

Aircraft *interiors* INTERNATIONAL

MARCH 2012

THE INTERNATIONAL REVIEW OF AIRCRAFT INTERIOR DESIGN AND COMPLETION

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HONG KONG AIRLINES IS INTRODUCING
A CLUB-CLASS SERVICE THIS MARCH
- HOW WILL IT FARE GIVEN PREVIOUS
ALL-BUSINESS FAILURES?

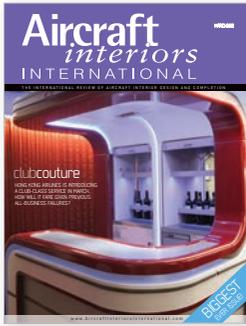
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Welcome to our biggest issue yet – at 220 pages, you should find plenty of interest. We start by taking a closer look at Hong Kong Airlines’ new Club Class service, which sees three A330-200s fitted with an ‘all-business-class’ cabin. In truth, the rear Club Classic cabin featuring 82 Recaro 4220B cradle-style seats at 51in pitch is more of a top end premium-economy product, but with just 116 seats across the aircraft, and full-flat beds in Club Premier, it will be interesting to see how the service gets on, given previous high-profile all-business failures, albeit on transatlantic routes.

Clearly there are airlines out there hungry for product innovation and ready to take risks on new approaches that appeal to particular market niches or help them remain competitive as passengers seek ever greater value and improved comfort. However, two obstacles remain in their path, both of which are tackled in this issue. The first of these is a perceived lack of approved suppliers and products offered by the aircraft manufacturers in their catalogues for line-fit programmes. Airlines grumble that they are restricted to too few choices, while new suppliers not yet approved complain of a certain inertia on the part of the planemakers to update their offerings.

In our exclusive feature on page 48, Airbus indicates it may be about to change its catalogue policy, handing more responsibility to its first-tier supply base. For example, a leather supplier would no longer need to seek Airbus approval – instead it would need to satisfy the requirements of the seat manufacturer, who would ultimately bear responsibility for any delays. “Airbus is not stopping or abandoning its catalogues,” says Sascha Horatzek, head of purchasing – seats and fabrics. “But in the future, we may take the section for dress covers out of our catalogues, because it is regarded as a part of the seat and thus a responsibility of the seat supplier.”

The second challenge is a chronic shortage of engineering resources. Aviation websites and cabin-relevant social media groups are clogged with recruitment adverts for skilled technicians – and this demand will only grow as more and more senior engineers head for retirement. The problem for aviation is that it is not alone in competing for the available talent out there: “We used to be the place to come and work, and now we’re one of the places,” says Alan Anderson, who recently retired as Boeing’s chief engineer, payload systems, on page 71. “The consumer products industries, the technology industries can be exciting places for people and we have to compete with those to attract the long-term talent we need.”

But let’s not get too despondent – new programmes such as Bombardier’s CSeries (see page 98) offer particular hope, while new products such as Thompson Aero Seating’s Vantage unit (p58), Acro Aircraft Seating’s Superlight range (p29), as well as a plethora of new approaches to IFE (see our tablets feature on page 108) suggest a very bright future.

Anthony James, editor

“AIRLINES GRUMBLE THAT THEY ARE RESTRICTED TO TOO FEW CHOICES, WHILE NEW SUPPLIERS NOT YET APPROVED COMPLAIN OF A CERTAIN INERTIA ON THE PART OF THE PLANEMAKERS TO UPDATE THEIR OFFERINGS”



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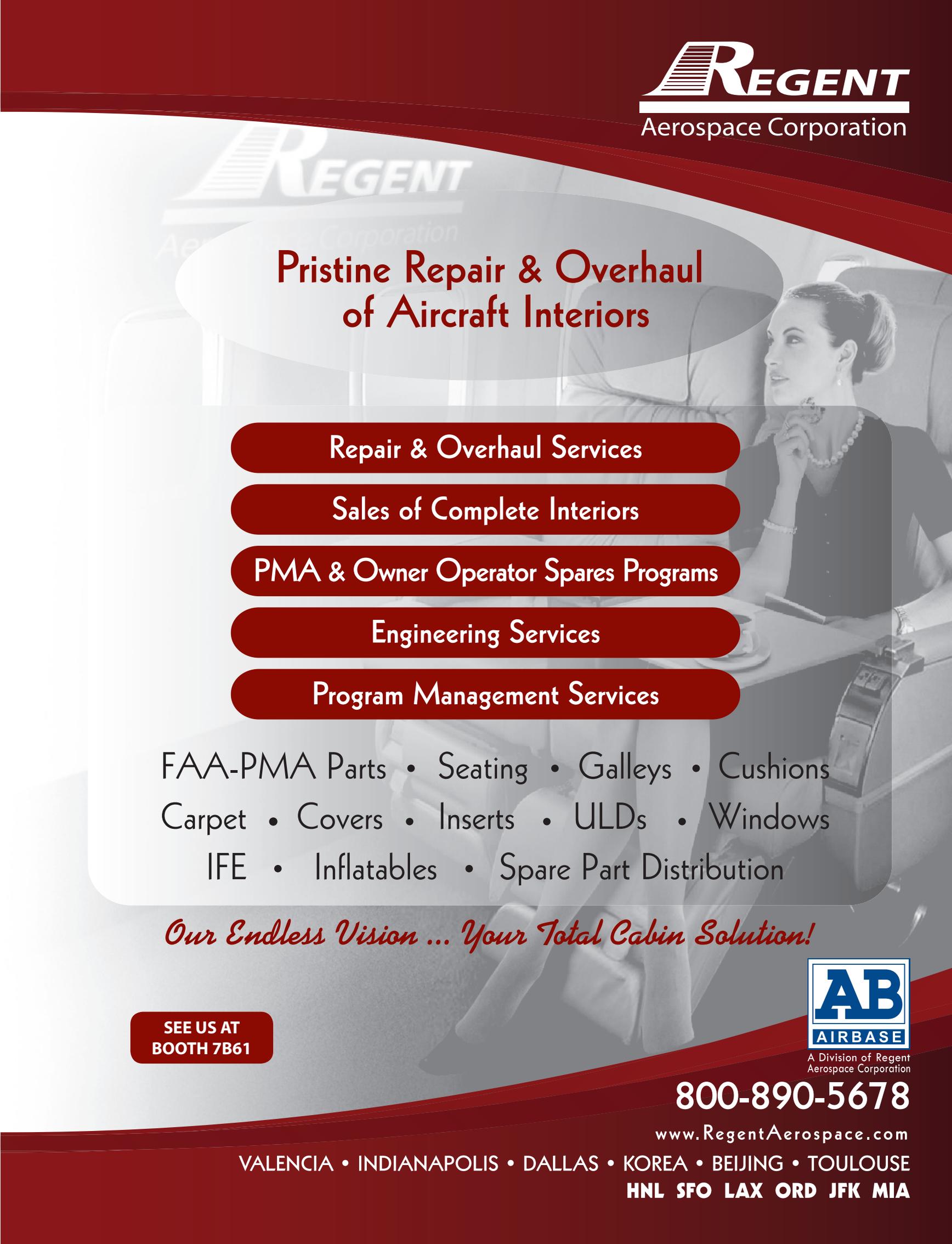
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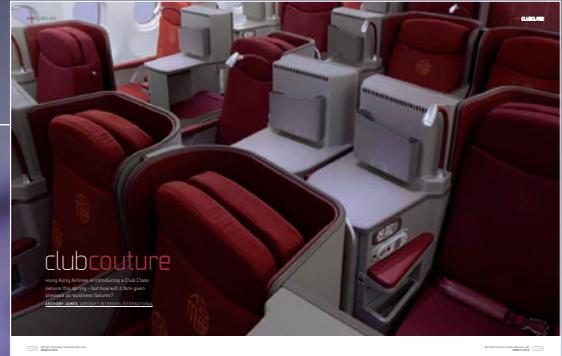
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 BERNARD FITZSIMONS,
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A shortage of engineering resources is threatening to restrict airlines' attempts to innovate in the cabin
 BERNARD FITZSIMONS,
 AIRCRAFT INTERIORS INTERNATIONAL



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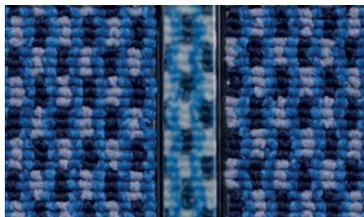
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history remade 078

The 747 is a true icon of aviation – the 747-8 Intercontinental, which will shortly begin service with Lufthansa, is now charged with writing the next chapter of this aircraft’s venerable history

AUBREY COHEN,
AIRCRAFT INTERIORS INTERNATIONAL



088 definitely maybe

The APEX Technology Committee’s High Definition Working Group closes in on a standard, while at least one HD initiative has deployed with limited Hollywood support – but a few obstacles remain

MICHAEL CHILDERS,
AIRCRAFT INTERIORS INTERNATIONAL



098 capital idea

Bombardier’s decision to turn cabin development for the CSeries over to one key supplier has paved the way for a number of key innovations

GUY BIRD,
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friend or foe 108

First perceived as a threat to embedded IFE, and then deemed too complicated to repurpose, consumer tablet devices are slowly working their way back into the cabin conversation

MICHAEL CHILDERS,
AIRCRAFT INTERIORS INTERNATIONAL



split personality 118

United Airlines' chief makes a plan for the future by leaving past troubles behind

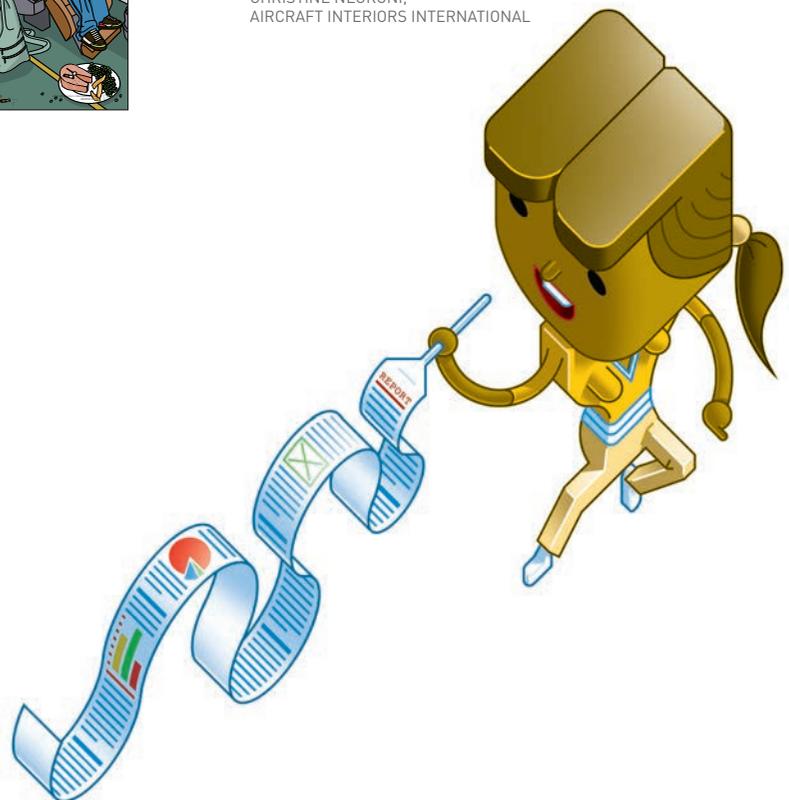
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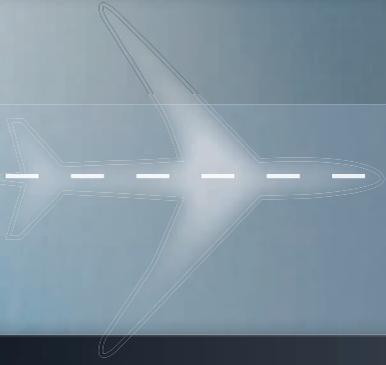


128 headline news

2011 may well be remembered as the year of the celebrity cabin eviction – what is it that makes some passengers lose the plot?

