04. Dummies relax before an economy seat test at ZIM Flugsitz



03



04



TESTING CAN ALSO INDICATE THAT A SEAT IS TOO STRONG; NOT GOOD IN AVIATION



**REVISED POLICIES** From private first-class cabinettes and herringbone positioned business-class seats, to the SkyRider modified saddles under development by Italy's Aviointeriors, innovation continues. Government regulators have responded by revising policies for testing and certification. FAA spokesman Les Dorr says the agency is "conducting research for seats at different angles to the longitudinal axis of the aircraft".

More than half of tests performed for certification focus on the structure, assessing things like whether legs remain secured in the floor track, what amount of pressure bends the frame, or how much strain the belts will withstand, Zodiac's Islam says. But testing can also indicate that a seat is too strong; not good in aviation, where every ounce must be justified. "Airlines want the lightest possible seat that meets the standard," states Robert Yancey, senior director of global aerospace at engineering company Altair. "Normally the seat manufacturer tests to the standard. If they well exceed the standard, it means the seat is over-designed and overweight – and that is a negative."

This fine-tuning of design is another benefit of software testing. "When you run a test with a physical test article, you don't know your margin of safety – just if it passed or failed," Olivares says. "But with simulation models you can quantify how close you were to failure. What simulation brings to the whole picture is more robust designs and a better idea of the limitations on design."

At present, the FAA's approach reflects a belief that while virtual testing has an increasingly important role to play, dynamic testing has the edge in credibility, offering a more reliable assessment of what will happen in an aviation event or crash. Results from actual crash tests feed

information to the software powering the computer models, making what Zodiac's Islam calls a "circle of data".

The circles are more like silos though, because seat manufacturers consider the data proprietary to their designs. They do not share what they learn. If they did, Olivares believes the integrity of this new technology could be established in two or three years. As it is, it could take more than 10 years.

**DIGITAL DUMMIES** Developing along with the digital crash test is the digital dummy, which takes what is known about the human body and the physical test dummy, and converts it into a numerical model that can then be smashed around in a computer-generated impact event. The computerised crash test, a marriage of the virtual seat and the virtual seat occupant, reveals where and how structures fail and how the event might injure the human.

The human side of the program is complicated and requires significant modelling effort, according to Robin van der Made, whose company, TASS, creates the software. Nevertheless, virtual dummies are seen as a promising tool for certification testing and even for understanding aviation events that have not yet been studied.

"Seats may perform very well in the test prescribed for certification, but what about some event different than what we planned for; turbulence, no landing gear or a belly landing," Altair's Yancey asks. "Our goal is to get a model that performs well with test data in a few different loading scenarios and exercise that simulation model for a wider range of loading conditions."

These virtual dummies don't sit on a shelf or win the approving attention of engineering Geppettos like Jasti's Ozawa. Instead they reside in the mathematical formulae of engineers who are still at work crafting them from an ever-growing stream of information culled from humans and crashes. When they are deemed ready to take their place in the world of seat manufacturing, they will be the direct descendants of the dummies on Ozawa's shelf. ☒



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# HOTEL BELLE AIR



## HOTEL

suite**talk**

As hotel design becomes an increasing influence for aircraft interiors, we look at what aircraft designers are learning from this parallel industry

GUY BIRD, AIRCRAFT INTERIORS INTERNATIONAL



It's logical enough. With a shared customer base and with both being involved in different parts of the travel process, it's no wonder hotel and aircraft interior designers share similar concerns and are thus likely to keep an eye on each other's creative output.

Devin Liddell, principal strategist at the Seattle, USA-based design consultancy Teague – which has recently undertaken work for the JW Marriott hotel chain as well as having a long-standing connection with Boeing and others in the aviation industry – makes the point well. “It's definitely a trend,” he begins. “Both have to design for confined spaces and are also involved in the tension between passenger experience and operational profit.”

Both industries also have to address different customer needs within one broad space, as Liddell illustrates with an example: “The 6:00am flight from Seattle to San Francisco is half-filled with businessmen with bleary eyes, while the



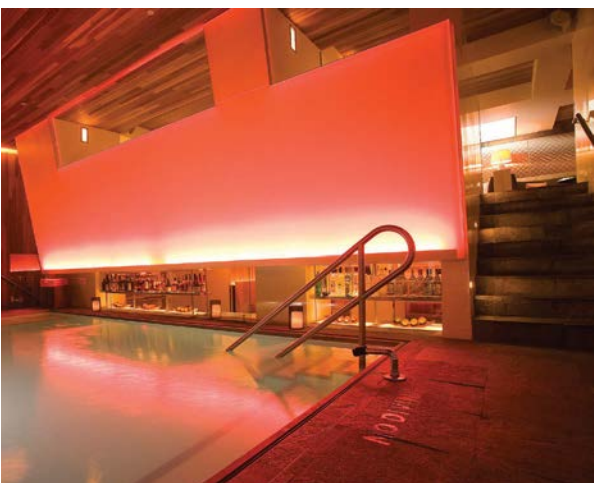
“

IT'S ABOUT FINDING THE COMMON DENOMINATOR BETWEEN DIVERSE CUSTOMERS. NO ONE WANTS A BEIGE BOX

”



02



03

other half are off to Mexico on vacation. Some already have their party hats on. Those audiences couldn't be more different. It's the same for many hotels. The business people want a productive, quiet space with wi-fi and a decent desk space, while those on holiday just want a good pool. It's about finding the highest common denominator between those diverse customers. Neither wants a beige box."

**HOTELS REDEFINED** But why, of late, does it seem to have become a mini-trend for aircraft designers to look more towards hotel designers for inspiration than the other way around? Howard Sullivan, a director at YourStudio – the London-based spatial design and strategy agency behind Iberia's new business and tourist class – reckons you only need to look at the respective offerings at the recent Aircraft Interiors Expo in Hamburg and Milan's Design Week, which focuses on furniture, lighting and the latest residential and hospitality trends, for evidence of the difference. "Exhibitors in Hamburg displayed a really amazing grasp of material finishes," says Sullivan, "but there was a big gap in trends. The Milan fair is more cutting edge, showing trends that will be on the high street within the next five years."

Sullivan also has a theory that the hotel industry may have reacted to the recession quicker in terms of new offerings. "Hotels had to redefine their definition of luxury.

The W does a good job – similar to Virgin – of exuding a vibe that is very clear about who it is for and who it is not for. Design-conscious people willing to pay a bit more for an experience 'get it'. They want vibrancy.

Devin Liddell, principal strategist at Teague

## retail blazes a brighter trail

Despite what can clearly be learned from hotel design, Devin Liddell, principal strategist at Teague, is even more excited by what he sees as the great strides made by the retail industry in recent years. "In general, I think hotels are still pretty undifferentiated. If you woke up in the middle of the night, in very few of them would you know where you were."

He argues that airlines are in a similar position. "To give just one example, 46% of the world's airlines use blue as their primary colour. It just doesn't make sense from an operational point of view. The retail industry, in comparison, has grasped the need for differentiation as an operational imperative – 'we have to do this or we will die'. A typical mall environment has similar brand differentiation issues to an aircraft, with a very stock space, but the good retailers really make each space their own. Lego and Apple are two obvious examples, but so too is Gap, which manages to make its many brands including Old Navy and Banana Republic stand out."

Customers might no longer want to pay for expensive chandeliers in a foyer with little function. They want good shared spaces – like the bar and boutique areas – and perhaps a more simple pod-like room without clutter."

NYC-headquartered agency MBLM, whose recent projects include the rebranding of American Airlines with FutureBrand, readily acknowledges the influence of hotel design on its work. "We often look to the hospitality industry as a whole for inspiration," says MBLM president Claude Salzberger. "We believe that flying is an integral part of people's lives and, as such, anything we can do to make the experience 'familiar' will reduce the stress associated with being captive inside a capsule at 35,000ft."

Salzberger agrees with Sullivan that the hotel industry has undergone a mini-renaissance of late, especially in its renewed focus on the details: "It's gone through major change in this regard, realising that creature comforts such as a better mattress, feather pillows, mood lighting, rain showers and technology at your fingertips are now expected as basic offerings."

With aircraft manufacturers moving to 'catalogue' solutions, making cabin architecture and seat configurations harder to alter, Salzberger says this emphasis on the 'micro' – or being "inventive with the details", as he puts it – will become even more important to airline interior design too.

01. The yin-yang seating at the Room Mate Carlos in Buenos Aires may be popular with BA business flyers
02. Colours and textures add interest to small spaces at Kimpton's Hotel Monaco in San Francisco
03. Luke Pearson's favourite hotel, the Room Mate Grace in NY



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04



05

**PRIVATE (SEAT) SPACE** In terms of what areas of hotel design can most readily be applied to aircraft interior design, Salzberger identifies premium seat design as the sweet spot. “From individual cabins, to pods and herringbone configurations, the goal is to provide an increased sense of privacy,” he says. “Once inside, the seats, the use of rich materials such as wood, lush fabrics, state-of-the-art plastics and personalised storage compartments are what enhance the overall experience and connote a sense of luxury.”

YourStudio’s Sullivan is honest about the extent to which each industry’s influence can overlap in this area, but still sees great potential. “You can’t compare an Eames Lounge Chair to an aircraft seat as neither could do the other’s job,” he reasons. “But I think we can do better on aircraft seats in the details, at the junctions where parts and different materials meet. With customers so used to swiping screens now, the good feel of a metal dial or the grain on unvarnished wood can make a real difference.”

**THE WHOLE EXPERIENCE** Luke Pearson, founding partner of PearsonLloyd, the London-based studio behind Lufthansa’s latest business class seat and before that Virgin’s

## best of both worlds



With a CV that includes positions as head of design at Virgin Atlantic for almost a decade and senior vice president of global design and guest experience for the InterContinental Hotels Group, Joe Ferry is ideally placed to comment on the relationship between hotels and cabins. He has written an opinion piece for our website, and here is an excerpt.

“The links between hotels and aircraft have been evident for quite some time. It was Pan Am, under Juan Trippe, who set up InterContinental Hotels to create a five-star hotel experience for crews and passengers. That was in an age when flying was highly inspirational and glamorous, and probably influenced both the hotel and automotive industries. Latterly, the influence from the ‘tube’ to the ‘box’ has probably been reversed.

Having worked in both sectors, I have experienced the restrictions and opportunities of each. By far the more restrictive is the aircraft world, with legislation and certification criteria that close down the majority of design concepts which are not formed on a solid foundation and understanding of the hard realities. Invariably, the hotel sector has far more opportunity for experimentation and to push new design movements, technologies and boundaries, influenced by art and architects at the forefront of inspirational ideas. There is, however, a world of difference between an über-chic boutique hotel and a franchised chain such as Holiday Inn; the latter actually having far more in common with the airline industry.

Hotel designers have the freedom to use new or exotic materials and finishes that have complete disregard to weight restrictions and in some cases, cost constraints. They don’t have to go to the extremes of withstanding the hostile environment of an aircraft interior, although they do have a few durability considerations of their own.

Some airlines have been very literal with the hotel influence and have employed hotel designers to add their touches to the cabins. British Airways recruited Terence Conran and Kelly Hoppen for some of their cabin interiors. Recently, design houses such as Priestmangoode and Softroom have enjoyed success by moving into the hotel sector, being recruited by Etap and Yotel, respectively, to use their expertise in maximising the potential of minimal spaces to create contemporary chic environments.

Whilst it’s good to keep an eye on the design developments of the ‘box’ it’s better to be true to the ‘tube’. There is still so much more potential in the aircraft interiors world that has yet to be tapped into, and with ever-developing technologies I believe a truly unique experience can be delivered without having to measure it against hotel design. For a start, you get a better view than any hotel can boast....



06

- 04. Mandarin Oriental gauged its market and went for a more masculine approach for its Las Vegas property
- 05. myhotel in London is tailored to the local market
- 06. A more unisex in the city design for Mandarin Oriental’s NY branch

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07



08



09

2003 Upper Class seat, also believes premium seats have been influenced by hotel design, in “richer material offerings on trim and finish, and in the lighting of business cabins”.

But he points out other areas of closer correlation too. “Airline lounges are undoubtedly being influenced in terms of feel. The stale corporate environments are being challenged with better design, more interesting products, but also a more holistic service offering. How the brand is delivered, from buying the ticket to the presentation of food, is all-important to the consumer, who is far more demanding and aware of the quality he or she might expect. People are better travelled and more exposed to different propositions in different service sectors.”

The importance of designing ‘a complete experience’ is shared by Luke Hawes, a director at Priestmangoode, also based in London and recently responsible for the award-winning first class cabin for TAM, among others. “We don’t just design aircraft interiors,” states Hawes. “We design hotels and other hospitality environments such as cruise ships. As a result, our work in the hotel industry has always informed our aviation work and vice versa.”

Rather than looking at any particular hotels for reference, Hawes says the studio focuses on “the levels of service that customers expect at different levels within the hospitality sector, whether budget, mid-range or five-star. Our goal as designer is to create a seamless passenger journey. So for instance, when we look at the transition

*My favourite hotel room is any room with a spectacular view. It would be great to have long, wide-angled windows on aircraft to give passengers more of a panoramic view. It's technically possible, so I think it's just a matter of time.*

**Luke Hawes, director, Priestmangoode**

between hotel and aircraft interiors, we look at what the passenger will encounter throughout the journey. Materials are a good example. We’re moving away from hard materials, particularly in business and first, instead using more domestic materials like wood, marble and wool”.

**COLLABORATION AND CO-BRANDING** This approach doesn’t necessarily mean airlines need to become experts at everything travel-related though. Teague’s Liddell is a believer in carriers bringing in expertise where applicable, and co-branding that collaboration rather than pretending it is all done in-house. “Airlines have so much on their plates already, so it’s a good plan,” he says.

He cites Delta Airlines’ use of Westin hotels’ bedding for its Business Elite class as a positive example with





10. The W chain is known for dramatic design. Teague's Devin Liddell likens the chain to Virgin, saying that design-conscious people will pay a little more for the vibrant experience



THERE CAN SOMETIMES BE A GRAVITATIONAL PULL TO THE MIDDLE, BUT THAT'S WHERE BRANDS GO TO DIE



a direct hotel connection. Elsewhere, he is impressed with the variety shown across the boutique style hotel chain Kimpton, which even offers different types of rooms within the same building. He believes something similar could be applied to airlines, although he appreciates it might unsettle the more conservative-thinking within airline management, as he half-jokes: "It's the sort of approach that might give a brand manager hives, but actually all the Kimpton hotels have a coherence within their differences; a common thread."

YourStudio's Sullivan highlights 'myhotel' in the Bloomsbury neighbourhood of London doing something similar, by partnering with Gail's local artisan bakery and kitchen for its food offering to give the hotel a genuine USP, and one that anchors it within its environment, rather than just imposing itself upon the area in an identikit fashion. Some airlines are already doing the same by

choosing food and drink that is local (and seasonal) to the routes they fly, to add variety for regular flyers.