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China Airlines refreshes Boeing 747-400 fleet

Taipei-based China Airlines has upgraded the cabin interiors on its Boeing 747-400 fleet. The retrofit includes an enhanced version of Weber's 8800 full-flat seat in first class, with EADS Sogerma's lie-flat model in business. In economy, the airline installed Recaro's CL 3510 class seats. All cabins are now equipped with AVOD IFE.

The refurbished aircraft sport a new colour scheme, with new textiles, lavatory styling, dedicated snack counter and a custom-designed literature rack. The new textile designs are also featured on the airline's recently delivered A330-300s.

The refurbished cabins were designed by Tokyo-based LIFT Strategic Design.

SAS orders BL3520 short-haul economy seats from Recaro

Scandinavian Airlines (SAS) has ordered Recaro's BL3520 economy-class seat for its short-haul fleet. During 2012, eight Boeing 737-800 aircraft are scheduled to be refitted with a total of 1,484 new seats, and the airline plans to install the seats on further aircraft the following year. "This investment results in more comfortable seats and more legroom for our customers," said Robin Kamark, chief commercial officer at SAS. "At the same time, it is in line with our strong focus on being environmentally conscious, because the new seats result in approximately 360kg less weight per aircraft, which lowers fuel consumption and CO₂ emissions." The first Boeing 737-800 aircraft fitted with the new seats is scheduled to take to the sky in May 2012. The airline's 737-800s are configured with 181 seats.

GuestLogix onboard store goes live across Aer Lingus network

GuestLogix has deployed its onboard retail platform across the entire Aer Lingus route network of nearly 70 destinations throughout Ireland, the UK, continental Europe and the USA. The implementation represents approximately 10.5 million annual passenger trips. Aer Lingus generates ancillary revenue from inflight sales of merchandise, entertainment and meals. GuestLogix' onboard retailing platform integrates the sale of these items and more based on specific routeings and passenger demographics. "GuestLogix provides the necessary technology to enable us to fully understand our customers' needs and buying preferences," said Aidan Power, director of catering at Aer Lingus. "The deployment of this technology will assist us in providing Aer Lingus customers with the mix of products they want on board."

airberlin introduces new cabins on long-haul flights

airberlin has launched the first of its long-haul fleet of A330-200s to have been equipped with new seats in business and economy and a new IFE system. The upgrade of all airberlin's long-haul aircraft should be completed by the start of the summer 2012 flight schedule. In the 20-seat business-class cabin, the new fully automatic seats – from Contour – recline 170° to offer a surface 181cm long and 50cm wide. Every seat has a connection for a laptop or other electronic device. In the 279-capacity economy cabin, new seats from ZIM Flugsitz have been fitted, featuring slimmer backrests for more living space. These seats are set at 29-34in pitch and have a 6in recline. The seat is a customised version of ZIM Flugsitz's modular ECO-01 model, with amenities such as adjustable headrests, coat hooks, literature pockets and special DVT cushions. ZIM Flugsitz estimates that the seats offer airberlin a 575kg weight reduction per flight, reducing fuel consumption by 800 tonnes a year. The aircraft also features a new AVOD IFE system, RAVE by IMS, offering passengers a selection of box office hits, TV serials, games, music albums and audio books. The IFE is accessed via 8.9in high-resolution touchscreen monitors with USB ports.



B/E Aerospace will be the exclusive manufacturer of modular lavatory systems for the Boeing 737 Next-Generation family of aircraft, as well as the 737 MAX, which is expected to enter service later this decade. The estimated value of the award is in excess of US\$800 million (approximately £509.5 million), exclusive of retrofit orders.

B/E Aerospace's modular lavatory system (MLS) utilises Spacewall technology, which the company says frees up enough floor space to add up to six incremental passenger seats. The MLS will integrate with B/E Aerospace's Aircraft Ecosystems vacuum toilet, LED lighting and tamper-proof lavatory oxygen system.

"We expect to begin lavatory system deliveries for Delta Air Lines' new-buy 737s

Boeing selects B/E Aerospace modular lavatory systems

in the third quarter of 2013, and to ramp up deliveries thereafter," said Amin J. Khoury, chairman and CEO of B/E Aerospace. "We intend to substantially accelerate our investments in our modular lavatory programme and on the related wastewater system programmes in order to be in a position to produce significant quantities of lavatory systems by the end of 2012. The company is also stepping up its capital spending to support certain other SFE programmes."

SriLankan debuts new flying experience with A330

The first of SriLankan's upgraded aircraft – a refurbished A330 – has taken to the skies. The airline expects to transform its entire fleet by July 2012. A big part of the upgrade is the introduction of flat-bed business-class seats on wide-body A330 and A340 aircraft. The seat, developed by Aviointeriors, reclines into a fully flat bed with 79in pitch. Each features a buddy seat; power adapters for laptop charging; privacy screens; in-seat massage; pneumatic lumbar support; and 15.4in widescreens. The seats are covered with terracotta-coloured leather. Business class also debuts IMS's seat-centric AVOD IFE system, RAVE. In the pipeline are more games with Nintendo-type controls and 'play your own music' features. The carpet is a high-pile in black, with specks of terracotta, and is complemented by the aisle carpet and headrest cover, which are derived from Dumbara designs – rust coloured with black motifs. At the rear of the cabin are black and white scenes of Sri Lanka. The cabins were designed by a Sri Lankan design team led by architect Madhura Prematilleke of Team Architrave and fashion designer Gihan Nanayakkara of Orient Design.

Virgin Atlantic to invest £100 million in business class

Long-haul airline Virgin Atlantic has pledged its biggest ever investment in its business-class (Upper Class) product – £100 million. The three-year programme will start in spring 2012, and includes an enhanced seat, a "futuristic" bar and other cabin updates. A new food service will include customised menus and new crockery. The updated Upper Class will launch on a new A330-300 serving the airline's London to New York JFK morning flight, before rolling out across all aircraft joining Virgin Atlantic's London-Heathrow fleet over the next three years.

Chefs now personalising first-class meals on Etihad flights

Qualified chefs are now flying in selected Etihad first-class cabins. The airline has hired nearly 110 chefs, provided with a pantry stocked with meat, sauces, par-cooked items, spices and freshly chopped vegetables, and utensils such as whisks and foamers. Passengers select from a redesigned menu of four to six proteins (160g portions of beef, chicken, lamb and seafood), four sauces and four sides, all prepared to order. They are guaranteed their first choice of protein and the chefs can create custom side dishes and sauces.



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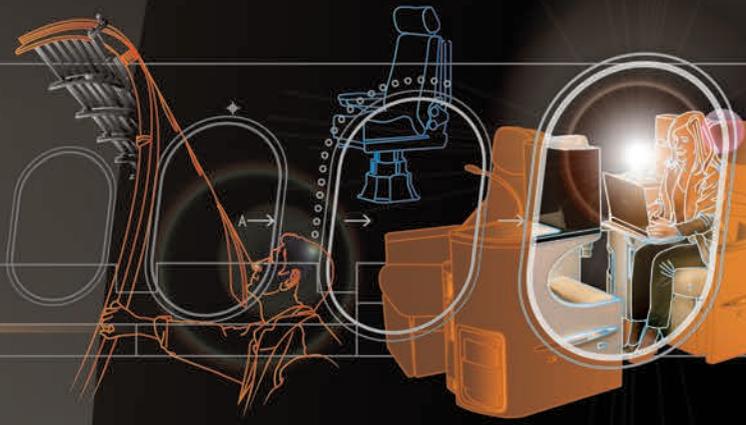
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Virgin Australia launches domestic business class

Virgin Australia has introduced a domestic business-class service, an option it has not offered in the country for more than a decade. Business class will be available on most domestic routes operated by its 737-700s and 737-800s, on its fleet of A330 aircraft; and on a range of Embraer E190 routes, with updated E190 interiors.

To develop the service, Virgin Australia assembled a group of experts, including chef Luke Mangan and designer Hans Hulsbosch. The offering includes new leather seating with 62in pitch on the A330

and 38in pitch on the Boeing 737-800; full-service dining; Australian wines, beers and spirits; amenity kits with blankets and pillows on flights more than three hours long; dedicated cabin crew and washroom facilities; newspapers until noon; and a coat check-in service with complimentary coat bag on A330 flights.

"In the last quarter of 2011, we had business class on transcontinental services and the feedback from guests has been excellent," said Liz Savage, group executive, commercial, at Virgin Australia.

MacCarthy wins contracts from British Airways and Transaero

MacCarthy Aviation is to refurbish galleys on five Boeing 767s for British Airways – four long-haul and one short-haul. The work package includes the replacement of damaged and missing parts, a change of décor, repainting entire units, and continuity checks and bonding, all within a 10-day turnaround. The contract will commence in April 2012, with the refurbishment being carried out at MacCarthy's facility in Surrey, UK. In other news, Transaero has selected MacCarthy to supply stowages, fixed class dividers and movable class dividers for its Boeing 737-800 Sky Interior.

United installs Economy Plus on international B757-200s

United Airlines is now offering Economy Plus seating on all long-haul international Boeing 757-200 flights, giving economy customers the option of 6in extra legroom. With the reconfiguration, the aircraft have 16 flat-bed seats in BusinessFirst, 45 seats in Economy Plus and 108 in economy. The Boeing 757-200 reconfiguration project, which began in late November 2011, involved the installation of 1,845 Economy Plus seats. United introduced Economy Plus in 1999, and currently offers the extra-legroom seating on more than 400 mainline aircraft and more than 150 regional jets.

Cathay details new premium-economy and economy seats

Cathay Pacific has released details of its new premium-economy class product, which will be progressively introduced on long-haul routes from March 2012. The airline will also introduce a new economy-class seat on the majority of its long-haul aircraft, also from March 2012. The premium-economy cabin will feature between 26 and 34 seats in 2-4-2 layout on the Boeing 777-300ER and Boeing 747-400 types; and 2-3-2 layout on the A330-300 and A340-300 types. Seat pitch will be 38in – 6in more than in economy class – and the seat will be wider (19.3in) and have more recline (8in). Each seat will boast a large meal table; cocktail table; footrest; 10.6in screen; in-seat power outlet; multiport connector for personal devices; and extra personal stowage space. Inflight extras include an amenity kit with dental kit, socks and eyeshade; larger pillows; noise-cancelling headsets; enhanced meal selections; a juice and champagne welcome; a bottle of water and additional snack choices. Perks on the ground include priority check-in and boarding and an increased baggage allowance. The airline plans to have 87 aircraft fitted with the product by the end of 2013. Meanwhile, the airline's new long-haul economy-class seat will feature a cradle mechanism; touchscreen monitors; a USB outlet; and an iPod/iPhone outlet that allows passengers to connect their own mobile devices to view content through the personal IFE monitors. The seat will also offer more personal storage space. Pitch is the same as the current economy-class seat – 32in, however, seat width is increased from 17.45-18.5in to 18.1-18.5in; and recline from 4in to 6in. The new seats will be fitted on all Cathay Pacific's long-haul Boeing 777-300ER (in a 3-3-3 layout) and A330-300 aircraft (in a 2-4-2 layout). The first aircraft featuring the seats are due to enter service in March 2012; and a total of 36 Boeing 777-300ERs and 26 A330-300s should be fitted with the seats by December 2013. The airline's current long-haul economy product will remain on Boeing 747-400 and A340-300 aircraft.

British Airways has started service with the first of its refitted Boeing 777-200s. The aircraft, flying from the UK to New York Newark, is the first of 18 to be fitted with the recently launched First cabin, new seats and cabins in World Traveller and World Traveller Plus (including in-seat power sockets), new widescreens in Club World and the airline's latest Thales IFE system. The multimillion-pound refurbishment gives the 18 Boeing 777-200s the same interiors as British Airways' six new Boeing 777-300ERs. The refit began in October 2011 and is scheduled to run until spring 2013.

Over the next five years, the airline will invest more than £5 billion in new aircraft, cabins, lounges and technologies. It takes engineers at its maintenance base in Cardiff, UK, about 5,700 man-hours to remove a Boeing 777's seats and interiors and replace them with the latest cabins. Each aircraft will have 13km of wiring removed and fibre optic cables installed to power the new IFE.