**AVOIDING 'AVERAGE'** But there is more that airlines can learn from hotels. Liddell says he is still amazed at how badly aircraft are designed in terms of how they lay out the 'front' and 'back of house' areas. "Where many airlines get it really wrong is in showing their 'back of house' as you walk onto the aircraft," he says. "It's like hotels directing their new guests through the kitchens to get to the front desk." He suggests more modular approaches to design could offer new locations for galley spaces, while making those galley spaces more aesthetically pleasing in the meantime.

Work to do then, and specific constraints to work around and solve for certain, but ones that this group of experts would say are not insurmountable, and are indeed necessary to improve brand differentiation and ultimately help ensure brand survival. The alternative is not a good plan, as Teague's Liddell concludes: "There can sometimes be a gravitational pull to the middle, but that's where brands go to die – you don't want to go there." ☒

CONTACTS

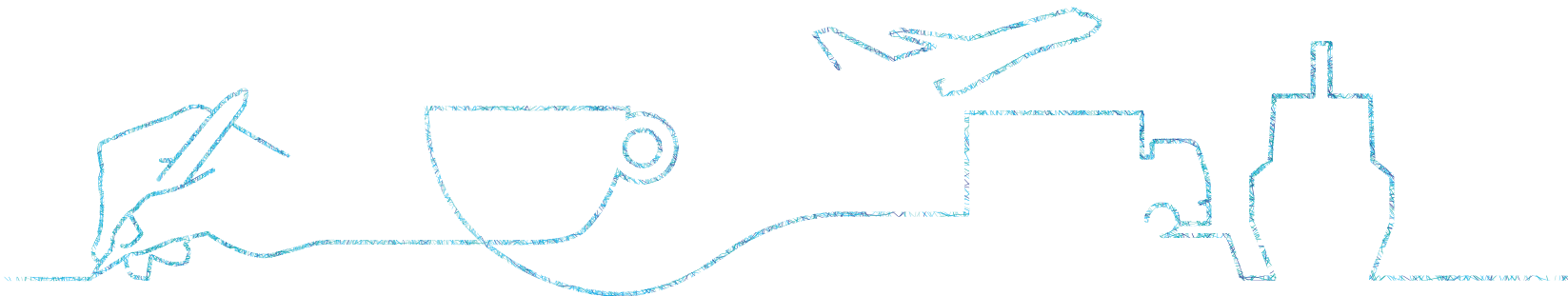
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# personaleffects



Customer experience experts reveal how airlines can get better at offering a truly personal service in the future

GUY BIRD, AIRCRAFT INTERIORS INTERNATIONAL



Imagine the scenario. You visit a hotel where the furniture positioning isn't quite to your liking, so you move it around a bit. Once the stay is over you barely give it another thought, until returning to that hotel on another occasion to discover your new room has something familiar about it. And then it dawns on you: the furniture has been arranged by the hotel staff just how you had it before – just how you like it, in fact. The story might sound like a hotelier's twist on the classic children's tale *The Elves and the Shoemaker*, but this is actually just one real-world example of customer service that can turn a good personal experience into a great one – in this case, provided by the ultra-luxurious independent hotel chain One&Only, and recounted by Peter Knapp, global creative officer for Landor Associates.

While it might sound a bit unnerving to think of a business taking that much interest in your personal preferences, if handled correctly and discreetly, Knapp reckons most people will recognise such moves as “good hospitality” rather than spooky. After all, to get cabin crew to take a subtle note (via a tablet) of a customer's favourite drink when first boarding an aircraft, and then accessing that information when they board on another occasion and offering it to them, is just thoughtful. It's what good bar

staff might do at your local pub and is easy to apply to frequent flyer business or first class air passengers, instantly making them feel like a king or queen and likely to fly with that airline again. And, as Knapp adds, “It shouldn't be difficult to do, as an airline will have the likes of Jack Daniel's and ice on board already.”

Reuben Arnold, customer experience director at Virgin Atlantic, recalls another personal example that could be applied to airlines: “I recently stayed at a hotel with my two young children and instead of the usual generic letter from the hotel manager welcoming us, there were two bags of goodies on the children's beds with their names on and a letter explaining the exciting things for them to do at the hotel. This tailoring of our experience had a powerfully engaging impact, but was not costly to implement. This is the type of recognition and personalised communication that could be easily transferred to an aircraft seat on IFE screens.”

**PLAYING CATCH-UP** However, Knapp worries that such positive outcomes are currently all too rare within the aviation industry. “There's usually no choice of beer – I only know it will be warm – and filter coffee that's been hanging around for too long,” he says. “I'm used to standard venues

**my ENVIRONMENT**

**COLOUR**

**LIGHTING**

**UP** **DOWN** **IN** **OUT**

**LUMBAR**

**UPRIGHT** **LOUNGE** **BED**

**SEAT MODE**

**SOFT/FIRM MASSAGE**

**PRIVACY**

**TEMPERATURE**

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INDIVIDUAL EXPERIENCE



on the ground that still offer six types of decent coffee from a vending machine. We need to play catch-up in the air.”

Extra choice doesn't have to mean extra fuel burn either, reckons Knapp. Data management of pre-booked choices is the way forward so the cost of carrying extra options is minimised. Indeed, Mike Crump, a partner at Honour Branding – behind the brand identity of Saudi Airlines, among other aviation projects – points to such an existing pre-flight meal booking service from budget airline Air Baltic, and suggests its idea could be developed for business and first passengers in a more bespoke manner: “Could this be taken one step further?” he asks. “Could I get a steak from Hawksmoor or an amenity kit with products that suit my skin type and preference?”

**CUSTOMISATION** There is certainly an appetite for more customisation, as other industries from mobile phones to cars offer ways to make mass-produced products more individual. Just 10 years ago, being able to use a low-res personal photo as a grainy screensaver on your mobile was novel. Now you can stream personal music playlists direct to your smartphone and access them via pin-sharp

touchscreens. Equally, car brands such as MINI and models like the Fiat 500 have moved away from prescribed trim packages of extras not necessarily all to a customer's taste, to offering almost endless colour and trim options – there were technically 549,936 variants at the 500's launch – with 19 types of exterior stickers, 15 upholstery choices, and even keycase colours to match the exterior bodywork.

Crump acknowledges the change. “Business and first class customers are increasingly demanding a more individual experience,” he says. “This is driven by the desire for greater control, to not be governed by the operational procedures and routines of an airline. Being able to eat what they want, when they want, is now a key premium-customer need many airlines are tapping into with à la carte menus and dine-any-time concepts. These customers also want greater flexibility within their space, and freedom to move around and not feel hemmed in, hence the growth in aisle-access seating, which is quickly becoming the product standard for business class. These customers want to lounge, sleep, work and eat, yet not many seating solutions can support all of these customer needs perfectly.”

01. Gone are the days of 'any colour as long as it's black'. The Fiat 500 has nearly 550,000 permutations of colour and trim

01

## Airbus trends see the light

An older customer base, more females, the rise of the BRICS and lighting innovations could all affect future cabin design and function according to Ingo Wuggetzer, Airbus' vice president of cabin innovation and design, and Nicolas Tschechne, a trend research and market intelligence specialist at the Airbus Cabin Innovation and Design Centre.

"A couple of robust passenger and airline trend developments can be identified that impact short- and long-term personal experience customisation demands", says Wuggetzer. "First, the 'ageing society', with a higher percentage of people aged 65 years and above, will drive future mobility concepts and active health promotion on board. Second, the changing shapes of passengers are influencing future comfort requirements and cabin configurations. The increasing role of females in business and society needs to be considered for new travel-related business models and more specifically, demands regarding privacy and service levels. The growing influence of the BRICS countries is rounding up the development towards a more culturally diverse passenger landscape."

Lighting innovations are also predicted to enable passengers to interact in different ways. "Lighting could be deployed to offer specific zones on board," muses Tschechne. "We already have increasing integration of social media along the booking process, where passengers can select their desired neighbour profile. These developments will enhance the demand for onboard 'virtual cabin zones' for working, silence, chat and social interaction or even health, where lighting, among other elements, will play a major role."



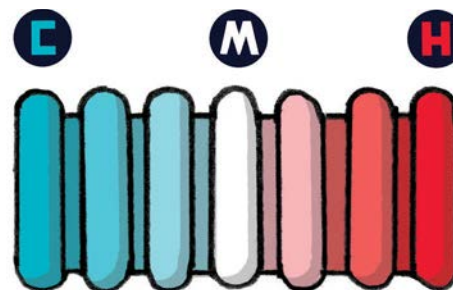
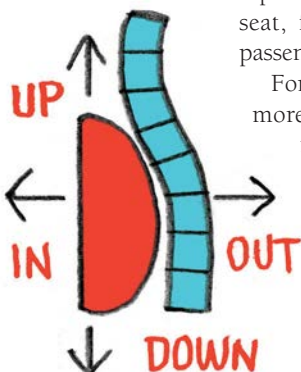
PRIVACY DOES NOT HAVE TO BE ABOUT PHYSICAL BARRIERS



**PASSENGER PRIVACY** An aspect of personal experience that most airlines are starting to improve upon is privacy. "As the world of business travel has become 'flatter', the requirement for greater privacy has increased as sleeping close or next to a stranger brings its own etiquette," continues Crump.

It's a point Dorothea von Boxberg, Lufthansa's director of passenger experience design for premium classes, also thinks crucial: "Some passengers require the highest degree of privacy, as they want to rest or sleep without being disturbed, or for cultural reasons. The Lufthansa First Class solution offers adjustable privacy screens that separate the seats from the aisle, and on a centre double seat, from your neighbouring seat. This means each passenger can choose the amount of privacy desired."

For Crump, creating such privacy can be achieved in more subtle ways too, without an actual screen that needs to be pulled up or down, with its potentially related dilemma of when, how and who – out of the two strangers affected – to do it. "Privacy does not have to be about physical barriers," he says. "It could be much softer and lighter through the use of innovative fabrics. An



innovative seating layout in the cabin can also provide the seclusion that some passengers require, without the need for additional screens."

**YOUR LIGHTS, YOUR AIR** Crump cites technological advances enabling the reduced size and weight of lighting, as well as a greater range of adjustable colours, bringing tangible personal experience benefits not just to mood or task lighting but soon whole walls too, as he adds: "Suite walls in first class could see digital wallpaper being used to provide intricate and decorative lighting features. Customers may be able to bring their family and home into their personal environment through projected images, or personal photos appearing on micro-thin monitors that wrap around the suite."

Landor's Knapp sees the same "real estate potential in the back of the seat in front" where the ability to project a picture of their wife and kids as a screensaver could provide a real tonic to a world-weary traveller.

Nearer-term, Lufthansa's von Boxberg believes better air-conditioning is another area with potential. "Temperature control is definitively an area that could be much improved, yet this is very difficult to realise," she begins.

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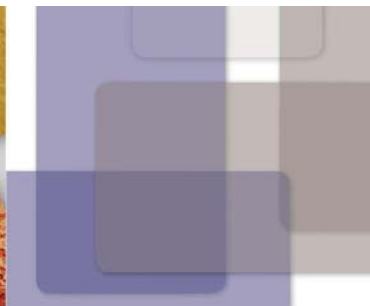
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NIKE BLAZER MID iD

02



03



“In the first step, all involved parties – including the aircraft manufacturers – have to continue working on avoiding discomfort by unpleasant airflow and drafts, uneven distribution of temperatures along the aircraft, and other areas of uncontrolled temperature, such as door areas. In the second step, the individualisation of the temperature control in the direct environment of the seat is a challenge for airlines and seat manufacturers alike.”

**INTUITIVE CONTROLS** Whether adjusting the home stereo volume via an iPad or remote-locking the latest cars via a smartphone, customers are starting to get used to controlling many external environments using their own mobile device – rather than having to learn a new graphical user interface (GUI) each time. Making your aircraft seat’s entertainment system compatible with these various main devices will undoubtedly help, especially if that can be done wirelessly via Bluetooth or similar, to avoid obsolescence with the various external devices’ plug and socket changes (the iPhone 4 to iPhone 5 is one obvious example). Virgin’s Arnold also reckons that as aircraft connectivity becomes the norm, this will enable better customer choice recognition during the flight too, not just in the pre-flight stage.

However, carriers are not giving up on their own inflight systems just yet, as von Boxberg explains: “There are definitely different tastes regarding films and music. However, the individual requirements for a graphical user interface are pretty similar: get me to where I want to go as quickly, intuitively and with as little hassle as possible. So the focus for the development of Lufthansa’s brand new GUI, which will be introduced during 2013, is one that takes into account the common goal of navigating easily and, if desired, playfully through the contents of the system, with the ability to compile your own playlist or



CUSTOMERS ARE STARTING TO GET USED TO CONTROLLING EXTERNAL ENVIRONMENTS USING THEIR OWN MOBILE DEVICE



favourites, and thereby customising it to each individual’s preferences. Instead of relying on future technologies to tackle the inherent problems of multiple Bluetooth communications in a cabin, we have focused on developing the personal controls with our passengers.”

**LIMITS AND CONCLUSIONS** Many of the experts we spoke to expressed concern at the potentially conflicting priorities of aircraft manufacturers putting the brakes on such personalisation plans. Honour Branding’s Crump makes the point explicitly: “While the customer is demanding greater levels of customisation, aircraft OEMs are trying to drive less, through standardisation and a catalogue approach to cabin specification. While this may help these OEMs make more product faster and more cost-effectively, it puts greater pressure on buyer furnished equipment [BFE] suppliers to drive the differentiation that customers are demanding. Aircraft OEMs need to build in greater levels of modularity to be able to offer more levels of choice so that airlines can create a differentiated and customised experience for their customers.”

For Adam White, director of London-based Factorydesign – who has worked with airlines such as Etihad and seat specialists such as Contour – there is a danger in going overboard with customisation options

- 02. They’re your Nike Blazers, so why shouldn’t you get to choose the colours?
- 03. The personal approach leads to some great marketing and advertising opportunities



## Really personal devices

A popular approach to creating a more personalised passenger experience is to provide cabin crew with tablets on which they can access passenger information. British Airways began the initiative, with 'Know Me', a trial of iPads loaded with specially developed software and apps, allowing cabin crew to tap into data showing customer preferences and previous travel arrangements. The trial was so successful that the airline has now issued over 2,000 iPads to its senior cabin crew.

The iPad also shows crew where each customer is seated, who they are travelling with, their Executive Club status and any special meal requests, as well as useful information to help passengers, such as timetables, safety manuals and destination guides.

Bill Francis, the airline's head of inflight customer experience, states: "The iPads provide real-time insight into our customers'

preferences across a whole range of areas, from special meal requests to onward travel plans, enabling us to deliver a truly bespoke service."

The scheme was not without its critics at first, as sites such as Google Images were being used to obtain pictures of customers, but now the scheme has also been rolled out to fellow IAG airline Iberia.

Other airlines running similar systems include Malaysia Airlines, with its A380 crews trialling iPads running SITA's CrewTablet solution – branded 'MHcrew' by the airline – to enable crew to quickly access passenger and operational data.

Qatar Airways has also embraced the iPad in its customer service, with cabin crew and concierge staff at Doha and London Heathrow using the devices to access customer information, data



on flights, and destinations.

An app with an interactive seat map highlights the presence of VIPs and Privilege Club members onboard, provides ready access to customer information, and alerts staff of special meal or service requirements.

Another tablet fan, Emirates Airlines is using the HP ElitePad 900 tablet as the interface for Knowledge-driven Inflight Service (KIS), an innovative in-flight communication and customer relationship management (CRM) system, to enable pursers to work more efficiently with cabin crew to deliver the best possible personalised service.



that have no real customer 'pull'. He says, "I think all the features described have a relevance or certainty in appearance in the coming years, but it should be remembered by those keen to 'bolt-on' the latest tech, that for many people the idea of, say, mobile phone connectivity is an anathema on board a plane and that the few hours we have flying are the few hours in the week where we get a bit of time out."

Virgin's Arnold, despite working for a forward-thinking company in terms of personal experience, is equally forthright on this point, adding, "There are significant considerations around cost and complexity. The key with any development is being clear on the tangible value to the customer. There is no point in delivering cool innovation and creating bespoke experiences unless they are ultimately addressing a real customer need."

Both are excited by technological opportunities that help remember customer preferences and deliver them well, but an equally important – and constant – factor that will continue to have overriding relevance is how the humans involved in managing that data deliver the services based upon that knowledge.

As Lufthansa's von Boxberg sagely concludes, "I believe you find examples of outstanding service when it is offered in a personal and hospitable way. Hardware needs to be thought through and needs to cater for basic needs, but it is the human interaction that makes the difference in customisation and personalisation." Quite so. ☑

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# quietconfidence

Iberia is now truly a flag carrier for Spain to be proud of, with a subtle yet deep redesign of the whole travel experience under way

ADAM GAVINE, AIRCRAFT INTERIORS INTERNATIONAL

01. Don't let the understated looks fool you: clever use of materials mean the new business seat will keep delivering surprises hours into a flight



It's no secret that Iberia has had a few troubles in the past, but IAG has restructured the Spanish airline for greater efficiency, which should see it return to the black in a few years – hopefully along with a recovery in Spain's economy. However, if the airline is to attract new customers in a reinvigorated Spanish travel market there is, of course, one other element that needs to be in place: new interiors.

The current long-haul business product, introduced in 2005, is already a good offer, with full-flat beds and more than 2m of personal space. But as Francisca Patilla, Iberia's product design manager, explains, "As the years passed, we knew there were some features we needed to improve – features that were demanded by our customers."

These demands included direct aisle access, extra privacy and stowage, and improved IFE. And a little added glamour wouldn't go amiss either. In 2009 Iberia selected the team that would work with its in-house experts to deliver its aims: Interbrand for the brand experience, Mormedi for the industrial design elements, and YourStudio for the CME.

"Iberia has never really carried out a deep rethink of its brand," explains Borja Borrero, Interbrand Madrid's executive creative director of the project. "Because it was a public company, in the past it was managed by engineers. But now the airline feels it is time to bring something new to the brand and to look to the future. We are in the middle of a full reinvention of the brand experience for Iberia – not simply a new cabin experience. The scheme will project Iberia's new brand into the future and reposition the brand as a new world-class carrier."

It's a bold goal, but what specifically did Interbrand want to achieve? Borrero explains: "We did benchmarking and discovered that when you think of Air France, British Airways, American Airlines or Lufthansa, because they are all flag carriers you immediately associate the brand with feelings of the country they belong to. So we wanted to deliver the feelings of vitality and expressiveness that go with the Iberia brand and the Spanish way of life, which is







01



IT'S NOT ALL ABOUT SIESTA OR FIESTA – IT'S ABOUT THE PASSION WE PUT INTO THINGS



02. Pictures don't really do the design justice. The dogtooth pattern in the fabrics is echoed in the shell finishes
03. Mormedi redesigned the armrests and end bays, which YourStudio enhanced with red leather and metal details
04. The real fun lies in the changing nature of the colourful pillows

something very powerful and something many envy. We also wanted to match that brand experience with a professional feel on board. It's not all about siesta or fiesta – it's about the passion we put into things, the vibrant and energetic way we do things. We wanted to deliver this on board.”

**BUILDING BUSINESS** Madrid-based Mormedi worked on the design strategy for the new seats, which involved understanding the airline, what it required, and what its customers want. Following many evaluation flights, together with market analysis and benchmarking exercises, the team put together its proposals for a two- or three-class offer (see page 59) on the understanding that Iberia did not want any 'blue sky' seating concepts. Two seats were proposed for both business and economy, with a herringbone and a staggered design proposed for business to meet the direct aisle access requirement, and following thorough evaluation with focus groups composed of Iberia's frequent flyers, as well as its engineering and maintenance teams, the seat models were decided upon for its incoming A330-300s – albeit with a 12-month delay during the creation of IAG.

Iberia selected the EADS Sogerma Solstys for business class, and while the airline did not want an all-new seat, it was not an off-the-shelf option either. The standard Solstys has a 73in bed length, and Iberia was adamant that it required a minimum of 76in, so Mormedi set about redesigning the shell – and while making changes, why not optimise a few other elements? Thus the shell was redesigned to give the extra 3in in bed length, and ways to create additional space were examined and implemented, such as moving cabling to free-up an extra 1.5in in seat width (now 22.5in), and also creating space for new stowage areas such as a water bottle holder, while a little more room was found in the footwell. The armrest was also redesigned to go down as well as up, adding a little more width in bed mode. The product is finished with a 15.4in Panasonic IFE display, which will be complemented by GSM and wi-fi as soon the relevant permissions are granted by DGAC, the Spanish civil aviation authority.

“Even though we started with defined kinematics, we created a completely new shell and that gave us an opportunity to make a new seat,” explains Jaime Moreno, CEO of Mormedi. “It is easier when you have the kinematics from the start, but it does make constraints. It was a tight programme in terms of delivery time, so there were some issues we could not change as that would have required recertification of the seat, which would have been impossible in the deadline.

“A blue sky project it is more exciting for designers, but the objective from the beginning was to make the product



02



03

better with a longer bed and wider seats, to increase privacy, and to give everyone direct aisle access and extra stowage, and we achieved that.” Better still, Mormedi ensured that the redesigned Solstys would not cost more to buy or manufacture.

“Those improvements were very important for us and there was room to make them, so we thought it was a great opportunity to include them and fulfil all our customers’ needs,” adds Iberia’s Patilla.

**STRONGER ECONOMY** Interbrand noticed in its research that there was a huge difference in the passenger experience between the outgoing business and economy cabins, and decided to make the economy experience a little more energetic and closer in feel to business. “After all, many people who fly business class also fly economy class on their holidays. So we wanted to make the experience not so dramatically different,” explains Borrero.

Again, the seats – from Zodiac Seats France (Sicma) – were not extensively modified by Mormedi, but they did receive careful attention all the same.

“I think the standard seat is good in terms of comfort, and the seatback looks modern, but the armrest looks old and heavy – like a 10-year-old design – so we pushed Iberia to let us customise it. We gave the armrest more curvature and made it slimmer, which also created more space,” explains Moreno, who also updated the end bay. The new Panasonic eX2 IFE also meant that Iberia could answer customer demand for individual touchscreens.

## changing plans

The seat fabrics and upholstered elements are highly tailored and sophisticated, to enhance feelings of quality and restfulness while also ensuring longevity of the product. However, when the time came to design the accessories, it was an opportunity to be more playful.

The changing nature of these elements means they will be an ongoing project, and a really exciting part is the disposable cushions in economy. Why provide the usual white item that just gets thrown away after a flight, when vibrant printed patterns might mean Iberia-branded cushions get taken home and remind customers of their positive experience? Current ideas include limited-run designs such as seasonal versions with Spanish flora and fauna. Other ideas being mooted include getting aspiring designers involved, crowdsourcing designs, or even inviting designs as part of a competition.



04

## what was the biggest challenge?

**FRANCISCA PATILLA, PRODUCT DESIGN MANAGER, IBERIA:**

“Timing. We were about to receive our new Airbus A330 fleet and we wanted to have the new product in the new aircraft. In order to achieve this goal, Iberia’s team did this project in an incredibly short time. It was really challenging because we also had to convince our providers that it was possible. We are happy we met the deadline, with the first A330, flying since February, equipped with the new cabins.”

**JAIME MORENO, CEO, MORMEDI:**

“Trying to understand a big corporation. In such a project, many departments want to get involved and each wants something different. Engineering, marketing, maintenance and customer service all have their own ideas. Then branding is looking for something fashionable, but maintenance says not to use white because it will get dirty quickly. So the challenge in a project like that is to keep everyone aligned – which is sometimes not easy, especially when you get into colours. With industrial design there are constraints, but with colour everyone feels they can give their opinion.”

**HOWARD SULLIVAN, DIRECTOR, YOURSTUDIO:**

“Trying to negotiate the opinions and trying to push through designs we really believed in. We always tried to make sure the work we did had meaning against all the other work that was created by the other parties, to make it a coherent experience. Colour was the most complicated part. In the end we achieved something we are really happy with, but we went round the houses to get there.”

**BORJA BORRERO, EXECUTIVE CREATIVE DIRECTOR, INTERBRAND MADRID:**

“Convincing the client. There were two in this project: the one who put together the pitch and decided change was needed, and the other was the rest of the organisation. Changing the mindsets of the various business units and departments in such a big organisation is difficult. As with any organisation that has gone from public to private, with staff who have worked there for generations, it is difficult to make changes to the mindset. But on the other hand I’m sure that when the employees see the changes they will be the first to support them. At first they’re scared, but once they see the changes they will realise they are important to the airline’s success and will become ambassadors of the change.”



WE WANTED TO CREATE SOMETHING WITH A LITTLE MORE INTRIGUE



Speaking of the overall seat project, Moreno adds, “We showed we had good technical knowledge and that our proposals would not cost more to manufacture. We had a good relationship with Sicma and Sogerma after this project as everything we designed was feasible. And they recognised the improvements – the economy seat looks much more modern and the business seat is much better in terms of space and comfort. In the end, both vendors were happy with the results.”

**COLOURS AND MATERIALS** According to Iberia, the cabins had to give a sense of attention to detail, tailored style and the “art of flying”, while also being internationally recognisable, stylish and premium, enhanced by colours that give a dash of Spanish vitality.

Interbrand explored colours and textiles to find the right feel that would meet the brand strategy and create a new brand experience on board. The team established colour palettes and values that would be delivered throughout the Iberia experience, and also created several exploratory studies and mood boards with patterns, graphics, photos, renderings and other visual elements.

“We didn’t want too colourful an experience,” explains Borrero. “We wanted an elegant backdrop on top of which we could add splashes of colour and ideas that give the feeling of being passionate and expressive. We didn’t want to saturate the fun idea, we wanted it to feel professional while also giving hints of fun and delivering a great experience. By choosing flashes of colour we delivered this, but it’s not all over the place, it’s not overdone.”

The result is that the predominant tone in business is a mid-grey, a relaxing shade that makes the stars of the flight experience – the passengers and crew – stand out. It also means that the cabins will not soon go out of fashion, and current trends can be addressed by updating colourful elements such as cushions, blankets and amenities.

Interbrand did a great job in defining the brand’s visual expression, but it wanted some assistance in translating those ideas into reality, and turned to London-based YourStudio. This relieved Interbrand of a large workload as CMF is an area in which – and this project was no exception – anyone can offer an opinion. However, the YourStudio team retained control by presenting its vision of the perfect cabin in terms of CMF and only then inviting opinion.

“One of our guiding principles from the beginning was that even though we wanted to create the ‘wow’ factor when passengers enter the cabins, we wanted something that wasn’t gimmicky, that felt really tailored and sophisticated,” says YourStudio director Howard Sullivan.





06



07

- 05. Left to right: Jaime Moreno, Borja Borrero, Howard Sullivan, Francisca Patilla
- 06. The large table gives plenty of space to enjoy the Michelin-star-standard cuisine
- 07. The redesigned armrest has freed-up valuable sleeping space
- 08. Sadly the brilliantly named iBARia walk-up bar is not part of the final product

“Because these are predominantly long-haul aircraft, the passengers will be there for around 10 hours, so they will very quickly tire of anything too flashy. We wanted to create something with a little more intrigue that develops your interest as you go through the journey.”

Thus, while sitting in business, you will have around 20 different materials and finishes within reach, from rubber strips, to soft touch, semi-matte and lacquered paint finishes, to different grades of leather and ultrasuede, to different weights and textures of fabrics. Eight hours into a journey a passenger might reach down to pick up a magazine and discover a leather finish by the footwell – an unexpected surprise that reinforces the feeling of quality.

“When on an aircraft, everything you touch should represent quality because you’re up in the air. The things you touch or rub against should feel solid, so you feel solid and safe. It was important to us for it to be a really tactile experience,” says Sullivan.

For textiles, months of work went into experimenting with various mills to achieve interesting textures while remaining subtle – and aerospace compliant. In this field a further expert – Emma Rickards from West 6 – was brought in. Rickards has worked with YourStudio previously on projects such as British Airways and Cathay Pacific lounges, and was brought on board due to her good relationships with mills, suppliers and manufacturers, and her knowledge of selecting and creating materials, trims and finishes to airline specifications.

The scope of textile influences went beyond supplier catalogues and airline inspiration. YourStudio carried out an audit of materials used in the fashion industry, with particular favourites being those of Mulberry and Lanvin, while they also looked at traditional fabrics such as herringbones and tweeds. “Our roots were driven by classic fabrics as we wanted to create a modern classic,” says Sullivan.

## a third class?

With the rebrand, a three-class offer could have been created. So was a first class cabin considered? Not according to Francisca Patilla, Iberia’s product design manager: “In 2005, when we introduced our Business Plus product – business for long-haul flights – we decided we wanted a business class that was better than the average business class in the market, something between business and first, and it was a complete success. We have kept to this concept with the new business class.”

So how about a premium economy class? “We have not ruled out premium economy. It is an option that has been on our radar for some time, but we haven’t made a decision yet,” says Patilla.

Jaime Moreno, CEO of Mormedi adds, “When we started with the design strategy, part of the scope of the project was to help Iberia define its product strategy. We saw there are already more than 20 airlines offering premium economy, but the commercial team was scared of compromising business class through people downgrading. So they put it on hold, but apparently they have done some studies over the past few months and it looks as if they are thinking about it. But I don’t think it’s fully defined.”