The Thales IFE system offers more than 700 hours of entertainment on demand – providing 50% more choice on movies and doubling TV and music options, as well as plug-and-play technology. Each cabin also gets bigger screens – 35% larger in World Traveller (now 8.9in); 60% larger in World Traveller Plus (now 10.6in); 16.3% larger in Club World (now 12.1in); and 15.4in in first.



British Airways' first refurbished Boeing 777-200 flies

American Airlines unveils 777-300ER interior selections

American has announced details of its 10 three-class Boeing 777-300ERs, scheduled for delivery from 2012 through 2013. First class will offer a new Flagship Suite seat that converts to a fully lie-flat 6ft 8in bed with drop-down armrests. Each suite will provide aisle access; privacy dividers; 17in touchscreen; touchscreen video handset; two universal AC power outlets; USB outlet; two tray tables; a swivel seat; and amenities including Bose QuietComfort 15 acoustic noise-cancelling headsets. Business class will also have fully lie-flat seats, all with aisle access; adjustable seatback, headrest and leg rest; 15.4in touchscreen; and touchscreen handset. Seats in economy will have a higher recline pivot for more knee room; articulating seat bottom; and 9in touchscreen Panasonic Eco Monitor. American will also offer an economy-class premium product, which will include additional legroom for seats in the forward section of the cabin.

IMG Media and Panasonic launch live 24-hour sports channel

IMG Media has teamed up with Panasonic to launch a live global 24-hour sports channel for airline passengers. Sport 24 is available through Panasonic's eXTV, and is being broadcast via satellite to specially equipped Gulf Air aircraft. It will feature live coverage of the 2012 Summer Olympic Games, the Barclays Premier League, Bundesliga, the Masters, the Open Championship, the Ryder Cup, Formula 1, Roland Garros and the Australian Open. Gulf Air is initially offering Sport 24 on its 'Sky Hub', currently available on A330 aircraft that fly long-haul and on some intra-Gulf routes, including to Europe, Kuala Lumpur, Bangkok, Jeddah, Manila, Lahore and Islamabad. Panasonic's eXTV television network uses its eXConnect inflight Ku-band communications service, including the same Ku antenna and onboard components. IMG Media has acquired the rights to the various sporting events and programming and will be producing the content within its London production facility.

US Airways installs first class on Express aircraft

US Airways has completed the installation of first-class cabins on 110 Express regional jets – 14 CRJ-700s, 38 CRJ-900s, 20 Embraer 170s and 38 Embraer 175s. The installation began in September 2011 and was completed by mid-December 2011. The first-class cabins include nine seats (eight on the Embraer 175s) in a 1-2 configuration. All the aircraft also have economy cabins – with 58 economy-class seats on the CRJ-700s, 70 on the CRJ-900s, 60 on the Embraer 170s and 72 on the Embraer 175s. Pitch in first class is 37in (38in on the CRJ-900s), and 31in in economy. The first-class offer includes priority check-in, security lines (where available) and baggage handling; early boarding; a larger seat with increased legroom; and complimentary alcoholic beverages, snacks, pillows and blankets. US Airways has also begun the installation of its Envoy Suite – a lie-flat business-class product with on-demand IFE – on its wide-body A330-300 aircraft.

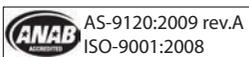
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Two-year trial influences Southwest's new cabin

Southwest Airlines has introduced a new cabin design, Evolve, that it plans to begin retrofitting on its current fleet of 372 Boeing -700s in March 2012. The airline anticipates completion in 2013, for a total estimated cost of US\$60 million (£38.3 million). New subsidiary AirTran's Boeing -700s and 717s will also be retrofitted with the interior as they are converted to the Southwest brand over the coming years. Other fleet types are still being evaluated for a possible retrofit.

Southwest launched a 'Green Plane' in 2009 to test the latest sustainable products, and many of these feature in the Evolve interior, including the seat cover; carpet; foam fill; life jacket pouch; and seat rub strips.

Capacity will increase from 137 to 143, and seat recline has been reduced from 3in to 2in. The seats feature fixed-wing headrests (for better support) and netted seatback pockets (streamlined to provide more knee room). To save an estimated US\$50 million (£31.9 million), Southwest

will retain its existing seat frame – B/E Aerospace's Innovator II – on 372 of its existing -700 fleet (excluding AirTran's -700s). However, the seats feature a new and lighter fill from Franklin Products in the seatback, and new covers made from E-Leather, a leather alternative made from natural leather fibres. The seat cover is manufactured by Irvin Automotive. Southwest says it will save nearly 6 lb in weight per seat (635 lb per aircraft).

Other products chosen in part for their ecological sustainability include the new carpet from InterfaceFLOR, which will be applied in squares, eliminating the need for total replacement of individual areas. The carpet is manufactured in a closed-loop recycled process. Meanwhile, new life jacket pouches save 1 lb in weight per seat and take up less space; and aluminium replaces plastic on the rub strips, tray table latches and seat arm trim pieces.

The design incorporates earthy tones combined with Southwest's signature Canyon blue and aluminium accents.

Asiana debuts business-class

Asiana Airlines has unveiled a new business-class seat, called the QZ Quadra Smartium (QZ is the airline's flight code). The full-flat business seat is installed in a staggered 1-2-1 layout, giving every passenger direct aisle access.

Contour completes refit for Etihad

Contour Aerospace has completed a multimillion-pound refit project for Etihad. The three-year project involved the design, manufacture, delivery and fit of the stowage compartments and facilities on a fleet of 20 Airbus aircraft. In total, 115 items – including closets, stowage cabinets and dividers – were provided. "Contour continues to win contracts with the best airlines in the world to design and refit superior cabin interiors," said Contour's principal programme manager, Adrian Sumner, who oversaw the project. "Our innovative aircraft cabins play a central role in the whole onboard experience," commented Werner Rothenbaecher, senior vice president, technical, at Etihad Airways.

Airbus Corporate Jet Centre (ACJC) has delivered its 10th Airbus Corporate Jet (ACJ) VIP cabin, to an undisclosed customer in Europe. The ACJ319 can carry up to 18.

Passengers are welcomed with a 1.8m-high metallic artwork embedded in the entrance partition. The lounge and dining area features an L-shaped divan; two VIP club seats; a large sideboard; and a dining table surrounded by a divan and three VIP seats. At the front, the bedroom boasts a system based on two movable beds with storage, providing either two single beds or a double bed. The bedroom is complemented by a large bathroom, with a full-height shower. The aft section includes 12 fully flat, electrically actuated cocoon seats, each with 15in video screen.

The cabin has a new telephony system with WiFi handsets and connectivity based on a complete SwiftBroadband Satcom solution. As with ACJC's 9th VIP completion (delivered in December 2011), the 10th cabin includes a high-definition video system based on HDMI wiring, allowing passengers to enjoy 1080p in VIP zones, as in the forward lounge displaying a 52in full HD screen. ACJC also implemented a cabin weight-saving plan for extended range.



Airbus Corporate Jet Centre delivers 10th VIP ACJ cabin

Comlux bolsters Russian charter fleet with ACJ319

Comlux has taken delivery of a new ACJ319, under a management contract for an undisclosed customer, which it is making available for VIP charter. The ACJ319 boasts an interior designed by Comlux Creatives designer Tim Callies, and is certified for 19 passengers. The main room offers a VIP lounge with L-shaped divan, two club seats and a large dining table for six guests. At the front, a fully private compartment incorporates a bedroom with two beds completed by a dedicated bathroom with shower. The cabin also has a first-class seating area at the back for guests. The ACJ319 is the sixth VIP aircraft managed and operated by Fly Comlux in Russia.

Flying Colours delivers Challenger 850 to Lily Jet of China

Flying Colours Corp has delivered its fourth Chinese-registered aircraft – a Bombardier Challenger 850 business jet – to Shenyang-based charter company Lily Jet. The 17-seat aircraft is available for third-party charter. "The completion included a cabin management system, broadband enabling WiFi, a high-definition camera system, a mid-cabin custom desk, and coloured LED lighting in the restrooms," said Sean Gillespie, director of completion sales and management at Flying Colours. A further three 850s destined for China (scheduled for delivery in 2012) are being completed at the company's facilities in Peterborough, Canada, and Chesterfield, Missouri, USA.

Corporate jet showroom opens for business in London

The Jet Business formally opened its doors in January 2012 at One Grosvenor Place, London, UK. The company will guide prospective buyers of new and pre-owned aircraft through the transaction process. The building boasts a full-scale cabin mock-up of an Airbus Corporate Jet, along with floor-to-ceiling screens running the length of the showroom, where full-size cabin cross-sections and floorplans can be displayed. A bespoke iPad application compares and contrasts the various aircraft types to an individual's profile, while full-time analysts and business intelligence teams create the information engine that delivers unique market data.

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ultrasound

BRIEF: Not content with setting up a new aircraft seating company from scratch and selling over 10,000 units, Acro Aircraft Seating and design partner Factorydesign continue to look to the future. Having already made a noise in the industry with its fixed-back short-haul Superlight F seat, the team has gone on to develop a recline version – Superlight R. “Now with airlines showing increasing interest in the Superlight for its improved comfort, low weight and part count and ease of maintenance, there is a growing demand for an enhanced version with IFE and added features to meet the demands of the modern passenger,” says Factorydesign’s Peter Tennent. Say hello to the latest addition to the family, the Superlight Ultra.

DESCRIPTION: The Superlight seat family was developed with a goal to reduce part count, improve ease of maintenance and increase passenger comfort by offering more leg room. Superlight F has already entered service with launch customer Jet2.com. Tennent says the first production seat is the lightest in its class: “Installing this seat on a typical short-haul aircraft such as a Boeing 737 could mean a weight saving of 95kg, equating to fuel savings of up to US\$200,000 per aircraft, per year,” he says. “So the continued evolution of the Superlight seat had to embrace Acro’s pragmatic approach and maintain their philosophy of minimum parts, simplicity of use and operation and reliability, while at the same time acknowledging the need for increased passenger benefits.” Developing an enhanced product included the introduction of more sophistication and elegance to areas such as the seat back, arm rests (now longer) and aisle end. The Ultra version boasts a number of new features, including an articulating headrest, wider and re-profiled seat cushions and the possible addition of an IFE system by enclosing the rear of the seat back for a more integrated appearance.



VERDICT: A runner-up in last year’s Crystal Cabin Awards, Superlight has also been nominated by the D&AD. It has already won a British Design Week Award and received a coveted DBA Design Effectiveness Award. The product range now comprises the original fixed-back seat (type-F), the type-R (recline version) and the Ultra, seen here. Acro has already secured orders for seats from airlines in Turkey, Lithuania, Russia, Indonesia, Ireland, Nigeria, The Netherlands, Scandinavia and Italy. There’s no doubt that this latest addition looks great, while retaining the same slim-line, fuel-saving features that have proven so popular with customers to date. ☒



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doublevision

BRIEF: The H2XQR Series concept is based on Airbus's A320 cabin, but introduces a second aisle to create a 1+3+1 configuration in a bid to reduce boarding times and improve the onboard experience, with 80% of passengers next to an aisle. "A twin aisle gives better safety, ergonomics and comfort in Y-class with quicker boarding and deplaning as spin-offs," argues its chief proponent, Morten Müller, a former Airbus sales manager. He first thought of the idea in the early 1980s in a bid to win an order from SAS: "I was sent to Stockholm with instructions to stay there until SAS signed up as a launch customer for the A320 Series," explains Müller. SAS's CEO at the time, Jan Carlzon, was keen on the idea of a second aisle to attract more business travellers, sowing the seeds that would eventually lead Müller to attempt to resurrect the notion when he entered his previous H2XP3 Series (featuring a 1-2-2 layout) into the 2009 Crystal Cabin Awards.

DESCRIPTION: H2XQR's 1-3-1 layout proposes two columns of single seats, each 22in wide, a 62in-wide seat triple, and two 19in aisles. "Typical A321 capacity at 32in pitch is 198 seats [220 seats maximum capacity]," says Müller. An H21QR would offer 179 seats at 30in pitch with a maximum of 201 seats at 29in pitch. "That's only 19 seats less," says Müller, adding any revenue shortfall would be balanced by H21QR's "greater rotation efficiency, as well as extra freight revenue and higher, automatic, CRS-generated ticket yields, which could actually boost profits."