08

- 09. The flashes of red also extend to the IFE menu screens in economy...
- 10. And even the serviceware



OUR ECONOMY IS NOW AMONG THE THREE BEST ECONOMY LONG-HAUL CABINS

Clearly there are fewer finishes to captivate the economy passenger, but the teams still wanted the feeling of quality to feed from business to the main cabin, so elements were added – including a red leather trim on the armrests, with a nice metal detail round the edge – so that all passengers feel the attention to detail.

Red stitching is used in both classes as a subtle nod to Iberia's brand colours – as a cricket-ball stitch in business and a simple running stitch that follows some of the seams in economy. The red elements have been kept deliberately low-key as it can be quite a 'sharp' colour for interiors, but the teams felt it was important to feature it in some subtle way. "It was a way of showing that where you see the Iberia red, it is signalling a nice detail," adds Sullivan.

**FINISHES** It is not just the tactile qualities that endure during flight, as the various paint finishes react differently to different angles and intensity of light. One of the finishes that really impresses is the laminate on the seat shell. As you walk in the cabin, taking in your surroundings and under the bright boarding lights, you will just notice pale grey shells. But as the natural light and the LED mood lighting changes during the flight, you will notice that the shell is actually finished in a subtle dogtooth print of warm silver against a slightly colder silver grey, with a soft sheen.

This is no off-the-shelf finish. The idea actually stemmed from matte-metallic paint finishes from the likes

of Mercedes-Benz, that the YourStudio team noticed at the Paris Motor Show. The idea was worked on and refined, and a unique shell finish made specially for Iberia.

"It graces the seat with the light and gives you extra dimensions that come alive as light moves around the curves of the seat and as you move around the cabin. We tried not to use flat colours wherever we had the opportunity not to," says Sullivan.

**THE FUTURE** Iberia and its design partners are not finished yet. The new cabin designs and seats are also being retrofitted to the airline's fleet of 17 A340s, the first of which will be complete in June, with the rest of the Airbus fleet to follow by the end of 2014.

Beyond that, new lounges are literally on the drawing board, and the livery may receive some attention. Clearly the livery is a major element and a big decision, and Interbrand is being cautious, with Borrero saying, "At this point we are looking at several solutions. The livery already has strong visual equity in many markets, so we haven't made any decisions yet."

"We are in the process of redesigning our brand, but we are not in a position to talk about the timing," adds Iberia's Patilla.

However, Patilla is in a position to mention the customer feedback from initial flights with the new interiors, saying, "Our customers' reaction has been fantastic in relation to both cabins. To be more specific, the surveys conducted among our customers so far show that our economy class is now among the three best economy long-haul cabins. This encourages us and shows that our effort has been worth it." ☒

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# hotseats

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## italianmaster

Leonardo, the latest seat from Aviointeriors, has been in development since July 2011 and makes extensive use of composite materials, which have enabled a slimmer backrest design, with flexibility that aids ergonomics and comfort. In addition, the use of suspension fabrics rather than cushions further reduces weight and enhances comfort, bringing the total fully dressed weight down to 7.5kg per pax place.

According to Aviointeriors, the seat can be installed in any configuration for any aircraft, in a range of sizes. Leonardo requires a minimum 29in pitch, and a wide range of customer options will be offered.

The seat has passed flammability, static, and dynamic structural tests (14g down and 16g forward), and further dynamic tests are under way to minimise post-test deformations. A dynamic test campaign for HIC assessment in the seat pitch range from 28-35in has also been scheduled. Complete certification data is estimated to be ready by the end of 2013, and the company expects to be ready to start production deliveries by late 2014.



## LIGHTSABRE

Optimares' answer to the need for passenger-centric solutions in economy class is Sabre, a semi-fixed backshell seat. The design, created in conjunction with London-based Factorydesign, combines the comfort attributes of a traditional reclining system with the space advantages of a fixed back shell, and creates an interesting result.

Proposed at a 32in pitch, Sabre enables passengers to completely stretch their legs underneath the ultra-efficient carbon-fibre structure of the seat in front. While reclining, the seat bottom slides forwards and gently down, providing support with a unique cushion system, and the backrest pushes the passenger forwards and down, providing lumbar support in all positions.

The backshell does not move, so the space for passengers behind remains unchanged, enabling them to continue eating, working or relaxing while enjoying a constant space without intrusions. The only movement noticeable by the passenger behind is the gentle sliding of the monitor, which does not affect the visibility of the IFE.

The seat design also avoids the claustrophobic effect that previous generations of fixed backshell economy seats could impose on passengers. Luxury finishes, non-plastic materials all around, and solutions previously seen only in luxury cars complete this seat, which Optimares says will soon be flying with its launch customer.



## economyclass

Christian Streiff, former CEO of Airbus, is among the investors in Expliseat

## expliseatdetail

Industry newcomer Expliseat has made a bold entry to the market with its Titanium seat, with a claimed weight of 4kg per pax place, including tray table, seat cover and armrest (but not belt or life vest).

The combination of a titanium-composite structure and an assembly comprising a mere 30 parts make it a very durable design, withstanding up to 100,000 usage cycles, equivalent to 10 years of operation.

The seat is designed for use in A320s or B737s at 18-18.5in wide. The company says it is in "serious discussions" with five airlines, and expects initial deliveries to begin at the end of 2013, following EASA certification. The lead time for orders will be less than 16 weeks.



Expliseat

## FEATHERWEIGHTCONTENDER

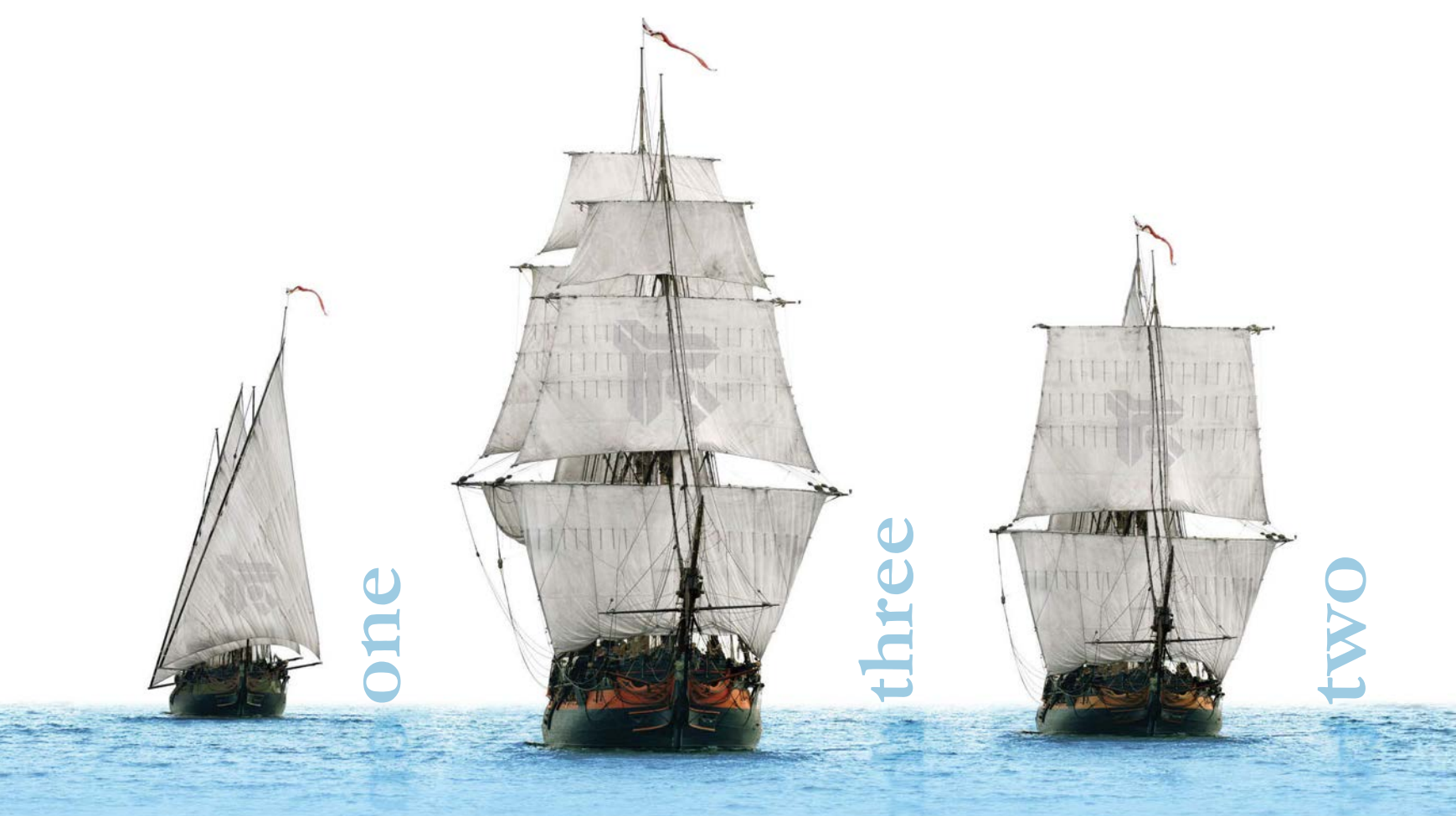
The latest addition to Timco's FeatherWeight series, the 3200 FeatherWeight, was designed in-house specifically for operators seeking a full recline seat for high-density configurations. With a slim profile, and enhanced shin clearance on the seat back using a flexible, fixed fabric suspension system, the 3200 is intended to retain passenger comfort in high-density configurations, while lightweight materials keep weight under 35.4kg per standard triple (including bottom cushion, fabric dress covers, tray table, seat belt and life jacket container).

The seat provides a number of innovations designed to deliver added comfort for passengers, including a curved back shell with upper literature pocket yielding

greater knee and shin clearance, fold-flat armrests, and 10in food trays with a 'belly room' curvature for added space. The rigid back standard mechanism is preset at 1in recline, with a total 6in recline from vertical. This can be extended to 7.5in without further testing.

The design is the product of a joint effort between Timco and its customers, who offered input from their passengers on what they liked or did not like about similar standard economy seats. The result is a seat that, Timco says, delivers more amenities for the passenger, but at a lighter weight. In addition, some of the design elements reduced part-count and assembly complexity, which in turn reduces long-term maintenance costs.





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Simplicity and ingenuity have always led to great conquests; Columbus seat, in its three variants, is ready to make operators discover a new world of fuel savings and easy maintenance.



**AVIO  
INTERIORS** 

## the international seat

Recaro has further expanded its extensive seating range with the CL3710 long-range economy seat. The company went in a slightly different direction to usual with this design and, rather than attempting to fulfil the specifications of individual customers, considered the needs of customers worldwide to create a seat that meets the demands of different markets, regions and airlines across the globe.

Recaro says the CL3710 is the most comprehensively developed product it has ever made and, following analysis of every material, technology and manufacturing process, claims the seat is the lightest in its class at less than 12kg (fully dressed).

Comfort at the minimum pitch of 29in is aided by the ultra-slim contour of the backrest and the high literature pocket, combined with the clever solution of mounting the IFE boxes in a space-saving pancake construction under the seat pan. A new six-way headrest offers improved neck support, and the armrests can be raised and still remain flush with the backrest – even in recline.

The seat is currently undergoing certification, and a launch customer will be announced soon.



## economy upgrade

The BL3520 short-to-mid-haul economy seat for the A320 and B737, first launched by Recaro in late 2010, has recently been revised to meet different regional needs.

This 11kg high-density seat is now a little more comfortable, due to features including an optional thicker foam in the backrest and seat cushion, redesigned padding contour and seat

cover materials, and six-way adjustable headrest. IFE-wise, the seat can now be specified with a touchscreen monitor, while the redesigned armrest incorporates an audio/video control unit.

Airlines have ordered more than 150,000 units of the BL3520. With these enhancements, it has become an even stronger offering.

The BL3520 has won the 2011 Crystal Cabin Award and the 2012 Red Dot: Best of the Best Design Award, as well as many other prizes

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## ultramodern

UK-based Acro Aircraft Seating has created a new variant in its lightweight economy seating range – the Acro Ultra Long Haul – suitable for single or twin-aisle application in twin, triple or quad configuration. Designed in collaboration with London-based Factorydesign, the seat, like the other variants in the Acro catalogue, has a unique ‘monospar’ chassis for added legroom and comfort in tight 28in pitches, with legroom and comfort further aided by the profiled backrest.

However, the comfort features that make this seat a long-haul model include an upholstery system redesigned for long-term comfort, an articulating headrest, and an optional IMS RAVE seatback IFE system. Even with those comfort features, the seat weighs a mere 12kg fully dressed with belts, but not including IFE. As well as low weight, a design focused on low maintenance keeps costs down.

The seat, 9g and 16g certified, has already found a wide-body launch customer in Royal Air Maroc, for its B767 and B747 fleets.

### APPLIED LOGIC

The Ultra Long Haul is also the first application of a simple-yet-effective new design that reduces both weight and maintenance requirements. A finalist in the Industrial Design & Visionary Concepts category of the 2013 Crystal Cabin Awards, Acro's Ultra in-arm table dispenses with the table enclosure. By removing this structure, a useful weight reduction is achieved without using expensive and exotic materials, while seat width is also increased, and cleaning and maintenance procedures are simplified. The table can be line-replaced in less than 60 seconds.



Since moving to larger facilities in August 2012, Acro has doubled capacity to 1,000 seats per month, with a 16-week lead time

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The current lead time for EC-00 orders is six months from ITCM



## simpleapproach

For airlines looking for an even lighter dedicated short-haul version of ZIM Flugsitz's ECO-01 10.3kg per pax economy seats, the company has developed the EC-00, which has been specially sculpted to improve comfort at a 28in pitch. This model weighs in at 8.8kg including an e-leather dress cover and seat belt.

The baseline modularity of the EC-01 was transferred to the EC-00 to ensure the interchangeability of parts and ensure the easy accessibility and maintainability of the seat. Features include an integrated headrest (with a four-way headrest as an option), an upper literature pocket to maximise legroom, and an optional meal table, or even an optional cocktail table complete with an iPad slot.

EC-00 is certified for EASA.21O.1222 (ETSO C127a) and ZIM is currently in order negotiations with several interested parties.

## FROM CONCEPT TO REALITY

You will have seen the PF2000 from new UK-based aircraft seating company Pitch before, but it has gained an entry as it has gone from being a concept to being an imminent flying reality. This lightweight economy seat was designed in the UK by Design Q, a specialist in aircraft and automotive design. Continuing the automotive theme, the seat was developed in conjunction with Intier Automotive, a global Tier 1 automotive supplier.

Aimed at the single-aisle, short-haul market, especially the A320 family, the PF2000 features a composite backrest with a modular 'back pack' that gives a choice of specification options, from integrated IFE solutions such as the 1Net system from Thomson Aerospace, to a high-mounted magazine pocket. The seatback modules are also interchangeable, so customers can choose to add IFE later with minimal modification work.

In January 2012, Pitch passed an indicative 16g dynamic test and is on target to complete its certification plan by the end of May this year.