VERDICT: Müller had hoped to enter H2XQR for this year's Crystal Cabin Awards, but the judges ruled it was too similar to his previous entry in 2009. Meanwhile, Müller suspects the airframers are in no hurry to adopt his idea – with full to bursting order books for their conventional 3-3 cabins. It would certainly take a very influential airline to change their mind – passengers would welcome the extra aisle and seat width – but does the business case stack up? ☒



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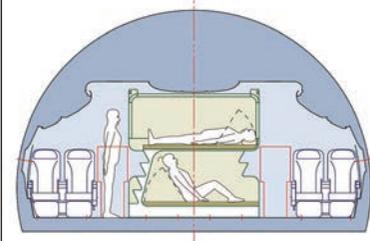
micromacro

BRIEF: Aviointeriors describes its Micro Suite as an innovative business-class aircraft passenger accommodation layout. "It is based on the concept that different postures and passenger activities require different accommodation devices," explains Tanya Saracino, vice-president, sales and marketing. "It offers a recline business-class seat and special separate furniture to accommodate the passenger in a completely flat, full-size bed." The passenger can choose between the seat and the bunk depending on their needs: the seat is intended for eating meals, working, reading, using the IFE system and activities that require a seated or more relaxed 'Z' position. The bunk is intended for sleeping and relaxing.

DESCRIPTION: Each passenger is assigned a seat and a rest bunk. A 267in-long fuselage section from a Boeing 777 would accommodate a dozen pairs of business-class seats set at 53in pitch on the outside of the cabin, with 24 bunks in the middle. Both the seat and the bunk feature IFE monitors. "While the seat offers a good recline feature that will allow sleeping in a 'Z' position, the bunk has a flip-up mattress that electrically lifts the upper body to ease reading and watching the IFE screen," continues Saracino. "Great freedom of behaviour is given with the chance to sleep on the seat or relax in the bunk." The bunks have curtains for privacy, while ladders provide access to the upper-tier beds. A collision awareness device warns aisle traffic that a passenger is exiting the lower bunks to prevent accidents. Seatbelts in each bunk improve safety in case of turbulence; however, use of the bunk is prohibited during take-off and landing. The bunk furniture is made from a combination of honeycomb composite panels and aluminium alloy structural parts.



VERDICT: The Micro Suite is a rational response to a well-known cabin conundrum: how to deliver a fully optimised seat that is also capable of converting into the ultimate bed? "It is well known that a comfortable seat has a backrest shape that follows the passenger's spinal curve, but when the backrest is reclined to act as a part of the mattress of a full-flat bed, the same curve does not apply," says Saracino. "This often leads seat manufacturers to adopt a compromise shape that by definition will not be the best for the seat function nor for the bed function." The Micro Suite, similar to Lufthansa's first class on its 747-400s, avoids this compromise. ☒



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rollingstock

BRIEF: Skypak, a Cologne-based design firm, is offering aerospace aficionados and inflight fetishists the chance to own their own airline trolleys – converted for terrestrial use in the home or office. “Our goal is to combine design and functionality,” explains Peter Jorge Fischer, Skypak’s owner. “A Skypak trolley is highly customisable and could be used as a coffee bar, cocktail bar, office furniture, shoe cabinet, or a piece of lounge furniture,” he continues. “The possibilities are endless!”

DESCRIPTION: “When sourcing the trolleys, we give preference to the leading manufacturers, to ensure the best endurance qualities,” explains Fischer. “Usually Skypak redesigns them to create something entirely new, but there are also variants for those who want to have a piece of furniture which flew from New York to Sydney, and which radiates the spirit of voyage.” Shelves and drawers made of aluminium or walnut are available, providing ideal storage for special items. “A good example would be a CD rack or filing cabinet, which, containing your favourite music or secret documents, can also be protected from unwanted intrusion simply by attaching a padlock,” adds Fischer. Three luxury models are available: the ‘Pure Gold’ trolley is refined with 24-Carat gold leaf and comes complete with gold-plated pedals; the ‘Bisazza Mosaico’ trolley features an “exquisite” glass mosaic; and the flagship ‘Luxury Crystal’ trolley is adorned with 82,000 Swarovski sparkling crystals. Blinging marvellous.



VERDICT: Readers will be pleased to know that Skypak’s trolleys can be purchased at prices starting from US\$2,000. However, the top-of-the-range Luxury Crystal model will set you back a cool US\$40,000. “Ridiculous,” I hear you say? Well, currently Skypak says it sells about 100 trolleys per month. Now who’s laughing? Let’s hope security at this year’s Aircraft Interiors Expo is tight – with redesigned trolleys able to fetch such high prices, it will need to be! ☒



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AIRCRAFT TYPE	A330-200 TYPE 1	A330-200 TYPE 2	B737-800 TYPE 1	B737-800 TYPE 2	B737-800 TYPE 3
No. of aircraft	6	3	2	2	4
Entered service/last refurbishment	June 2010	Mar-Jun 2012	Dec 2006	Dec 2006	Dec 2006
Total seats	283	116	164	164	164
Number of seats	0	34 seats (Club Premier)	0	0	0
Configuration	N/A	1-2-1	N/A	N/A	N/A
Seat pitch	N/A	N/A	N/A	N/A	N/A
Seat width	N/A	21in (53.3cm)	N/A	N/A	N/A
Seat recline	N/A	180°	N/A	N/A	N/A
Bed length	N/A	6ft 1in	N/A	N/A	N/A
Seat supplier	N/A	EADS Sogerma (Solstys)	N/A	N/A	N/A
IFE system	N/A	i5000 AVOD	N/A	N/A	N/A
IFE screen size	N/A	15.4in (39.1cm)	N/A	N/A	N/A
IFE supplier	N/A	Thales with Rockwell	N/A	N/A	N/A
Club Premier business class		Collins moving map			
Connectivity	N/A	OnAir voice, data, WiFi	N/A	N/A	N/A
Number of seats	24	82 cradle-style seats (Club Classic)	8	8	8
Configuration	2-2-2	2-2-2	2-2	2-2	2-2
Seat pitch	62in (157.5cm)	52in (132.1cm)	50in (127cm)	50in (127cm)	50in (127cm)
Seat width	27.8in (70.6cm)	22in (55.9cm)	26in (66cm)	26.9in (68.3cm)	25.5in (64.8cm)
Seat recline	180°	155°	7in (17.8cm)	10in (25.4cm)	6in (15.2cm)
Seat supplier	Sicma	Recaro (4220B model)	B/E Aerospace	Weber	Recaro
IFE system	eX2	i5000 AVOD	MPES	MPES	MPES
IFE screen size	10.4in (26.4cm)	10.4in (26.4cm)	15in (38.1cm) wall-mounted	15in (38.1cm) wall-mounted	15in (38.1cm) wall-mounted
IFE supplier	Panasonic	Thales with Rockwell	Panasonic	Panasonic	Panasonic
Club Classic business class		Collins moving map			
Connectivity	N/A	OnAir voice, data, WiFi	N/A	N/A	N/A
Number of seats	259	0	156	156	156
Configuration	2-4-2	N/A	3-3	3-3	3-3
Seat pitch	31in (78.7cm)	N/A	31in (78.7cm)	31in (78.7cm)	31in (78.7cm)
Seat width	21in (53.3cm)	N/A	17.2in (43.7cm)	17.4in (44.2cm)	19.3in (49cm)
Seat recline	6in (15.2cm)	N/A	4.5in (11.4cm)	4in (10.2cm)	4in (10.2cm)
Seat supplier	Weber	N/A	B/E Aerospace	Weber	Recaro
IFE system	eX2	N/A	MPES	MPES	MPES
IFE screen size	8.6in (21.8cm)	N/A	N/A	N/A	N/A
Economy class					
IFE supplier	Panasonic	N/A	Panasonic	Panasonic	Panasonic

01. Club Classic
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A330-200 cabin
(type 2 above)

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PASSENGERS CARRIED IN 2011: 2.8 million





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clubcouture

Hong Kong Airlines is introducing a Club Class service this spring – but how will it fare given previous all-business failures?

ANTHONY JAMES, AIRCRAFT INTERIORS INTERNATIONAL



“

HONG KONG AIRLINES IS PIONEERING
THE ALL-BUSINESS MODEL BETWEEN
EUROPE AND ASIA ”



star alliance

Hong Kong Airlines has partnered with Michelin star chef, Jason Atherton (pictured), to create an inflight dining concept for customers on board its flagship all-Club Class service from London Gatwick to Hong Kong. Atherton will create a signature menu for customers in Club Classic and Club Premier cabins in both directions between London and Hong Kong. The airline says the onboard cuisine will reflect the best culinary traditions of China, Europe and beyond, complemented by an expertly chosen wine list and a selection of fine Chinese teas. "With Jason's wealth of experience as one of the UK's great chefs, we can set apart our dining experience, helping to create an exciting culinary experience in the air," says Gerard Clarke, UK general manager for the airline.

"The opportunity to work with a dynamic airline brand for an exciting launch in this way is incredible," adds Atherton. "I'm looking forward to showcasing my concept for Hong Kong Airlines to give customers a truly memorable experience."

Atherton was the first British chef to complete a stage at Spain's famous el Bulli restaurant and went on to work under Pierre Koffmann, Nico Ladenis, Marco Pierre White and Gordon Ramsay, before opening his flagship restaurant, Pollen Street Social, in London. The restaurant was awarded its first Michelin star last year, only six months after opening, and has recently been named the BMW Square Meal Restaurant of the Year 2011.

□ We've been here before, haven't we? First there was Maxjet, followed by EOS and then Silverjet. 'Who?' I hear you ask. Let me remind you – all three now-defunct transatlantic carriers grabbed the headlines at the time of their launch as a result of their unique all-business-class cabins, which offered an atmosphere akin to the exclusive club-like ambience that was once the preserve of Concorde. However, all three ultimately failed to live up to the hype when exposed to the commercial realities of the cut-throat airline business.

True, their refitted and repainted 757s and 767s proved popular with corporate types looking for a bit of a bargain and something different to brag about to their colleagues, but in the end they couldn't compete with the established pack of flag carriers, who were able to offer better schedules, wider networks, more convenient airports and more modern, efficient aircraft.

Ever-increasing fuel prices, coupled with a downturn in business travel due to the stuttering economy at the end of the last decade, didn't exactly help their chances of survival. Unlike the bigger, more established carriers, these 'boutique' operations were unable to hedge their fuel costs as effectively, and were left with no plan B when big business started cutting back on expenses. Their investors balked and the rest is history.

Despite their failure, their legacy lives on: British Airways' exclusive Club World London City service to New York's JFK is operated by two A318s fitted with only 32 business-class seats across eight rows. Each seat converts into a fully flat 6ft-long bed. The airline went on to launch

its Paris-based subsidiary, Open Skies, an all-business carrier that operates between New York-Newark and Paris-Orly, using a fleet of three Boeing 757s fitted with 84 seats in a 2-2 pattern. Open Skies offers a slight twist, with the cabin split in two: the Biz Seat section offers 72 seats that recline 140°, while the Biz Bed cabin, as its name suggests, offers a dozen seats that convert into fully flat beds. Innovative features on board include personal entertainment systems, universal power outlets in every seat and fine dining.

EASTERN PROMISE And now Hong Kong Airlines is pioneering the all-business model between Europe and Asia, with its exclusive 'Club Class' service on board three A330-200s flying overnight between London Gatwick and Hong Kong. From 8 March 2012, Flight HX876 will leave London at 21:30, arriving in Hong Kong at 17:45 the following day, while Flight HX875 will depart Hong Kong at 23:50, reaching London at 05:55 the next morning.

Each A330-200 will feature 116 seats split between two premium cabins: 'Club Premier' at the front and 'Club Classic' to the rear.

Club Premier comprises 34 EADS Sogerma Solstys seats that convert into fully flat 6ft 1in beds in a staggered 1-2-1 layout. "The staggered configuration of the central seats provides the best customer choice, with each consecutive pair positioned at the maximum distance apart for solo guests, or for those travelling with partners, the 'honeymoon' pairs are configured closer together to create a more intimate and sociable travelling experience," explains Gerard Clarke, Hong Kong Airlines' UK general manager.

01. Full-service (pictured) and self-service bars in a smart red finish provide a note of glamour



03

- 02. Thales' i5000 system provides the IFE, with 10.4in screens in Club Classic
- 03. Club Premier features 34 Solstys seats from EADS Sogerma in a 1-2-1 layout

"The Club Premier seating choices will be communicated via the website, reservations team and through travel trade partners," he continues. "There will be no pricing differential and advance seat selection is free of charge immediately from time of booking."

A fine dining service with individual table settings, superior wines and champagne, and a turndown service with duvets, pyjamas, slippers and luxury amenity kits, complete the offer.

Club Classic will feature 82 Recaro 4220B cradle-style seats at 51in pitch in a 2-2-2 layout. Each 22in seat reclines 155°, which Clarke believes is enough to satisfy an emerging demand for a product somewhere between premium economy and full business.

"Research and feedback received by Hong Kong Airlines demonstrated that small and medium enterprises and high net worth leisure travellers are seeking greater comfort and value than is being offered by other airlines' premium-economy cabins," he says. "These products are considered to be far closer to economy class than business class. Club Classic's 2-2-2 configuration provides excellent seat width and the 51in pitch delivers a level of seat recline and personal space far exceeding any premium-economy

products. In addition, business-class catering and onboard bar facilities provide further benefits for the cost-conscious traveller not willing to forgo genuine comfort on a long-haul service."

Club Premier features a full-service bar, while Club Classic has its own self-service bar at the rear of the aircraft. LED mood lighting is featured throughout the cabins to vary the ambience depending on the time of the day and both bars include LED feature lighting.

ENTERTAINMENT FACTOR All cabins are equipped with WiFi, AVOD IFE, digital magazines and high-definition 16:9 ratio widescreens, with 15.4in monitors in Club Premier and 10.4in screens in Club Classic.

According to Clarke, the airline selected Thales' i5000 IFE system for its robustness and improved functionality and reliability over earlier AVOD systems. "The user interface has been designed with ease of use in mind and will feature recognisable icons and multiple language options," he adds. "Simplicity will ensure that guests will have no problem navigating the extensive content, even if it is their first time using such an IFE system."

The airline is currently evaluating the benefit of allowing passengers to order meals, drinks and other items via their touchscreens. More than 100 movies, television shows, music and games, as well as e-magazines and books, should provide plenty of distraction. An advanced moving map by Rockwell Collins provides live aircraft route information.

Passengers will also be able to make calls using SITA and Airbus' OnAir service. The ALNA V2 platform uses

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04

the Inmarsat 14 satellite and provides 802.11b/g SwiftBroadband with two channels of bandwidth at 432kbps per channel.

“OnAir will enable up to 16 passengers to make and receive simultaneous voice calls,” notes Clarke. “The fully wireless cabin also allows guests to send and receive SMS messages, emails, instant messaging, internet browsing, corporate networks via VPN client and other services over GPRS on smartphones, tablets and laptops.”

CODE RED Unsurprisingly, the cabin scheme is dominated by shades of red, the carrier’s corporate colour. “Seating fabrics are consistent throughout Club Premier and Club Classic and are in two shades of red, featuring a Chinese motif, which is a blessing for good fortune,” explains Clarke. “Carpets [supplied by Lantal Textiles, which is also providing the curtains and seat covers] are a rich deep red with a subtle pattern designed to provide texture and be highly serviceable.”

Seat frames are pale grey while the cabin structure of walls, ceiling and lockers is clean white. A red-and-gold trim runs the length of the overhead lockers and this feature is replicated in the emergency lighting strip at floor level. The bars feature high gloss red accents. The cabin concept and design were undertaken internally by HNA Group, the airline’s parent company.

Passengers will enjoy similar surroundings back on the ground. “Hong Kong Airlines will operate from freshly refurbished areas at London Gatwick North Terminal and initiatives by the airport operator will ensure that a premium ground experience will be provided to all customers,” says Clarke. “Customers can expect a significant level of service at the airline’s home base at Hong Kong International Airport, including the lounge, which is available to all Club Premier and Club Classic guests, plus Fortune Wings Gold and Silver card holders.”



05



THE ROUTE NETWORK IS A KEY FEATURE OF THE BUSINESS MODEL



RISKY BUSINESS? The Club Class service represents a notable departure from Hong Kong Airlines’ normal offer. Its existing A330-200s in service to Moscow and Asian destinations feature 24 Sicma-supplied business-class seats in a 2-2-2 configuration at 62in seat pitch, while a traditional economy cabin sees 259 Weber-supplied seats in a 2-4-2 configuration at 31in seat pitch.

Is Clarke worried by the failure of some earlier all-business-class airlines? “Hong Kong Airlines is not a start-up airline and has developed a significant route network since 2006 out of the Far East’s leading hub, including the most prosperous cities in China,” he says. “The route network is a key feature of the business model and this key differentiation was missing from the business plans of those

- 04. The one-piece meal table features a very simple mechanism
- 05. Each Club Premier seat converts into a 6ft 1in flat bed



06



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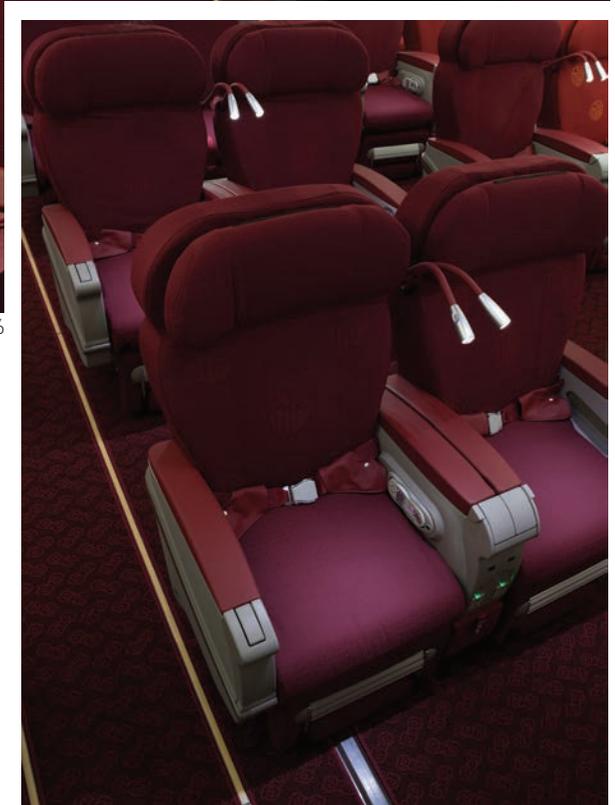
- 06. No flat beds but a generous 51in seat pitch puts Club Classic at the top end of the premium-economy sector
- 07. Club Classic features Recaro's 4220B seating units

airlines that failed. The airline is also part of the HNA Group, one of China's leading corporations with a diverse range of successful businesses, including ownership of Hainan Airlines, China's fourth largest airline."

Established in 2006, Hong Kong Airlines serves 25 cities in Asia and Europe with a modern fleet of Airbus A330-200s and Boeing 737-800s, as well as large orders for next-generation aircraft – it will receive more than 50 new aircraft in the next four years, including four A380s, six 787s and 20 A330-200s.

The airline has already received its first two Club Class-configured A330-200s, with a third to follow in June. Prices start at about £1,900 for a Club Classic seat and £2,850 for Club Premier.

Clarke is confident that the new service will be a success: "We have gained a reputation for outstanding service over the past five years and we look forward to extending this to our new flagship route, connecting two global business capitals," he says. "The concept for the all-Club



07

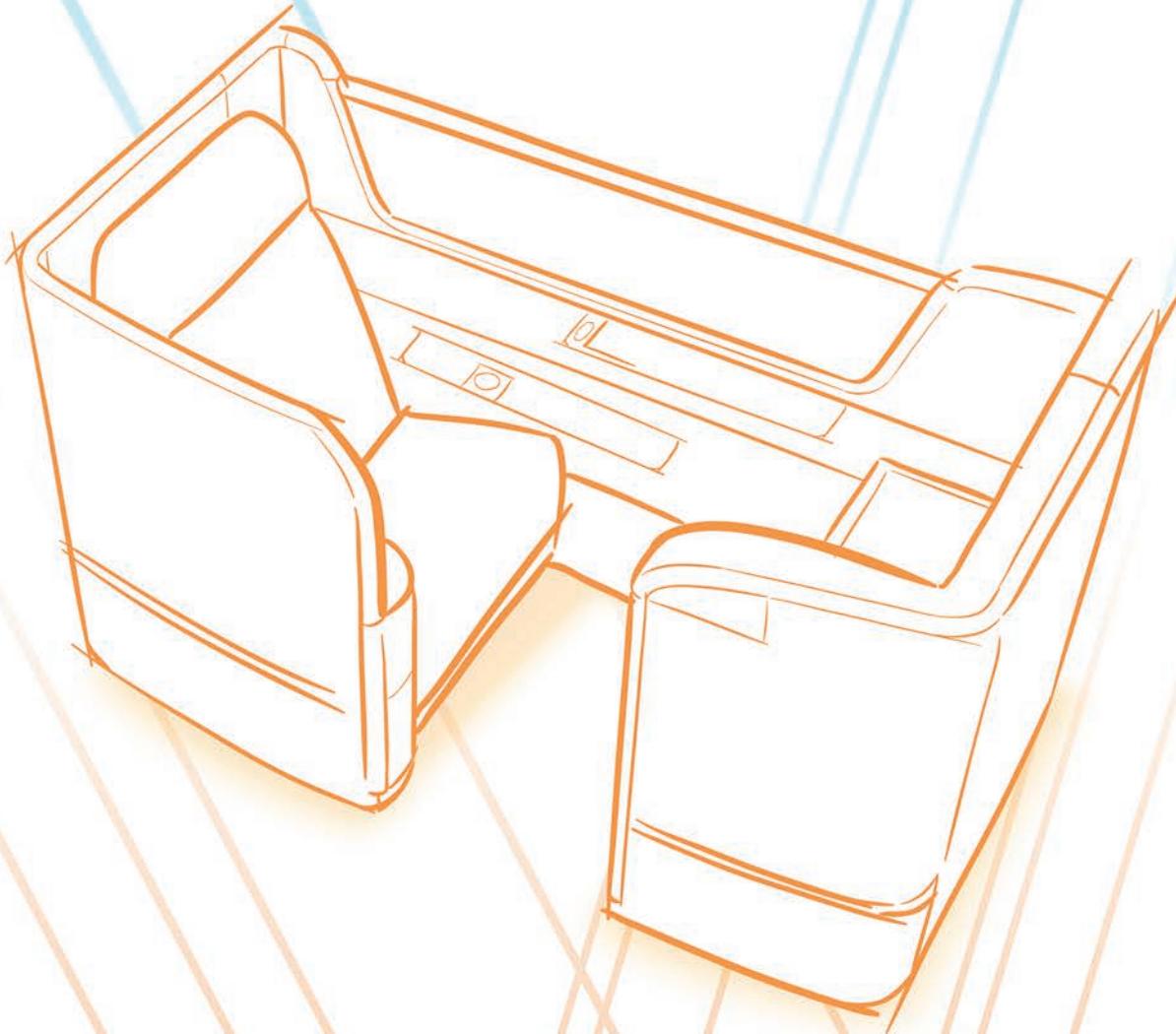
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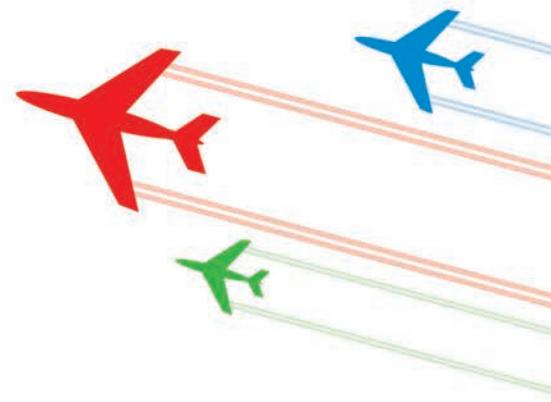


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Airframers are extending their control over the process of sourcing cabin furnishings, but some suppliers say the catalogue approach to interiors inhibits innovation

BERNARD FITZSIMONS, AIRCRAFT INTERIORS INTERNATIONAL

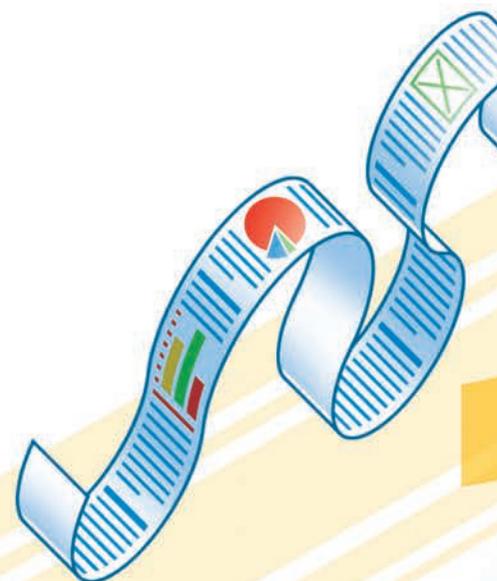


Airbus and Boeing have tightened their supplier criteria and changed the basis on which airlines buy interior equipment in recent years, making much of what used to be buyer-furnished equipment (BFE) either seller-furnished (SFE) or seller-managed.