First deliveries will begin this year, with a retrofit order for Monarch's A320 fleet. The company is currently working at a 12-15 week lead time.

The PF2000 weighs 26.5kg for a fully dressed triple



# STentersmarket

Extending into cabin interior product manufacturing, ST Aerospace has unveiled Ergo, a new long-haul economy seat, jointly developed with Japanese aircraft seat manufacturing company Tenryu Aero Component.

Inspired by the word 'ergonomic', Ergo is designed with human comfort in mind, offering soft yet firm ergonomic support. Features include generous shin clearance,

adjustable lumbar support, an articulating seat pan, a teardrop-shaped headrest for extra head and neck support, and a tray table with an integrated PED support for comfortable viewing.

Following a successful reveal at Aircraft Interiors Expo 2013, ST Aerospace is now focusing on refining the seat, with a new version due to be revealed soon. Watch this space...



# ROOMTOMANOEUVRE

The Side-Slip Seat, created by USA-based Molon Labe Designs, is intended to aid ingress and egress and reduce turnaround times. The aisle seat slides over the middle seat during boarding to create around an extra 24in of aisle width. When extended, using a button on the armrest, the middle seat remains set back, so all three passengers get armrest space.

The staggered design also creates an extra 2in of width per seat triple on a B737, and 3in extra on an A320. For the latter, Molon Labe Design considered adding 1in to each seat. However, following consultation with stakeholders such as Bombardier (which has apparently expressed interest in fitting the seat in a 3-2 configuration on the C Series), Airbus, Boeing and the National Association to Advance Fat Acceptance, it was instead decided that all the extra width would be put into making a 21in-wide middle seat. This means that the person in the usually undesirable middle seat feels less crowded.

Passengers will be pleased at being able to be seated faster, while people with reduced mobility will appreciate being able to access their seat without a skychair, and airlines will enjoy more productive use of the aircraft.



# ACCESSALLAERAS

Greiner Aerospace has developed the Aeras seat in cooperation with the Ludekedesign industrial design studio and Kobleder, a specialist in knitting technologies. What makes this seat different from other aircraft seats is that the high-tech knitted design is claimed to be approximately one-third that of a conventional cushion and cover combination. At the same time, comfort is enhanced due to the seat's ability to adapt to various body sizes, shapes and weights, giving support in all positions while reducing pressure points. The knitted structure also offers good micro-climate properties due to its air permeability.

**pitch** PF2000

[www.pitchaircraftseating.co.uk](http://www.pitchaircraftseating.co.uk)



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## anewstar

A further seating option has been added to the Airbus Contracted Supplier catalogue with EADS Sogerma's Celeste, a stylish cradle seat intended for premium economy applications in the A350, joining the Zodiac 5810 in this class.

The design, created in-house by Sogerma, has been optimised for the wide fuselage of the A350, and can be configured 2-2-2, 2-3-2 or 2-4-2, depending on operator preference, with a choice of widths ranging from 18-22in.

The styling is suitably clean and modern to reflect the innovative new aircraft, with the demonstrator model trimmed in a very on-trend pale mesh. The fixed-back design requires a 38-40in pitch, and is available with either a single electric actuator, or a gravity-driven system to recline the passenger by up to 35°.

In standard form, Celeste offers premium economy passengers an integrated IFE screen of up to 14in, a seatback tray table, cocktail table, a bottle holder, and a space to store a PED, complete with in-seat power.

EADS Sogerma has not yet finalised the weight figures for Celeste, but expects it to come in at 20-30kg per pax, depending on the customer specification.



## HIGHMIQ

Industry giant B/E Aerospace has created MiQ, a new entry for the increasingly popular long-haul premium economy sector, and also suitable as a short-haul business seat. Intended for business use in the A320 and B777 families, and as a wide-body twin-aisle premium economy model, MiQ can be configured 2-2, 2-3-2 or 2-4-2 at a minimum 38in pitch, and was designed by B/E Aerospace's own design studio in North Carolina, USA.

The modern, modular design features a slimline backrest that increases overall living space, along with a patented 'cradle' articulating seat pan, which will particularly benefit the premium economy passenger experience, as will the seatback or in-console video integration.

A range of useful large storage areas have also been included in the seat without compromise to seat width or comfort.

premiumeconomy

## versatileceleste

EADS Sogerma's Celeste seat (see previous page) can also be configured as a business class seat for narrow-body aircraft. The design remains largely similar, with the same actuation options, but pitch grows to 40-45in and hence the tray table moves to the centre console. Also, the recline increases to 45°, a privacy divider is added between the seats, and IFE screens of up to 18in can be specified. In business-class guise, Celeste is currently configured 2-2, although the Sogerma team is also looking at both 2-3-2 and 1-2-1 configurations as it considers the markets for Celeste. Seat widths range from 18-22in, and the IFE display can go up to 18in.

The design weight goal for a dual-seat installation is expected to be 60kg. The product has been developed by the company's in-house design team and, like the premium economy version, is the beginning of a new range of seats being looked at by EADS Sogerma Cabin Interiors as an expansion of its range of seating solutions to the world's airlines.



As a director at Priestmangoode, Luke Hawes has to be aware of every seat on the market for his airline designs. What does he look for when choosing a seat for a project?

"A high level of customisation is crucial"

The first thing we look for in a seat is the level of customisation it allows. Clients come to us because they want something different or unique, so it's important that whichever seat we choose, we can customise the trim and finish, and adapt the seat shell, credenza, monitor integration, tray tables, etc, to create a product that looks like no other seat on the market. Our expertise is in applying an airline brand throughout the cabin, including the seats, and a high level of customisation is crucial to enable us to do that.

For business, we look at configuration and layout. Business passengers want, and have come to expect, a lie-flat seat, but airlines need to keep seat numbers up. And while there are different configuration options, passengers generally prefer to sit facing forward. We also look at comfort, living space, and position of seat features. A well-designed seat with a smaller seat pitch can feel more spacious than a badly designed seat. We place considerable importance on using seat mock-ups to test ergonomics and overall passenger experience.

## businessclass



## SOLSTYSENHANCED

Solstys Enhanced is a new and improved version of the multi-award-winning Solstys premium business-class seat. Differences compared with the standard Solstys model include seat pitch increasing from 43.5in to 47in, plus an improved bed length of between 73.5in and 79in. And 100% aisle access for all passengers is maintained from the original Solstys design in a 1-2-1 configuration.

Both armrests now retract down, giving a bed width of 26in between the elbows, thus offering more comfort to passengers when in bed mode. Sogerma will still offer customisation of the ottoman, shell surround and IFE monitor, and cocktail table, as part of customers' individual requirements to differentiate the product.

To date, EADS Sogerma has sold over 6,000 units of Solstys, with some 2,000 delivered so far.

## THOMPSON *Vantage*

- 79" fully horizontal bed length at 45" pitch
- Maximises passenger comfort and cabin real estate
- Monitor sizes up to 16"
- Increases working space and improves aisle access
- Wide range of customisable styling options



## THOMPSON *Vantage XL*

- Fully horizontal bed length with direct aisle access for ALL passengers
- 24" to 26" seat width
- Monitor sizes up to 18"
- Multiple personal stowage solutions
- Wide range of customisable styling options

## THOMPSON *Cozy Suite*

- Flexible platform for Economy & Economy Plus cabins
- MORE comfort - 18.5" seat width on B777 10-abreast
- MORE seats - A330 9-abreast with 17.8" seat width
- Individual armrests, dedicated sleeping position, improved egress and increased shoulder width



# SITTING IS BELIEVING



Journey's first journey will be on LATAM's A350



## journey'send

One of this year's most eagerly awaited seats was revealed at Aircraft Interiors Expo 2013: the Journey business seat, Jamco's first foray into aircraft seating. Designed by KBM and Priestmangoode, the seat is far from being a tentative concept, as it has already entered the A350 XWB premium seating catalogue, joining EADS Sogerma's Equinox.

Jamco is keen to stress that it has the wider bed though. It is a clean, forward-facing in-line design that works at a 74-78in pitch in a 2-2-2 or 2-3-2 configuration, offering a large, comfortable seating area with dedicated stowage areas, full-height privacy divider, extendable foot/leg rest, LED reading light, and a four- or six-way adjustable headrest. There is provision for the latest IFE systems, including Panasonic's eX3 and Thales' TopSeries Avant systems and peripherals, including a fixed video screen of 16-18in. A unique, lightweight seat mechanism with a single actuator enables passengers to personalise their positions, all the way from TTOL to bed.

Journey will not just be limited to A350 use, as it was developed with cross-platform implementation in mind to ease its installation on other Airbus and Boeing aircraft, including the A330, A340, A380, B747, B777 and B787.

## VANTAGE GOES LARGE

Thompson has enhanced its Vantage platform to create the Vantage XL fully horizontal lie-flat seat. This deluxe seat, created with a little help from Factorydesign, offers direct aisle access for all in a 1-2-1 configuration across twin-aisle aircraft, increased living space, and seat widths up to 26in.

The greater width and larger footwell area of the XL results in a much greater sleeping area, a large bi-fold table, and options for power, USB and other electronic outlets. The large workspace/console area enables passengers to continue working while dining. XL also offers a wide range of stowage options for items such as laptops and shoes, and

hand-held and embedded IFE can be integrated, with monitor sizes up to 18in.

Minimum pitch is 42in, with a typical installation of 45in offering a 79in bed length. Seat widths, depending on airframe, range from 23-26in, and bed widths range from 24-28in. XL weighs an average of 78kg (depending on LOPA and trim and finish), including IFE provisioning.

As it is based upon the previously certified Thompson Vantage platform (ETSO on A321, A330, B767 and B777), Vantage XL will be granted ETSO. The first application of XL will be on an A330 in July 2014 with an as-yet unnamed airline.



## WINNING ANGLE

The Cirrus reverse herringbone business seat from Zodiac Seats France (formerly Sicma) has been a resounding success since its launch in 2009, due to its 180° bed and direct aisle access. And now the seat, designed by JPA Design, has entered the A350 catalogue. Here are five of our favourite uses of the Cirrus.

1

### US Airways

As the launch customer for Cirrus, US Airways became the first airline in the world to introduce reverse herringbone seating when it was launched in its Envoy cabins.



2

### Cathay Pacific

A brilliant installation and excellent service earned the airline the title of World's Best Business Class in the Skytrax 2012 survey of over 18 million passengers worldwide.



3

### Delta

As if Cirrus wasn't comfortable enough, Delta's clever branding tie-in with Westin's Heavenly range of inflight bedding should further aid blissful sleep.



4

### American Airlines

Passengers on AA's B777-300ERs are the latest to enjoy the Cirrus, in a restful cabin that draws on residential design with rich fabrics and woods.



5

### Air France

Cirrus has now found a European customer in Air France – an excellent choice of seat for the airline's ongoing programme of improvements.



## newdimensionforequinox

Equinox 2D is a derivative of EADS Sogerma's successful Equinox 3D model and offers a more traditional bed position in its design. Pitch is between 62in and 65in, bed length is 76.5in to 79.5in dependent on pitch selection, and seat width is between 19in and 22in. The seat is driven via a single actuator, which aids the target of low weight, with the design weighing around 94kg for a double seat and 147kg for a triple seat. Configurations include both 2-2-2 and 2-3-2.

The seat offers real comfort for passengers in the 100% fully flat bed mode, whatever the configuration. During the transition into the bed position, both seats remain at the same height above the cabin floor; although slightly lower in height than a normal business seat application, this allows for easy step over and exit for the window-seat passenger when the aisle-seat passenger is in bed mode.



Sogerma now helps customers visualise the seats in their own cabins and colours using 3D CAVE systems








## SHORT-HAULBUSINESS

Geven, the Italy-based seat manufacturer, is currently developing Privilege, a new three-abreast business seat, to augment the range of options available to its ATR customers.

Sadly we can't reveal details yet, but in other Geven news, we can report that the company is enjoying considerable interest in its Comoda business seat (pictured left), designed to offer a proper business-class experience to the single-aisle market without adding weight or reducing cabin space. It looks pretty stylish too!

## ASSORTED GEMS

When it departed from traditional in-line layouts to create the Diamond, B/E Aerospace may have created an aircraft interiors design classic. Here's how five airlines have taken their business class to the Diamond standard.

- |   |  |   |   |  |
|---|--|---|---|--|
| <p>1</p> <p><b>Continental</b><br/>Where it all began: Continental was the launch customer of the Diamond seat in 2009 and received much praise for the seat.</p>  | <p>2</p> <p><b>KLM</b><br/>Dutch designer Hella Jongerius added Dutch style and a homely feel to the airline's new World Business Class cabin.</p>  | <p>3</p> <p><b>Lufthansa</b><br/>A sophisticated reworking of the Diamond, the result of a collaboration between Lufthansa, B/E and PearsonLloyd.</p>  | <p>4</p> <p><b>Air China</b><br/>A key aim in the design programme of this business class was for the interior to flow, aiding a restful journey.</p>  | <p>5</p> <p><b>Aeroflot</b><br/>Look out for this light and bright cabin, debuting later this year, which will also feature the airline's new Thales IFE system.</p>  |
|---|--|---|---|--|



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## livingroom

When it showed this concept at Aircraft Interiors Expo 2013, Recaro was looking to trigger reactions and spark discussions. We can safely say it was successful as this really was different to anything else at the show. The design is intended to be less a seat and more a relaxation space, while also offering good cabin density and direct aisle access.

For TTOL or meal service, passengers use the seat as normal. However, when it's time to relax, simply flip up the seat extension and armrest, and a large space is created for relaxation. The diagonal orientation of the sleeping surface also creates good privacy, with the head and shoulders away from the aisle.

There is also a large stowage compartment under the relaxation area, and the space could be good for those travelling with children: remain in the seat and toddlers can have a secure play area.

The design team also placed "visual comfort" at the top of the list for the concept. Thus the compartment's dark outer surfaces cocoon the passenger in a light, restful interior space, while non-reflective materials, clean lines and aesthetic contours emphasise the premium quality of the design.

This is no fanciful concept created by the in-house design team: according to CEO Mark Hiller, the company has invested a "double-digit million euro sum" in the development of this seat, as well as two years of research.

Recaro is a strong player, with sales of €309m in 2012, and an aim of achieving €500m by 2017



## DOVETAIL

Jamco has developed a new full-flat business seat concept, designed in conjunction with JPA Design. The DoveTail seat has a unique layout and an organic, flowing style, offering direct aisle access at a short pitch. This new style, says Jamco, improves passenger space by 10% while retaining density comparable to rival seats, as well as offering a range of enhanced features. These include: a private environment; a bed over 81in long; flexible stowage; provisions for IFE with a fixed 15-18in screen; amenity kit stowage with built-in vanity mirror; and a large laptop stowage area with power outlet. The elegant single-piece table can also move for easy egress during meal service.

The layout also has inherent additional stowage opportunities, which can be used as anything from functional cabin crew spaces to walk-up bars. And operating with just a single actuator, the seat has weight and maintenance benefits for the airline.