Boeing built its Dreamliner Gallery so that airlines could see and specify all the elements of their entire 787 cabins in a single location, then buy them from the airframer rather than direct from the individual vendors. Airbus has named single-source suppliers for galleys and lavatories on the A350, and subsequently for galleys on the A320 family.

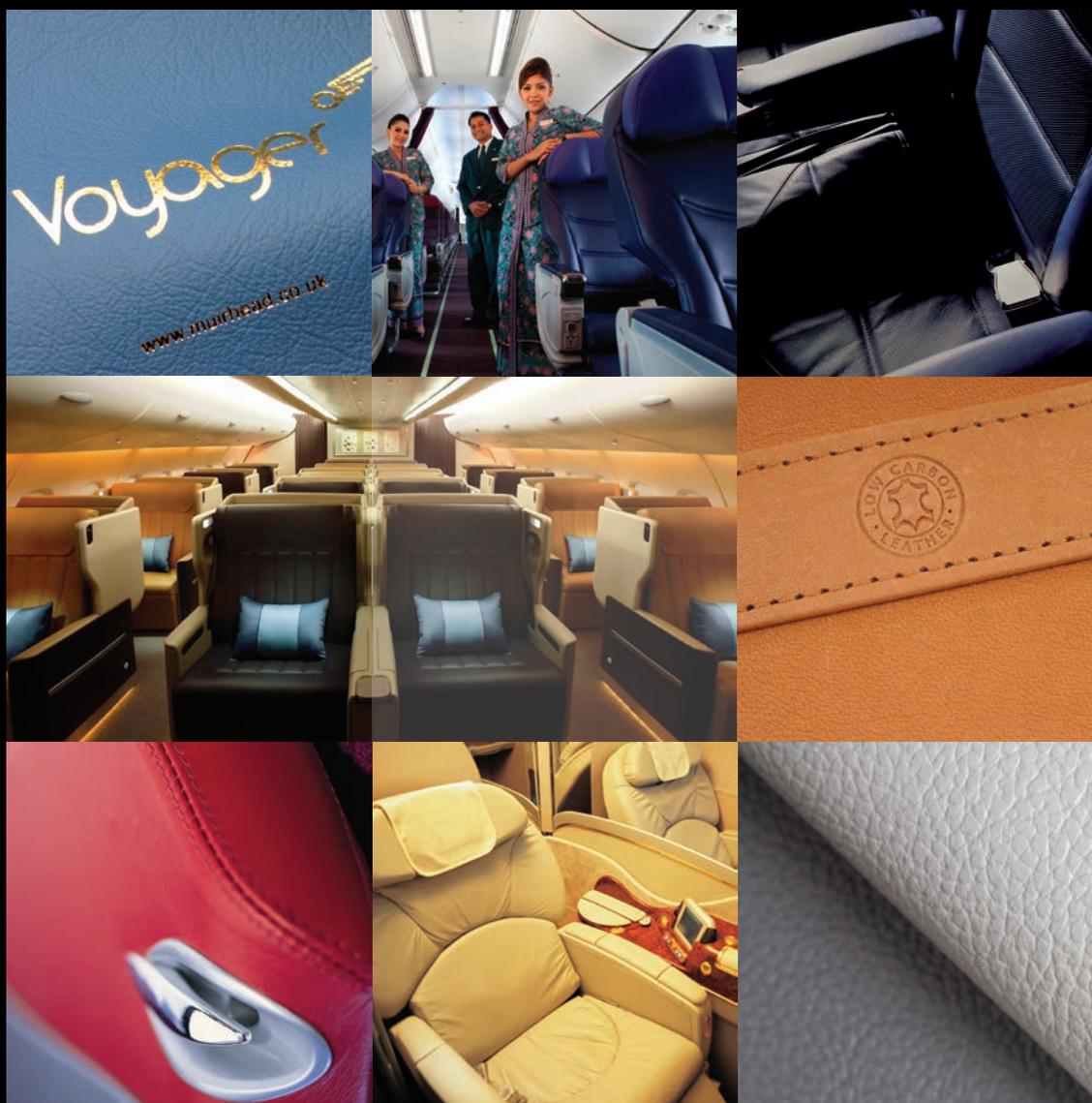
The approach is understandable. There have been several instances of aircraft deliveries being delayed, at huge cost to the airframers and major inconvenience to the customer, because of the late delivery of items such as galleys and lavatories. In 2008, Boeing failed to meet its quarterly earnings projection because late galleys prevented the delivery of three 777s to Emirates. The airline, in turn, was forced to postpone repeatedly the expansion of its services to the US west coast. Then in 2010, Boeing delivery rates were hit by a seat manufacturer's certification problems, and Airbus has reported similar difficulties.

On the other side of the equation, of course, there have been some serious hard-luck stories among the vendors in recent years, as suppliers have ended up stockpiling





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systems and equipment for new aircraft models subject to extended delivery delays.

Yet the catalogue approach, which specifies which products can be installed on the production line, can even inhibit an interior supplier's ability to sell on the retrofit market. At least one seat manufacturer, not yet on Airbus's approved supplier lists and consequently focused on retrofits, has lost business because the owner of an aircraft vetoed the airline operator's choice of its seats. The aircraft was being retrofitted, but the bank that owned it ruled the airline had to use the same seats as new aircraft to be delivered in the future to maintain commonality.

HIDE AND SEEK The Airbus list of approved cabin and cargo suppliers runs to nearly 250 companies. But only three of the dozen or so established suppliers of leather for seat coverings are included in its more specific catalogues

for individual line-fit programmes. Yarwood Leather, which estimates it is probably the fourth biggest supplier, is not one of them: indeed, the company was not even aware that approval was an option, believing only the seat manufacturer needed to be on the list, until the government owner of an airline that was about to buy new seats using an innovative leather product rejected the coverings because of the supplier's lack of approval.

Matthew Nicholls, Yarwood group managing director, describes trying to get on that list as "a very, very interesting journey". The company has unique products, he says, including the only leather to have demonstrated compliance with Airbus' own ABD 0031 fire test standard and the FAA's 65/65 heat release rule, which says the average maximum heat release rate during a five-minute test must not exceed 65kW/m² and the average total heat released during the first two minutes must not exceed 65kW min/m².

airbus' approach

The traditional approach to interiors at Airbus is that the airline selects the seat or galley or IFE system and makes its own contract with the vendor. Delivery dates and quality requirements are specified by the OEM, but the responsibility for ensuring the product arrives on time and in an acceptable condition lies with the customer.

Signs of strain in the supply chain, and the fact that Airbus had no contractual leverage over the suppliers, led the manufacturer to introduce a new system for the A350. Lavatories and galleys for the A350 are seller- (SFE) rather than buyer-furnished equipment (BFE), while seats and IFE will come from Airbus-contracted suppliers. The result, says Airbus, should be that the airlines retain the choice, product quality and benefit of competition they enjoy with BFE but with Airbus as the OEM taking over the development risk. In particular, Airbus says, its application of industrial and project management processes will drive a more consistent, higher quality product in larger numbers. "The prerequisites for any supplier to be considered for entry into our catalogues are industrial stability and reliability, innovative products (weight, cost, customer value) and excellent delivery performance," explains Claire Nurcombe, aircraft interiors marketing manager, Airbus. "These aspects are audited and managed by the Airbus procurement teams as a matter of course. A product offerability process describes the steps to be followed by the suppliers, Airbus and our customers in order to secure the offerability of BFE equipment," she continues.

"Strict adherence to this process is a prerequisite for an inclusion of a product in the BFE Catalogue. A supplier will make a request to us to launch the product offerability process. Upon acceptance by Airbus, the supplier receives an authorisation to offer the product to customers. Full offerability is granted once the qualified product has been certified through installation on Airbus aircraft in order to secure smooth introduction of the product in the customers' fleet. Generally, all products in the BFE Catalogue are offerable within the required Airbus lead times."

Nurcombe refutes any suggestion this process can have an impact on innovation: "The Airbus BFE Product Catalogue lists the certified products from the catalogue suppliers and is structured and defined to meet varying airlines' needs with optimised and mature products. It is also continuously enriched with the latest innovations while obsolete products are removed. If a customer wishes to install a product from an approved supplier outside the BFE catalogue, then we will negotiate this on a case-by-case basis. However, due to product quality and industrial constraints, Airbus may require a back-up solution from an approved, catalogue supplier."



ILLUSTRATION BY LEE HASLER

The journey started more than three years ago with a letter from the potential customer's design director. "We had been working with the airline for nearly six months," recalls Nicholls. "We'd supplied them with samples and mock-ups and everything for their new business-class suite, and at the last minute, as they were about to start placing purchasing orders, we had a letter to say, 'thank you very much for all your support, we really wanted to work with you but because you're not Airbus approved, we're left with no choice but to go to a different vendor'."

The Airbus approval process is not trivial: it involves multiple visits over the course of a year by teams of auditors, similar to the process for ISO 9000 or QS 9000 certification, says Nicholls: "It's quite a full-on system; it's not just a tick in a box."

POLITICAL CALLING About 18 months ago, Nicholls enlisted the help of his local member of parliament, Alun Cairns. After receiving no reply to his own letters, Cairns in turn took the matter up with business and enterprise minister, Mark Prisk. "The minister got me a response within a couple of days," Cairns recalls. His own follow-up email received an immediate response: "It said they were now disbanding their approved list of suppliers for the seating requirements, and that it would be better for Yarwood to approach seating manufacturers directly rather than Airbus, because they were about to change their policy."

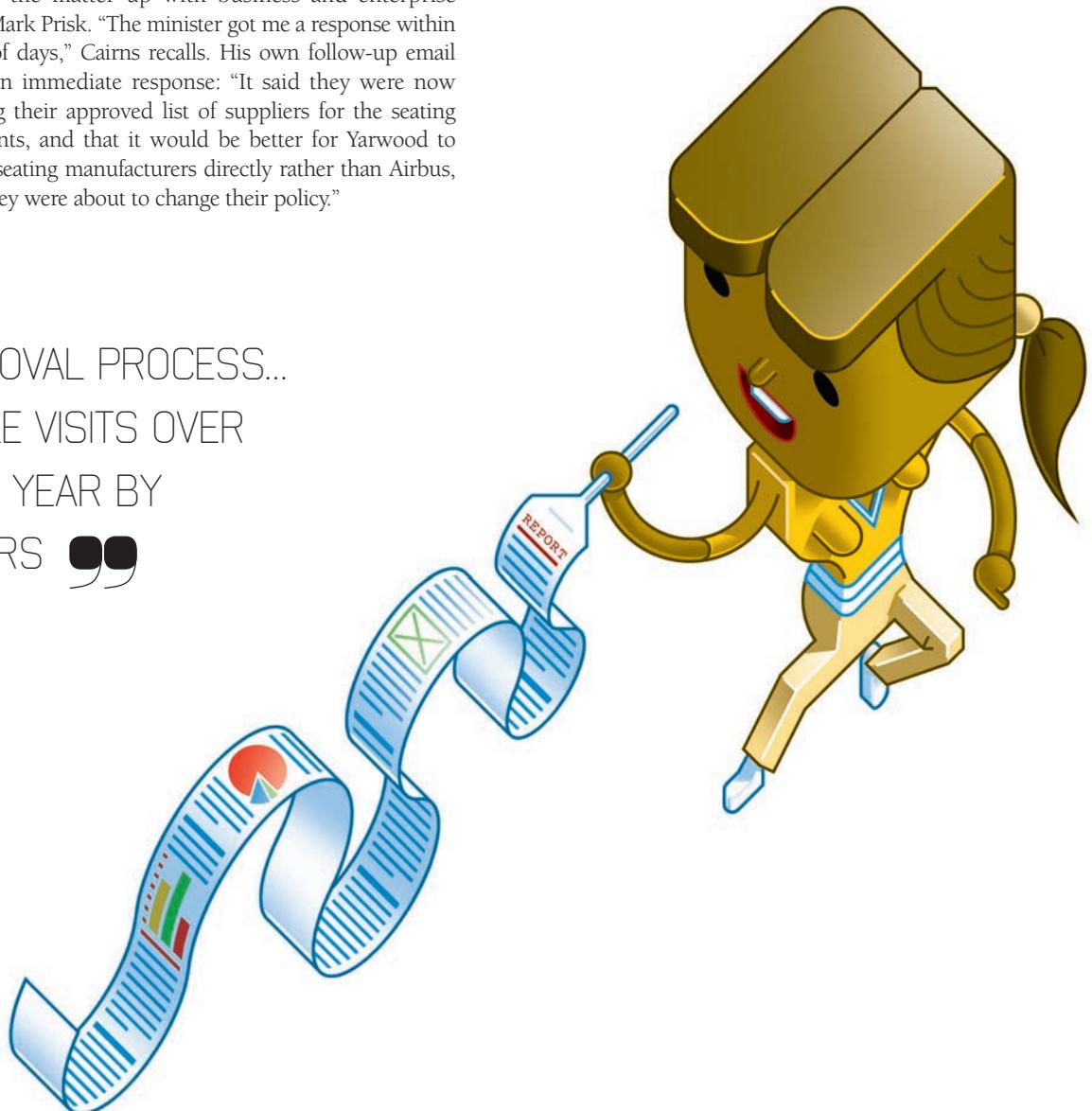
That was fine, says Cairns, "but when Yarwood was approaching seating manufacturers at other airlines that used only Airbus-approved suppliers, it didn't have any documentation or any evidence to prove that Airbus had changed its policy". In October 2011, after another three months without further response, the MP tried a different tack, approaching the Airbus official responsible for UK government relations at Airbus parent EADS. In the end, it was January 2012 before the connection was made.

Given the significant sums of public investment that have gone into Airbus, Cairns contends, "There should be a proactive approach to work with business in all parts of the UK and across Europe. We're not asking for any favours; we just want to be judged by the same standard as every other company and competitor they have."

In the meantime, Nicholls says, there have been some line fits of seats covered in Yarwood leather, including the



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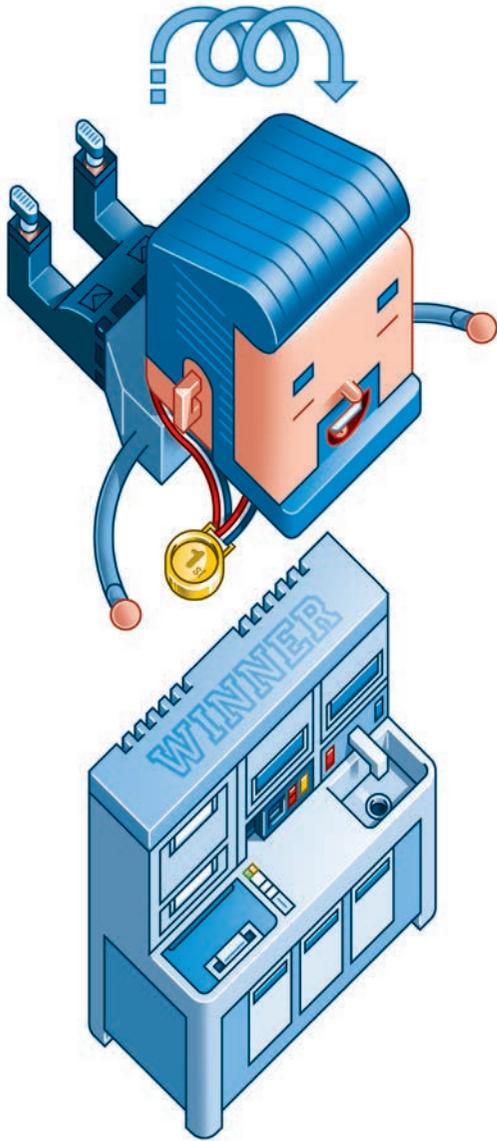
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boeing's view

Boeing's "standard airplane philosophy" for the 787 baselines many features that would have been options on earlier wide-bodies, from dual head-up displays for the pilots to a plug-and-play IFE system. Its catalogue of pre-engineered options, allowing airlines to choose interior furnishings such as preassembled seats and galley inserts, is intended to give operators "the flexibility of choice without the burden of managing myriad individual interior plans".

The Dreamliner Gallery, a purpose-built showroom and office complex, enables airlines to see all the available products, fabrics, colours and surface finishes under one roof, examine variations and make their selection without the multiple intercontinental flights that would be needed to visit each manufacturer's own premises.

The Dreamliner Possibilities catalogue features some single-source elements, such as flight attendant seats from Goodrich and galleys and lavatories from JAMCO. But there are multiple vendors for other items, such as business-class seats by B/E Aerospace, Contour, Recaro, SICMA and Weber, and galley inserts by B/E, Iacobucci, Ipeco, JAMCO, Monogram and Sell.

business-class suite supplied to Swiss by Contour. "Not being on the approved supplier list means the airline has to be relatively forceful," says Nicholls. "Ultimately, Airbus will say, 'it's your choice, but if you do, you'll have to sign a waiver which says that you waive all responsibility towards the aircraft interior specifically for seat cover materials in terms of the liability from Airbus' point of view.' Seat cover materials are a difficult sell anyway. Winning new business from established players can be very difficult, but when you lump in Airbus' refusal to help, it becomes extremely difficult."

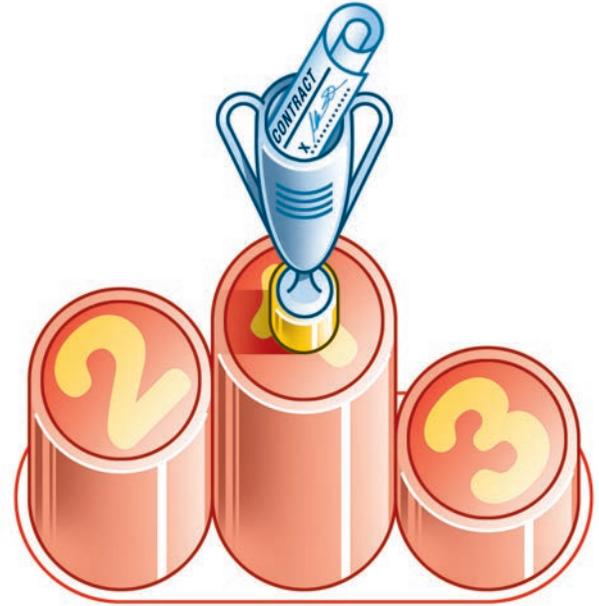
Asked to clarify the situation regarding its approval process for leather, Airbus's Sascha Horatzek, head of purchasing - seats and fabrics, points to a change in policy: "Airbus is not stopping or abandoning its list of approved suppliers," he says. "Airbus is not stopping or abandoning its catalogues. But in the future, we may take the section for dress covers out of our catalogues, because it is regarded as a part of the seat and thus a responsibility of the seat supplier."

Nicholls says this would be more in line with Boeing's approval process, which delegates responsibility for the

choice of items such as seat covers to the seat manufacturers and airlines: "They're getting a bit tighter on 787s because of the Dreamliner Gallery, but what we would prefer is that our preferred choice is whatever is in the gallery, so if you are leather and you're on a seat in the gallery, that makes you offerable as a product. And we're in that because we're the preferred leather supplier for Timco Aerosystems [formerly Brice Seating]."

For the Dreamliner Gallery, he says, Yarwood recently developed an iPad app with 3D renders of the Timco seats that enables prospective customers to experiment with different colours, trims and stitching.

CHAIN REACTION Both major airframers have warned that supply chain constraints are the main obstacle to a further ramp-up in production rates. And some observers, including Air Lease Corporation chairman and CEO Steven Udvar-Hazy, have warned that seats and galleys are in danger of becoming a constraint on supply. Production rates are at their highest ever, retrofit demand has increased again after a recession-induced slump, and there



BOEING AND AIRBUS WANT A RELIABLE, PROVEN SUPPLY CHAIN, WHILE THE AIRLINES WANT GOOD PRODUCTS



should be another new wide-body aircraft in production soon. So perhaps an increase in the number of suppliers would be a useful hedge against future supply problems?

CONFLICT OF INTEREST Chris Brady, commercial director of up and coming UK seat manufacturer Acro, believes the airlines would prefer to deal directly with individual companies, though they do like the protection of the Airbus delivery guarantee. “It all comes down to risk mitigation,” he comments. But there is a sense in which the business interests of the leasing companies and the aircraft OEMs are not aligned with those of the airlines.

“Both the leasing company and the manufacturer are intent on delivering the aircraft on time and fit to fly,” he says. “That’s when their business interest really ends. They’ve completed their contract. But what the airline wants is an aircraft on that day with the best possible seats on it.”

So there is a fundamental misalignment of interests: the day of delivery is the day the OEM’s job ends, but for the airline, it is the day the work starts. As Brady says, “Boeing and Airbus want a reliable, proven supply chain, while the airlines want good products. They’re not the same thing.”

One way of reconciling the conflicting interests, he suggests, might be a two-tier approval system. So while

established suppliers would continue to be fully approved and have the delivery guaranteed by the airframer, alternative suppliers might be accommodated with some risk assumed by the airline: “The OEM might say, ‘we’ve done some due diligence on this company; airlines can work with them, but there are some caveats.’ Maybe the delivery risk could be shifted around.”

STEP BY STEP Customer pressure may be the most likely impetus for the OEMs to add new vendors to their catalogues. But it can take a year to become an approved supplier, which would have to be added to the lead time for the aircraft. “There ought to be an ‘apprentice level’ of approved supplier, so that I can do half or two-thirds of the work for full approval without incurring all the costs and be a standby or boutique supplier,” Brady argues.

“I wonder whether the airlines could have the best of both worlds: big balance sheet stuff from established suppliers and boutique stuff from Acro. At the moment it’s zero or a very high mountain to climb. They could have some tiers on the way up.” ☒

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Co-chief executive Bernard Gustin was visibly enthusiastic during the presentation of Brussels Airlines' new cabin in early January at the airline's headquarters near Brussels Airport. The cabin upgrade will give a new dimension to the term 'passenger comfort'. "Customers boarding a Brussels Airlines long-haul aircraft will have the feeling they are entering a brand new aircraft," he vowed. "If we compare this level of comfort to the product of other airlines on transatlantic flights or routes to and from Africa, we can conclude that we will become a real precursor and trendsetter of quality in terms of seats, relax possibilities, leg room and entertainment technology."

The cabin upgrade is an important step and financial undertaking for Brussels Airlines (SN). The airline, which transported some six million passengers in 2011 aboard 45 aircraft, is investing €30 million this year to revamp the interiors of its wide-body fleet, comprising five Airbus A330-300s and two A330-200s. The refurbishment includes new business-class seats, new economy-class seats and the introduction of IMS Company's seat-centric RAVE IFE system throughout the cabins. Also lavatories and galleys are getting a complete facelift, with hot air ovens making way for steam ovens that guarantee a higher quality food offering.