DoveTail could be an opportunity to offer passengers something unique. "We believe it offers outstanding value for purchasers and gives them a significant business advantage over their competitors," says James Park, managing director of JPA, adding that it "raises the bar for premium seating design".

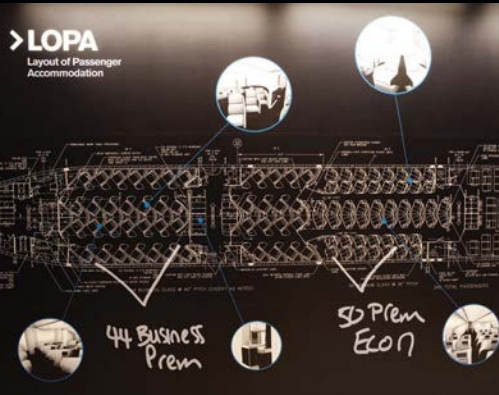
Jamco hopes that this design will join the Journey in the A350 XWB catalogue, as well as being offered for the A330, A340, A380, B747, B777 and B787.

# businessclassconcepts



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Part 145 (maintenance)  
Part 148 (manufacture)  
Part 19 (supply)

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# prizefighters

A total of 47 entries from 11 countries were submitted for the Crystal Cabin Awards 2013 – the only international recognition for innovations in the field of aircraft interiors – before three finalists were picked in each of the seven categories. Here is your guide to the winners and runners-up



## industrial design & visionary concepts

### WINNER: ZODIAC AEROSPACE (ZEO) – ISIS



The ISIS (Innovative Space Interior System), a re-imagining of the A320 interior by the ZEO team, won this category for its

combination of functionality and aesthetics. The modular design means ISIS can be retrofitted quickly and simply, while the pivoting bin design achieves a 60% gain in bag capacity and improves headroom. Other features include a new PSU design that combines a striking light fixture with touch-sensitive surfaces, and 100% recyclable ECOform sidewalls. As well as easy stowage, passengers can enjoy a sleek interface and a modern, light cabin.

### RUNNER-UP: ACRO – ULTRA IN-ARM TABLE SEAT

Acro has reduced the in-arm table assembly mechanism to its essence, dispensing with the conventional table enclosure. Benefits include the creation of extra seat width, ease of cleaning, a lower part count, and lighter weight. This line-replaceable unit can be fitted in less than 60 seconds.



### RUNNER-UP: PAPERCLIP DESIGN – CHECKERBOARD

These short-haul concept seats can be converted between economy and business modes, to give the flexibility to adjust cabin configurations for each flight. Rather than leaving an empty middle seat, business passengers benefit from extra seat width, an additional 8in legroom, as well as many other features such as flip-up privacy screens.



## passenger comfort systems

### WINNER: THALES – EYE TRACKING AND GESTURE CONTROL



Designed for premium class seats where the screen is out of reach from the seat, this technology enables passengers to control and navigate the IFE system using a combination of eye movements and hand motions. The use of eye

tracking and hand gesture control technologies creates a man-machine interface whereby the field-of-view between the passenger's eyes and hands is all within the same visual plane of the seat display, which eliminates the need to look down at a remote controller to make a selection. If this sounds far-fetched to you, just take a look at the latest home electronics.

### RUNNER-UP: ZODIAC PREMIUM GALLEYS – MODULAR GALLEY



This concept envisions a pre-certified modular galley family that occupies less main deck space on a wide-body, needs less engineering effort, improves industrial production, and provides airlines with highly flexible solutions for initial cabin furnishing and easy retrofits. A Cart Refill in the lower lobe and a Standard Unit Refill in the upper fuselage area enable airlines to remove monuments from the main deck and gain revenue space.

### RUNNER-UP: ROW 44 – LIVE TV TO PASSENGERS' DEVICES



The first service of its kind operating on commercial aircraft anywhere in the world, Row 44's inflight wi-fi live television, launched with Southwest Airlines in July 2012, allows passengers to watch live TV channels inflight on their own wi-fi devices. This service can be made available as a separate wi-fi offering, independent of whether the passenger chooses to pay for internet access.

# Passenger Power

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## premium class & VIP

### WINNER: DORNIER TECHNOLOGIE SYSTEMS – GLASS PCU

This new generation of PCU, developed and produced by Dornier Technologie Systems, is a sleek, capacitive touch panel. Suitable for both retrofit and line-fit programmes, and certified for both Airbus and Boeing, the product's highlights include high durability and flexibility, high resistance to scratches thanks to special hardened glass, resistance to fluids, and easy and hygienic cleaning. In addition, the Dornier PCU is freely customisable (size, shape, colours), offers homogeneous and selective lighting by using a specific light-guidance technology, and reduces the cost of ownership.



### RUNNER-UP: LUFTHANSA TECHNIK – NICE HD



The Nice HD system lets personal HD video via ultra-thin and lightweight 7in or 10in pop-up HD displays. It also offers a number of media interfaces (USB, Apple, HDMI), a multifunctional Nice HD media unit that includes a Blu-ray player, a media server, an AVOD server, both wired and wireless, and a map server. All cabin functions can be intuitively controlled via a scroll-wheel with

a corresponding animated user interface, a touchscreen control, or a wireless application on an iPhone or iPad. The Nice HD also meets today's stringent requirements for the legal streaming of HD content with integrated DRM and Hollywood-approved encryption.

### RUNNER-UP: ZODIAC SEATS – REVERSIBLE SEAT



The Reversible Seat concept lets passengers orient their seating in accordance with the size of the group with whom they may be

travelling. The proprietary mechanism enables the flight crew to swing the backrest from the back of the seat to the front, while simultaneously reversing the angle of both the backrest and seat cushion, and sliding the base-frame forwards to enlarge the shared foot area between the facing seats. A locking feature prevents the seat from sliding into a new position unless intended. This concept, and the alternate orientations it offers, facilitates a range of activities between passengers who may be travelling together.

## passenger comfort hardware

### WINNER: MERU – TRAVELCHAIR

The TravelChair is a unique product that offers comfortable postural support for severely disabled children in the age range of approximately 3-11 years old. Weighing 6kg, the TravelChair fits in most airline seats, is secured using a strap around the host seat, and allows for the airline seat lap belt to be used in the usual way, thus meeting aviation safety regulations. It is manufactured by Balforn under Form 1 regulations and is EASA approved. The seat, already flying with Virgin Atlantic, folds in half to fit into the overhead locker when not in use.



### RUNNER-UP: DIEHL AIRCABIN – GERMANY: MEMBRANE CEILING PANELS



These panels are claimed to offer improved passenger comfort, a weight reduction through system integration, and new possibilities for the design of cabin interiors. The sandwich structure currently used is replaced by membranes that are mounted on a supporting structure. The membranes are backlit by integrated lighting units and offer cabin illumination as well as mood lighting. By using these air-permeable membrane materials, distributed air outlets with low airflow velocities can be realised to prevent draft

effects and increase the efficiency of the ventilation systems by reducing shortcut flows.

### RUNNER-UP: ZODIAC AIRLINE CABIN INTERIORS – AMBER INTERIOR PIVOT BINS



The Amber Interior for 737s and 757s is intended to provide operators with a way to retrofit their NG interiors with new overhead bins and increase stowage capacity for carry-ons by up to 86 roller bags. Pairs of deep pivot bins are staggered in an asymmetrical 34 x 46in configuration along the length of the cabin, which affords an increase in cabin capacity for roller bags of up to 122%, depending on the aircraft's existing cabin architecture.

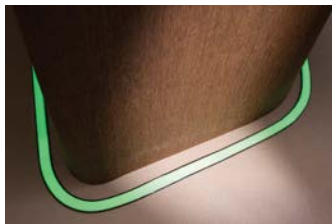
## material and components

### WINNER: DIEHL AIRCABIN – IPANEL

The iPanel concept is an integrated electric wiring system designed to save weight and mounting effort. The electrical conductors are run inside the panel to power the light, so the amount of electrical space needed is optimised, parts such as inserts and domes are no longer needed, and the amount of additional parts is reduced by 90%, while weight is reduced by around 30% compared with conventional systems. Misleading wires are no longer possible during production and the plug can be set right onto the panel surface.



### RUNNER-UP: LUFTHANSA TECHNIK – COLOURCURVE



ColourCurve is a non-electrical floorpath marking system that can be shaped to follow any form, adapted to any interior design, and is available in 20 colours. The product consists of only two parts instead of the six of the former system and achieves up

to 8kg/35% weight reduction (compared with former products) over the lifecycle of the aircraft. ColourCurve will be installed as a standard in the A350 and the Bombardier CSeries.



### RUNNER-UP: ROGERS CORPORATION – SILFX

This low-density, non-petroleum-based foam is claimed to enable thin cushion design, longer cushion life and lasting passenger comfort.

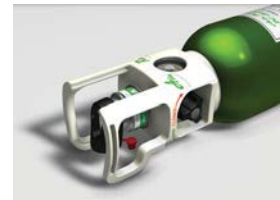
## greener cabin, health and safety

### WINNER: BOEING – INSULATED GALLEY CART

This cart design was created to enable airline operators to load cold food at the catering facility and then keep the food cold during transit to the aircraft and for the entire length of the flight. This eliminates the need for onboard refrigeration systems, reducing aircraft weight and operating costs, and improving aircraft performance.



### RUNNER-UP: AVIA TECHNIQUE – AVIA PULSE DE SERIES



The Avia Pulse DE Series is a Portable Pulse Oxygen System (PPOS) designed for airline passengers who require oxygen for a medical pre-condition. The DE Series can also be used for emergency first aid. It is light in

weight, has a long duration and is designed to complement modern cabin interiors.

### RUNNER-UP: RECARO – 'GREEN' INNOVATIONS IN THE SKY



Recaro Aircraft Seating has researched the environmental aspects of aircraft interiors development and is implementing lifecycle assessment (LCA) into its production process. The firm is assessing the environmental effects of its seats throughout the entire product lifecycle, and keeps customers informed about the impact of its 'green' solutions.

## universities

### WINNER: HAW HAMBURG – BIG LAVATORY CONCEPT



The BigLavC would be the first aircraft lavatory on the market that is customised to the special needs of obese passengers, and fulfils all the requirements of regular and PRM lavatories. Creating more space in the lavatory results in a gain in comfort for all kinds of passengers, and the diagonal position of the toilet increases comfort and space. A new toilet seat makes it safer and easier for wheelchair users to move between the wheelchair and toilet seat.

### RUNNER-UP: TU DELFT – TRAY TABLE CABINET

The tray table cabinet can be opened and used to store small items in dedicated compartments. The main features are spaces for a tablet, phone, wallet and keys; protective foam rubber; openings for headphone wires; a transparent bottom to help passengers remember their belongings; and a USB-charger.



### RUNNER-UP: TU DRESDEN – FUTURE AVIATION – CONCEPT CABIN



The Concept Cabin is intended to show the possibilities of economical yet comfortable

flying. Heavy mechanical parts are replaced by intelligent, flexible materials, while the large screens are light, thin films. Hybrid OLED layers convert light into energy, and small units and sensors harvest energy through light and vibration. The sidewall panels are expanded and equipped with 3D displays that provide pictures of the outer environment, which can be supplemented with digital information about the region.



## Our Future: Innovative & Green

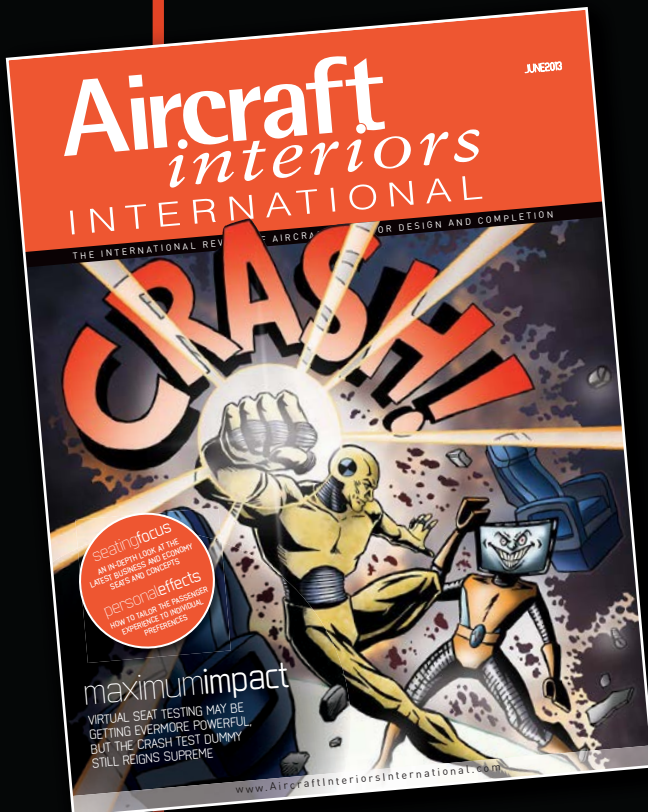
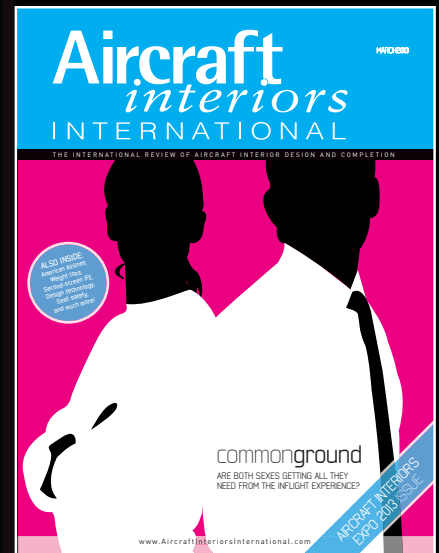
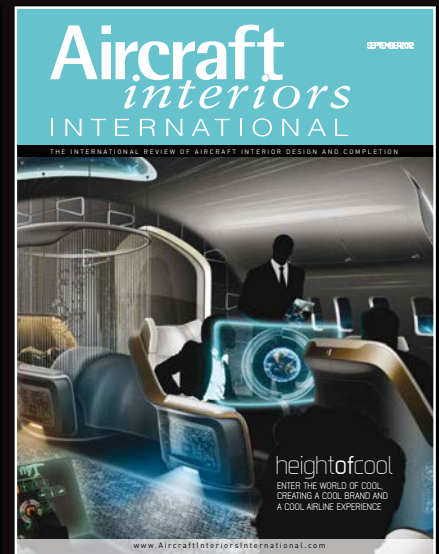
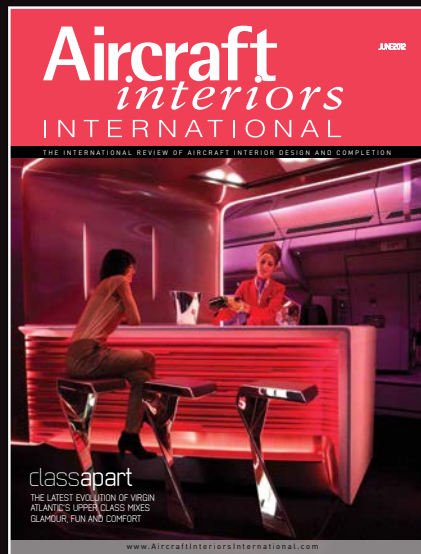
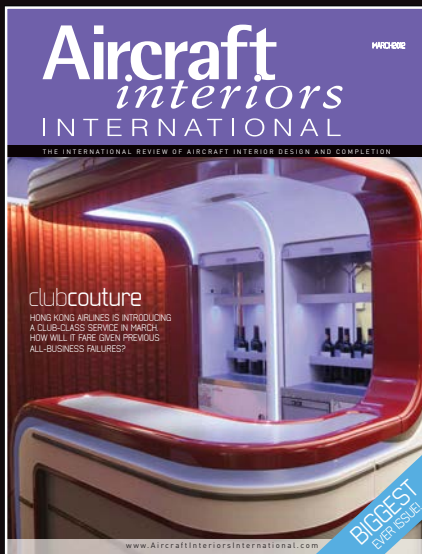
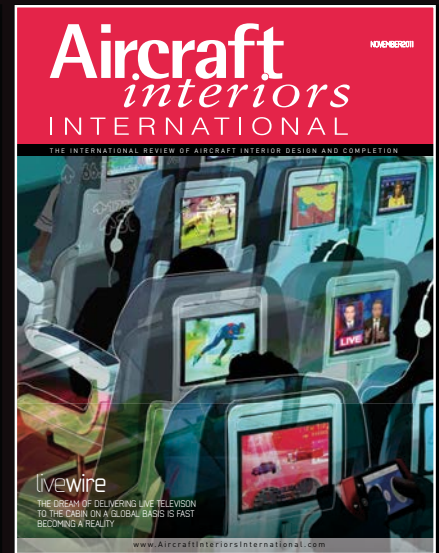
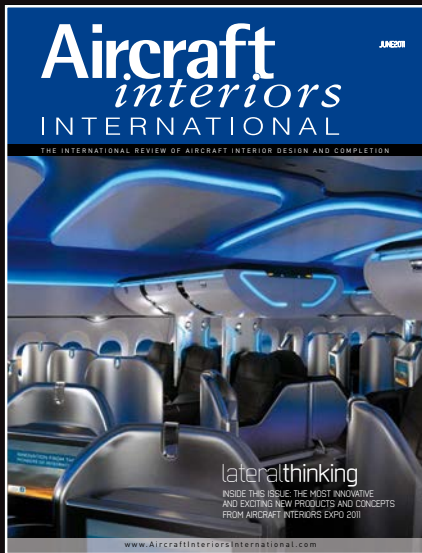
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Tapis says its Ultraleather range is greener, tougher and lighter than traditional leathers

## ultramodern

Aircraft seating requires extremely durable, yet soft and comfortable, fabric. And while traditional leather has long been a popular choice for seating, Tapis's Ultraleather brand of products has been designed to offer a more luxurious feel, look and style, with enhanced performance. For over a decade, Ultraleather has been used in high-wear seating applications on Embraer aircraft, for the Express Jet fleet and others.

Since 1966, Ultraleather had been produced using high-quality polycarbonate resins in the manufacturing process. Each product undergoes rigorous hydrolysis testing (as per test methods ISO 1419 Method C and ASTM D 3690-02, 6.11), ensuring that every offering on the market meets premium standards for durability, as well as heat/moisture and UV resistance. Lesser-quality leathers and resins, such as polyether and polyester, have a much shorter lifespan. Independent testing from the University of Cincinnati shows that Ultraleather meets or exceeds all industry standard testing criteria for the most durable leathers in the market today.

The fabric is also extremely light, and there is also less shrinkage than with traditional leathers, offering 100% yield. This translates into 100% usable fabric. In addition, Ultraleather maintains a consistent colour and texture throughout the entire production run.

Not only is the fabric durable and soft, it is also easy to maintain. Most stains can be removed with soap and water, and the product can even be disinfected using a simple 5:1, water to bleach solution without affecting the colour or the grain. Additionally, no toxic aftercare is needed, which eliminates the need for harmful cleaning solutions and improves overall cabin air quality.

Ultraleather is part of a new generation of technologically advanced polyurethane-based products that help protect the environment, and its energy-efficient manufacturing process minimises effluent and reduces emissions.

One of the most durable Ultraleather Collections, Promessa, blends extreme durability with a luxurious, innovative, two-toned texture. Permanently infused with an inherent EPA-registered, antimicrobial agent, Promessa provides safe and effective protection against bacteria for the lifetime of the product.

Tapis's custom matching capabilities assist clients in fulfilling their design vision. Tapis has developed custom grains and unique colours and finishes with Ultraleather for leading airlines, including Singapore, Etihad, Swiss, Kingfisher and JAL. On each occasion Tapis created a customised programme to meet the airline's precise needs for texture and colour.

Many fabrics in the Tapis product line complement each other, allowing for even more customisation and balance in the cabin. Ultrasuede is also a great seat material and has been used in combination with Ultraleather as seat inserts. Ultrasuede is made of 100% recycled ultra-microfibres, and the innovative technology used in the production of Ultrasuede results in reduced energy consumption and a more ecologically sound manufacturing process. Emirates, Virgin Atlantic, British Airways, LOT Polish Airlines and El Al Airlines are just three airlines currently using Ultrasuede for seating and other applications. In addition, Ultraleather has recently been approved as a seating material for the Airbus A350. Tapis's operations are certified to AS9100 and ISO 9001 standards.

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# Tomorrow's aircraft interiors industry in the making

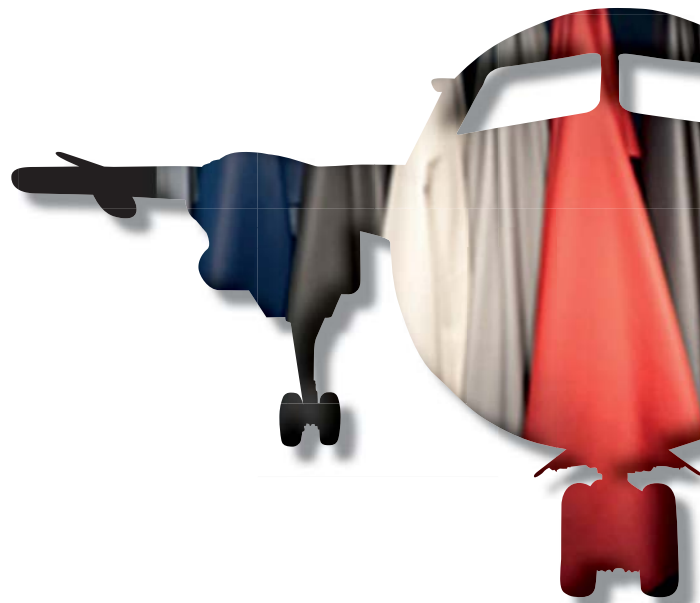
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As aircraft components reach the end of a life in service, they can begin a new one as a functional artwork

## secondlife

Chameleon, a UK-based company that has been applying decoration to enhance aviation products for more than 10 years and includes Emirates, British Airways and Qatar among its expanding client base, is continuing to innovate. One of the company's proudest achievements is that it uses a film transfer process that can make plastic, composites or most other substrates look like other materials.

Chameleon's team of engineers have now developed its technology even further, enabling its staff to apply bespoke designs, logos and images directly onto plastic components using a number of technologies and blending them together. The results are impressive and the company is gently moving the technique outwards to the market. The technology has some limits but is good for specialised projects, according to Chameleon.

In 2013 the company has introduced a new brand and logo, and has teamed up with a designer to create items of aviation artwork by recycling aircraft parts to make practical, usable items such as coffee tables, clocks and other unique items. Customers can also commission their own pieces.

"It's a bit like being a magician – we change things into something else," comments CEO Trevor Whetter.

With its background in aviation engineering, Chameleon is able to obtain and re-engineer various aircraft components so that they have a new function. From very rare historical aircraft to modern jets, the company can source engine and airframe elements to create both usable and decorative pieces. Polished, coated or painted, the best materials are used in both preparation and finish. Colours can be matched to any sample provided, and logos or patterns can be produced according to the customer's wishes.

"The nature of our work is such that we can obtain rare aviation parts for strictly limited production, or simply a one-off, or later jet parts can be obtained for 'small runs'," comments Whetter.

As most of the work is very time-consuming, built to exacting standards and using many rare parts, the company considers these pieces to be collectable and a future investment – a view which it claims is endorsed by all of its customers to date.

"This element adds a different dimension to our business as it puts us in touch with new customers, whether they be high net-worth individuals, banks or hotels, who, in addition to requiring a piece of our aviation artwork, may require other products and services that we can supply," adds Whetter.

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Spiriant, its  
new brand of  
inflight catering  
equipment, with a  
particular focus  
on environmental  
awareness

## brandnew

With "creatively designed, intelligently engineered and efficiently delivered products and services", LSG Sky Chef's new equipment brand, Spiriant, was officially launched at the World Travel Catering & Onboard Services Expo in Hamburg, Germany, on 9 April. Representing a milestone in the history of LSG Sky Chefs' equipment business, Spiriant was created to better respond to the changing needs of airlines, as well as other customers in the growing equipment and logistics sector. The launch also reaffirms the company's long-term commitment to the equipment market.

The colourful and inspiring look and feel of the new brand is representative of its promise to combine emotion with function, heart with mind, and design with technology.

"Our co-creation design process ensures our products address the real practical needs of our customers, while keeping individual brand identities intact," says Alexander Spahn, managing director of Spiriant.

With nearly 20 years of experience working with major airlines around the world, the Spiriant team has the resources, insight and knowledge to source, design and deliver a variety of product concepts for every type of budget. From luxury, brand-name amenity kits to unique children's toys, and from lightweight porcelain tableware to plastic glasses and drawers, each product can be customised according to the client's individual needs and wishes.

A current area of focus for both Spiriant and its customers is the continued development of lightweight, environmentally friendly products that can further enhance an airline's green image, while at the same time providing significant cost savings.

"We are seeing strong interest from our partners in using 100% biodegradable tableware, as well as other sustainable products," Spahn points out.

To accommodate this growing demand, Spiriant's eco-friendly Enlight collection offers a variety of items made with recycled, waste or sustainable resources. Its biodegradable sugarcane tableware collection, for example, includes items such as meal boxes, bowls, trays and casserole dishes that save both time and space in the aircraft cabin, thanks to their sustainable design.

In addition, the company's award-winning Slot tray is now available in a disposable version. It has the same dimensions as its traditional counterpart, but is made from polystyrene. A slightly offset stacking function optimises space in the trolley, while a specially designed place-holder keeps hot dishes in place. Further advantages include weight reduction (for every three trolleys traditionally used, at least one can be eliminated by using the Slot tray) and optimal stackable size – and, of course, no washing is required.

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# ITT

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The new LEXAN XHR sheet and film products have been engineered for outstanding FST performance in aircraft interiors

## filmstar

To help global aerospace customers comply with increasingly stringent standards for flame-smoke-toxicity (FST) performance of aircraft interior components, SABIC introduced an expansion of its LEXAN XHR sheet portfolio at Aircraft Interiors Expo 2013. The company's new super-low-gloss LEXAN XHR 6005 sheet brings velvet texture aesthetics after thermoforming for interior applications, and the new LEXAN XHR A13 film adds robustness in multilayer laminate constructions used in decorative applications.

"These new material solutions from SABIC are examples of our proactive efforts to help customers stay ahead of increasing design and system cost-reduction requirements," explains Jack Govers, general manager of speciality film and sheet at SABIC. "Our new low-gloss LEXAN XHR sheet grade not only provides design flexibility, custom colour and excellent processing characteristics, but also meets stringent safety and regulatory requirements. Our innovative materials are clearly making a great addition to our aircraft portfolio, enabling SABIC to deliver several performance properties and benefits to its customers, helping them lower parts costs and boost productivity."

In addition, full compliance with Ohio State University (OSU) and FST standards avoids time-consuming material waivers. With its extremely low heat release, the LEXAN XHR 6000 sheet series can deliver weight-out of up to 12% compared with traditional PVC/PMMA products, for better fuel economy while complying with the OSU 65/65 standard and FST requirements (FAR25.853) of airlines with regard to seating, cockpit linings, window surrounds, door shrouds

and other interior components. LEXAN XHR 6000 sheet is also qualified for Airbus AIMS04-06-001 material specification and can be colour-matched in sheet and resin form for colour coordinated thermoformed and injection-moulded parts.

Available in more than 250 colours, LEXAN XHR sheet can reduce production costs, eliminate paint, and withstand punishment in high-abuse applications. The product has improved texture retention and can be thermoformed at lower temperatures than traditional products, enabling the use of lower-cost tooling. These advantages, including low-gloss finish, can help customers lower parts costs and boost productivity.

A newly developed product solution, LEXAN XHRA13 film, provides engineers and product developers with a film grade that offers the performance attributes of LEXAN XHR sheet and helps maintain and build robustness in multilayer lamination constructions that can be used for sidewall panels, ceiling, galleys, aisle facings, lavatory walls, premium seating, door linings and partitions. Available in gauges from 2-7mm, LEXAN XHR film complies with the following FAR 25.853 regulation, smoke density and heat release requirements: Vertical burn test – FAR 25.853 (a) Appendix F Part I (60 second vertical burn); vertical burn test – FAR 25.853 (a) Appendix F Part I (12 second vertical burn); heat release – (OSU 65/65) and FAR 25.853 (d) Appendix F Part IV; smoke density – Airbus ABD0031; and toxicity requirements – Boeing BSS7239.

LEXAN XHR film is designed to provide better burn performance, improved toughness and lower weight than the traditional glass-reinforced backing layer used in multilayer lamination.

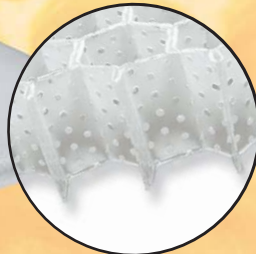
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# STIMULITE® HONEYCOMB: inspired by nature, engineered for performance



Seat cushions made from **Stimulite** honeycomb take inspiration from nature to provide long term sitting comfort. Using the lightweight matrix of aerospace honeycomb and fabricating it from advanced thermoplastics, Stimulite cushions provide comfort that not only feels **natural**, but is engineered to last. A leading **technology** in medical support surfaces and fighter jet seats, Stimulite cushions are more than 90% open space. Perforations in the cell walls **circulate air** to eliminate heat build-up, while the “footprint” of the cells **stimulates blood flow**.

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## Celebrating 50 golden years

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Frank Henry Lambert started the company in 1963 that bears his initials. Over the next 50 years F.H.Lambert Ltd grew to become a respected leader in specialist decorative metal plating. Its work has been featured on some of the aviation industry's finest interiors - on aircraft ranging in size from the Hawker 125 to the Airbus A380.

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Since 1963, F.H.Lambert has proudly remained a family-run business. Led by Frank's wife Sandy, three sons Jamie, Daniel and Paul. Frank still remains actively involved in the company's operations as chairman. Together they have established an outstanding reputation on the strengths of its vast experience, unsurpassed plating knowledge, exceptional workmanship and distinguished service.

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The IntelliCabin system has been designed to bring together cabin systems to enhance the flight experience for passengers and crew alike

## clevercabins

Global defence and aerospace company BAE Systems is introducing its IntelliCabin to the commercial aircraft market. This new cabin system is a highly integrated – yet flexible, adaptable and scalable – system that provides a unique flying experience for passengers and crew members. It functions seamlessly with other cabin systems, providing dynamic LED lighting, in-seat power capability for all passengers, simplified cabin functions for crew members, and built-in monitoring capabilities to limit aircraft turnaround time.

BAE Systems designed IntelliCabin to appeal to passengers, crew and airlines alike, with the goal of providing the ultimate flying experience through attention paid to safety, efficiency, comfort and service.

“Cabin systems are an integral part of what we do,” says Dr Ehtisham Siddiqui, vice president and general manager of commercial aircraft solutions at BAE Systems. “We’re committed to developing innovative and cost-efficient solutions for airlines and aircraft.”

The IntelliCabin system integrates all functions to create the cabin of the future, helping to make a pleasant environment for passengers. The system eliminates the need for bulky power boxes under the seats, which can impede leg room, provides power solutions for all seat classes, and controls dimmable windows and mood lighting. It also enables the crew to be more available to passengers. Working with BAE Systems’ Attendant Control Panel or the flight crews’ personal electronic devices, attendants can spend more time addressing other needs and less time controlling the cabin.

The system manages aircraft weight and saves fuel for airlines by determining just the right amount of consumables, such as potable water, to load for that particular flight leg. IntelliCabin is leaner, yet more robust, than existing cabin systems, reducing the number of components an airline needs to install. Its pay-for-power capabilities give airline customers the option of added revenue.

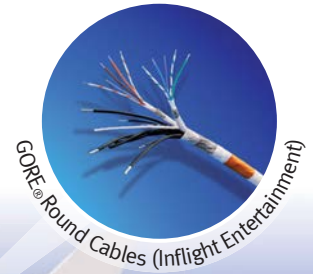
In April, BAE Systems, which manufactures high-integrity avionics, flight and engine controls, and cabin and cockpit electronics, signed a memorandum of understanding with EMTEQ at Aircraft Interiors Expo 2013 in Hamburg, Germany, to collaborate on IntelliCabin. EMTEQ specialises in the design, development and production of cabin lighting and power products, as well as achieving supplemental certifications for those products. It is hoped that the two companies’ complementary capabilities will result in increased value and innovation for airline customers as well as aircraft manufacturers.

“BAE Systems prides itself on its history of excellence and innovation in high-integrity avionics and controls,” says Dr Siddiqui. “By joining forces with EMTEQ, an innovator of lighting solutions and cabin connectivity, we’ll be able to present a highly integrated ‘cabin of the future’ to the industry.”

More than 1,000 B777s are today equipped with BAE Systems’ cabin systems, with a total installed base of 12,000 aircraft worldwide. In addition, more than 600 in-service 737NGs are outfitted with Boeing Sky Interiors enabled by BAE Systems’ Attendant Control Panel.

BAE Systems  
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# When failure is not an option...



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## fastdelivery

Since delivering the first shipset of new seats in May 2011 to ATR for the very first ATR 72-600, with launch customer Royal Air Maroc (RAM), seat manufacturer Geven has delivered more than 100 shipsets to the Franco-Italian airframer. RAM was also the first user of a dual-class configuration, with premium economy 'Prestige' and economy 'Classic' seats. The new seats were designed by Geven in close cooperation with ATR and Giugiaro Design to match the new Armonia cabin, which is one of the key factors to the success of the -600 series. Geven is currently designing a three-abreast business class seat named Privilege to augment the range of options available to ATR customers.

Angelo Romano, Geven's director of strategic initiatives and commercial partnerships, explains, "Privilege and Classic seats are available also for the retrofit market, providing substantial advantages in terms of weight savings and maintenance costs. Many ATR operators, who are ordering or taking delivery of new ATR 42/72-600s equipped with the new Geven seats, are also ordering the same seats to revamp their existing ATR fleets, with outstanding benefits in terms of commonality of both cabin look, passenger experience and, last but not least, spares stocks."

Among the latest Geven orders, in November 2012, Air New Zealand took delivery of the first of its seven ATR 72-600s on order, equipped with Geven Prestige premium economy seats, and is also retrofitting its current fleet of 11 ATR 72-500s with the same seat.

## austriancomfort

The best way for airlines to boost revenues is to give passengers a much better travel experience with a truly hospitable cabin ambiance. Specialising in soft interiors, Lantal Textiles helps carriers build seductive signature environments with a full range of products and services from the floor to the ceiling. In seating, the focus is on fit-and-fly seat covers, antimacassars, literature pockets, footrest nets, and the Pneumatic Comfort System. In floor coverings, Lantal delivers complete shipsets with pre-cut carpets designed for foolproof, ultra-fast installation. Livery-matched class divider and galley curtains – permanently pleated or plain sewn – are delivered ready to hang.

But bringing all these elements together in a stringent, highly cost-effective process-management approach is what sets Lantal apart from other outfitters. A recent project for Austrian Airlines illustrates how carriers can benefit from single-source convenience when working with the Swiss provider on an all-in-one solutions basis.

The scope of delivery included ready-made, graphite-foam-laminated covers with a perceptibly extended service life for Austrian's brand new long-haul economy and business class seats, as well as Lantal's acclaimed Pneumatic Comfort System, which was integrated in Thompson Aero Seating's Vantage B/C model. Designed, certified and manufactured by Lantal, custom literature pockets in leather were embroidered with the airline's logo and delivered to the seat maker. Pleated curtains were supplied as cabin dividers.

Austrian opted for the Pneumatic Comfort System because it offers passengers individually adjustable posture support while sitting, relaxing, or sleeping in the fully lie-flat bed mode. The weight savings achieved with the air-filled cushions are an important driver. All 10 Austrian Airlines long-haul jets – six Boeing 767s and four Boeing 777s – are being outfitted with the new interior.

This partnership with Austrian is a typical example of how Lantal can leverage its status as a Design and Production Organization (DOA, POA) to plan, schedule, organise and monitor customer projects with all milestones to assure glitch-free completion.



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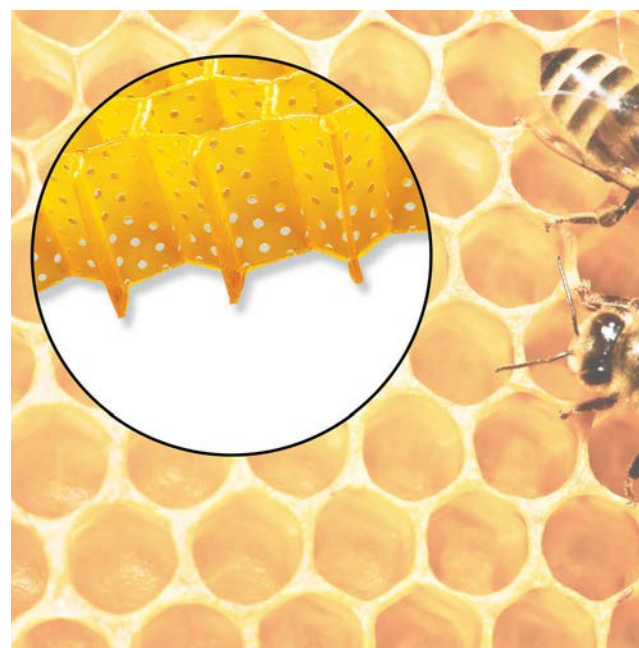
# comfybynature

Taking inspiration from nature to overcome ordinary challenges can lead to remarkable innovations. Better known as biomimicry, naturally inspired solutions in response to ordinary problems are a core strength of San José, California-based Supracor. The company's Stimulite honeycomb structured cushions utilise a matrix designed by nature to provide lightweight comfort to passengers.

While inspired by nature, Stimulite is engineered for performance, relying on the structural geometry of alternating thick- and thin-walled cells that distinguishes aerospace honeycomb and provides its optimum strength-to-weight characteristics. Seat cushions made from Stimulite honeycomb can support weight at a fraction of the thickness of foam cushions, resulting in more living space in the cabin.

The honeycomb cells contour to the body for comfort and support, while their flexing action helps to stimulate blood flow. Perforations in the cell walls circulate air and evaporate moisture. Made from advanced thermoplastic materials, Stimulite cushions are durable, washable and completely recyclable.

For more than 20 years, Stimulite has been a leading technology in medical support surfaces for pressure sore prevention. Its high performance and low profile has also been recognised by the military, where Stimulite cushions can be found in fighter jets and helicopters. Stimulite mattresses are featured in the crew rest of the new Boeing 787 Dreamliner and 747-800 aircraft. Currently, Supracor, the originator and manufacturer of Stimulite, is involved in several projects with both airlines and OEMs to integrate Stimulite into aircraft seats, offering passengers the experience of biomimicry in flight.



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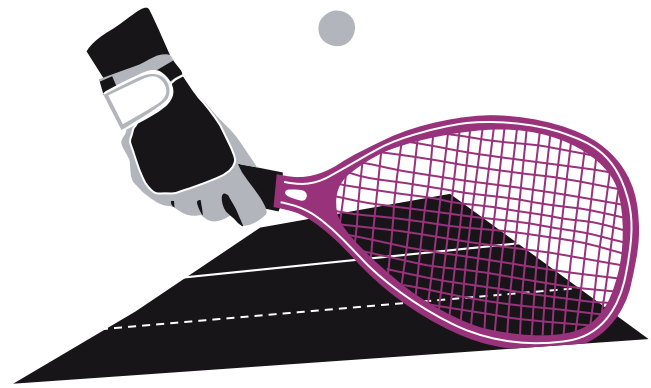
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# jaimemoreno



WANT TO KNOW MORE ABOUT THE PERSONALITIES THAT DRIVE SOME OF THE INDUSTRY'S MOST SUCCESSFUL COMPANIES? IN THIS ISSUE JAIME MORENO, CEO OF MADRID-BASED MORMEDI, RECALLS HIS EXPERIENCES, AND THE CHALLENGES INVOLVED, IN THE WORLD OF AIRCRAFT DESIGN

**1 WHAT IS YOUR BACKGROUND?** I began my studies with architecture at the Polytechnic University of Madrid, my hometown, then switched to and graduated in industrial design at the Art Center College of Design in Switzerland, gaining a BSc in transportation design. I was going to start working in automotive design but was offered a job as a product designer for Philips' domestic appliances department, and I was there for a few years. I then came back to Madrid and set up my own studio, Mormedi, in 1997. Because we were among the first generation of designers to specialise in surface modelling, there was a big demand at the end of the 1990s for experts to take ideas into implementation very quickly using parametric tools. I participated in high-level national and international projects for Airbus, Audi, BMW, Nissan, Siemens and Philips, among others.

I have kept up my design studies with some summer courses and seminars at Harvard University and Saint Louis University in the USA, and the IESE Business School in Barcelona.

**2 HOW DID YOU GET STARTED IN THE AIRCRAFT INTERIOR DESIGN INDUSTRY?** I was giving support to several design studios, and in 2000 I got a call from [design consultancy] Priestmangoode asking me to support them in creating the first mock-up of the A380. In the end, there were five of us from Mormedi helping Priestmangoode, and it was our first airline or aircraft project; that's how I got in contact with the industry. I went to Cannes in 2000 to visit the first Aircraft Interiors Expo, and decided I liked the industry and wanted to invest and work in this sector. It took us a few years to really get into the market.

In 2003 we were invited to design the long-haul cabins for Iberia, but FutureBrand won it. Then, in 2007, we had the opportunity to work again on the A380, creating first-class cabin mock-ups in Toulouse, together with Design Investment. After that we started pitching to airlines, and in 2009 we won the Iberia contract.

**3 DO YOU PREDICT IFE TECHNOLOGY WILL TAKE A MORE CENTRAL ROLE IN CABIN DESIGN?** I think what will make a big change is the user interface, in the sense that right now you still have tactile screens and remote controls. But you can already see some prototypes from companies such as Thales, with immersive interfaces such as gesture control, which will bring a big change in terms of comfort for the passenger. These systems will be more natural, the screen won't have

to be within reach, and I think it will be a step forward when they are implemented in the market.

**4 WHAT IS YOUR FAVOURITE PART OF THE JOB?** I love design strategy: helping clients identify and define new opportunities. And then, of course, helping to make them happen so they can go on the market.

**5 AND YOUR LEAST FAVOURITE?** Honestly, there is nothing I don't enjoy. I think the experience required to become a good designer is much more complex now, though. You have to understand many more things, including the business of your client, and that is a challenge. For us, especially with experience working in different sectors, I would say that sometimes the aircraft industry could be more innovative; the people in charge of certification don't always want to deal with too much complexity. Also, the time and cost pressures involved in certification make people less likely to try something different.

**6 DO DESIGN TRENDS FROM OTHER SECTORS INFLUENCE YOUR WORK?** Absolutely. For example, we do a lot of work on consumer electronics, and the new ways of manufacturing and tooling we have found in that sector have inspired us to apply some of these methods to aircraft seats. On the EADS Sogerma Solstys seat that we redesigned for Iberia, you see some plastic parts that were not thermoformed. The standard Solstys features thermoformed plastics and composites, but we introduced some injection-moulded parts. Due to our experience, we believed it was possible and we convinced Sogerma and Iberia that it was, and presented them with some manufacturers who could do the work.

**7 WHAT IS YOUR PROUDEST ACHIEVEMENT?** It's hard to say. We're very proud of the products we have been able to launch in the last two to three years, and the consumer electronics such as tablets and mobile phones that will be launched this year. Also, the Iberia interior, while not a blue-sky project, was, I think, a big improvement. Even Sogerma congratulated us and said that the design was an improvement on the original Solstys design.

**8 WHAT'S NEXT FOR MORMEDI?** In terms of design strategy, we are currently working on a few projects dealing with how to enhance the passenger experience, and we see this as the future. An airline is not just about a cabin interior, it is about the whole service. You might have an amazing seat, but if the passenger doesn't get the right service or the right food, they are going to be unhappy.

**9 HOW DO YOU RELAX WHEN YOU'RE NOT WORKING?** I enjoy reading and being with my family and kids. I also enjoy sports, and I run, ski, and play racquetball – a sort of mix between squash and tennis that's popular in South America too.

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