The comprehensive upgrade project started in 2009 and is part of the company's strategy to strengthen its long-haul network while consolidating its medium-haul operations where profitability is an unremitting issue. SN certainly is not an exception here: virtually all European network carriers, including Iberia, SAS, Lufthansa and Air France, have a too high cost base to effectively compete with budget

airlines. The Brussels-based carrier, in which Lufthansa Group holds a 45% share, added two A330s in 2012 and its growth plan foresees an additional two in 2013, which will lift its wide-body fleet to nine. All aircraft are on operating lease from several lessors.

"Coinciding with our new strategic goal was the thinking that our current product was at the end of its lifecycle," concedes product development manager, marketing, Eric Kergoat. "We have a lie-flat-at-an-angle bed [in business], which is what European carriers like KLM and Air France offer today. So the product is still competitive but we have to do better. We want to be best-in-class on long-haul, not only in business but also in the economy cabin." The best-in-class approach applies to the complete onboard experience, comprising service, seats, catering, lavatories and IFE, he stresses. "We will offer a 360° four-star hotel-like customer experience on board our widebodies."

DEMANDING SUBJECT While SN's current long-haul business class product is comparable to its continental



COINCIDING WITH OUR STRATEGIC GOAL WAS THE THINKING THAT OUR CURRENT PRODUCT WAS AT THE END OF ITS LIFECYCLE



01. Passengers can use their seat control unit to adjust the pneumatic seat cushion or convert the seat into a fully flat bed



SN EXPECTS WEIGHT SAVINGS PER AIRCRAFT DUE TO THE NEW SEATS AND SEAT-CENTRIC IFE TO BE ABOUT 500KG



peers, economy class does not really meet passenger expectations for a full-service European flag carrier. This is mainly owing to the lack of a personal, in-seat, AVOD IFE system. Its wide-bodies still have drop-down LCDs.

Brussels Airlines intends to compensate for this short-coming and will install IMS Company's RAVE seat-centric system, for which it is one of the launch customers. "We evaluated the systems available on the market today and decided to choose a seat-centric IFE system because we believe this new technology is much more reliable and much more cost effective than the classic central-based embedded systems," notes Kergoat, emphasising that "the system is really a win-win for the passenger and for the airline."

The passenger gets "instantaneous access to the content, which is stored locally in the screen, and moving forwards or backwards is much faster [than with the traditional embedded IFE product] thanks to a very user-friendly interface similar to popular electronic tablets. The risk for failure is practically eliminated and on top we can change the screens in some seconds. We will have spare parts on board our aircraft. This minimises the possibility of leaving a customer without IFE throughout the duration of the flight," he says.

- 02. Thompson Aero Seating is providing its staggered Vantage unit in business class - central single seats offer passengers plenty of space when working or eating
- 03. SN has selected 15in touchscreen displays in business class

A major "win" for the airline, besides better customer satisfaction and low IFE maintenance costs, arises also from the "fact there is no penalty for carrying the heavyweight traditional server-based IFE platforms," according to Kergoat. Initial estimates by SN expect weight savings per aircraft due to the new seats and seat-centric IFE will be about 500kg. This represents saving of approximately 1,270 tonnes of CO₂ per year for its wide-body fleet.

CREW CONUNDRUM The airline did some tests with tablet/DVD player devices but "we concluded that it is a difficult and complicated option when you have for example 250 passengers on board. It involves, amongst other things, a high additional workload for the crew," comments Geert Sciote, VP communications. Sciote says just providing the downloadable content for passengers' own devices might be an option in the future but is not a solution yet today: "Also bear in mind that on our African routes, many passengers do not own or do not bring their own device with them on board. Just offering content would mean that the majority of your passengers would not have access to IFE."

Brussels Airlines chose to install 15.3in touchscreens in business class and 8.9in touchscreens in economy class. The content will be available in six languages: English, Dutch, French, German, Italian and Spanish, which are also the six languages of its website, and is provided by Atlas Air.

The new cabins will feature another novel IFE app for the carrier, Lufthansa Technik's 'niceview' moving map system, already flying on Lufthansa's A380.

The carrier opted not to add WiFi capabilities because "our studies have shown that this is not a stable technology yet, for instance engineers are not sure about how many



02



03

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04

wireless access points are necessary for a wide-body aircraft due to the size of the cabin, and we want our new IFE to be 100% reliable,” says Kergoat. Also, there will be no Live-TV when the first refurbished A330 will be deployed “we are working on introducing TV daily news at a later stage,” he reveals, noting an “announcement will follow soon.”

Both business- and economy class-seats will have a headset port and USB power port for recharging MP3 devices and smart phones, while business-class seats will also have a laptop power port and personal video port for watching videos stored on their iPod.

WARM AND CONTEMPORARY Business class will feature 30 seats in a staggered configuration, which sees mixed rows of 1-2-1 and 2-1-2 abreast seating, meaning that 24 seats have direct aisle access and that 10 are “king seats” – i.e. they have no adjacent seats. Thompson Aero Seating’s Vantage seat turns into a 1.97m full horizontal bed and will have a blue LED mood light integrated in the seat at three different points: at the storage, at the foot rest and at the head rest. The light has three automatic modes linked to the seat motion but is also adjustable by the passenger (but not controllable by cabin crew).

The Thompson Vantage configuration was initially designed for and launched by SWISS but “Brussels Airlines is launch customer for the second generation Vantage seat, which is now produced by Thomson Aero Seating. And we are the second commercial airline in the world to introduce

seat success

Brussels Airlines has joined SWISS, Delta and Finnair in plumping for Thompson Aero Seating’s Vantage business-class seating solution. “The Thompson Vantage seat is lighter, has a lower cost of ownership and has a lower cost of maintenance,” says Brian Rogers, Thompson’s vice-president, sales, explaining the seat’s success so far. Vantage first entered service with SWISS, manufactured by Contour under licence from Thompson Aero Seating, however the company has since opened its own factory: “To meet the increase in demand for the Vantage seat we decided to start manufacturing ourselves rather than increase the number of licences,” explains Rogers. “Our facility is based in Portadown, Northern Ireland, production started in July 2011, and we have 60 employees but are currently in an expansion programme.” Rogers says the new company has already won three customers: Brussels Airlines, plus a further two as yet unannounced carriers, “with a number of more deals imminent”. Vantage offers an attractive mix of comfort and efficiency – each seat converts into a fully lie flat horizontal bed, but its staggered design enables a more competitive seat pitch, increasing revenue for carriers. “On a 777-200 you can fit 56 Vantage seats compared with 43 standard seats,” says Rogers. “Those 13 extra seats represents a 30% increase in capacity, which we estimate could generate US\$6 million more revenue per aircraft every year.” Vantage is available for line fit via Contour, however Rogers says Thompson Aero Seating is working to achieve line fit offerability in its own right “in the next two years”.

Lantal’s Pneumatic Comfort System (PCS) on our new business-class seat, after SWISS,” says Kergoat. “PCS gives a unique level of comfort and creates a ‘real bed’ feeling.”

Passengers will be able to control seat position, pneumatic cushion pressure and the in-seat mood light intensity via a latest-generation touchscreen Passenger Control Unit in the arm rest area. A secondary touchscreen PCU is embedded in the head area at sleeping position.

The new economy interior will feature Geven’s new lightweight long-range economy Steezy seat, for which Brussels Airlines is launch customer. The -300s will have 258 economy seats in a 2-4-2 abreast configuration. Seat pitch is 32.8in, seat width is 17.9in and recline is 10.6°. The adjustable headrest is in leather whereas the seats are covered in fabric supplied by rohi. The pattern is slightly different from the one on the business-class seats, but blue and different shades of cream and grey are dominant in the front and the back of the cabin.

The new A330 interiors combine a modern design with a warm, relaxing atmosphere: “The warm colours reflect our positioning as the preferred carrier to Africa and the contemporary design represents our origins of a modern

04. Passengers can charge their own devices and even watch their own media via a personal video port

05-06. Each Vantage seat converts into a near 2m-long fully flat bed

European airline,” explains Kergoat, adding that “the new cabin will have a premium feel and offer the highest comfort standards mirroring our positioning of superior quality, reliability, and service.”

SN decided against introducing a premium-economy: “We are offering a premium-economy product for all economy passengers – we’re best-in-class and consequently there is no need to have a ‘slightly better than standard economy’,” contends Kergoat. “Our economy passengers get a generous 32.8in pitch, complementary meals, alcoholic beverage, blankets and pillows.” In addition, “not one carrier in the Lufthansa Group offers a premium-economy product,” adds Sciot.

NETWORKING OPPORTUNITY Brussels Airlines selected Lufthansa Technik Malta to retrofit the aircraft. The first refurbished aircraft will be placed into service from spring, and by year end all seven aircraft will be fitted with the new seats, IFE, lavatories and galleys. SN’s new daily scheduled services to New York JFK, which commences this June, will operate with the new inflight product and the upgrade will be gradually available on the African network.

SN remains tight lipped which route will launch the new cabin, but is prepared to indicate to *Aircraft Interiors International* that it will be “on one of our most popular routes”. Routes recording the highest load factor and yield include Brussels to/from Kinshasa, which will see more direct flights this year, and Yaoundé (YAO) and Douala (DLA) in Cameroon. Subject to government approval, SN will add two weekly frequencies to YAO and three to DLA, bringing its schedule to six and seven weekly flights respectively. Noteworthy is that its Star Alliance partner and Lufthansa subsidiary SWISS will stop serving Cameroon with the start of the new IATA summer schedule “and thus it is important we offer a high-quality product on the routes,” concludes Sciot.

Overall, SN will operate 90 weekly long-haul flights this year, up 24 compared with 2011, to 22 destinations (21 in Africa, one in the USA) aboard its seven A330s. This equates to 1, 121 million seats offered in 2012, an increase of 23% compared with 2011. ☒

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05



06



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A shortage of engineering resources is threatening to restrict airlines' attempts to innovate in the cabin

BERNARD FITZSIMONS, AIRCRAFT INTERIORS INTERNATIONAL

 Industry figures and politicians alike have been warning for years of a dire shortage of engineers and its potential to hamper innovation and growth. But the aerospace industry's continuing success, exemplified by the combined total of deliveries by Airbus and Boeing passing the 1,000 mark for the first time in 2011, is exacerbating the problem.

UK business secretary Vince Cable opened the most recent Farnborough International Airshow (in 2010) with a speech highlighting the “chronic and terrible” shortage of aerospace engineers and said the scarcity was the sector's greatest challenge. And aerospace is not the only industry being impacted, nor the UK the only country affected. In 2011 Intel president and CEO Paul Otellini warned that a chronic shortage of engineering students, whose numbers have stagnated for 20 years, was threatening the USA's role as the world's leading innovator and impeding its economic recovery.

Engineering, of course, is a tough discipline. According to the American Society for Engineering Education, 40% of science, technology, engineering and mathematics

students abandon their courses after the first year. At the same time, a large percentage of existing engineers are nearing retirement. And with thousands of hours of engineering effort required for ostensibly straightforward tasks such as devising a new installation for an existing seat or designing a new galley, aerospace is particularly susceptible to the consequences.

DEMAND CYCLE Alan Anderson retired from Boeing last year as chief engineer – as he says, “there's no better title in the world” – and director of payload systems. During the 43 years he spent designing Boeing aircraft interiors, Anderson was responsible for the acquisition of engineering and design skills while observing the ebb and flow of demand through many cycles.

“I think the times we're facing now we've seen before,” he says. “There have been many times when design and engineering skills in our aviation industry and in our interiors industry have been in great demand, and when major airplane programmes stack up on each other it can become pretty acute at times.”

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“

WE USED TO BE THE PLACE TO COME AND WORK, AND NOW WE'RE ONE OF THE PLACES

”

The difference now is that there are other high-end sectors attracting top talent: “We used to be the place to come and work, and now we’re one of the places,” says Anderson. “The consumer products industries, the technology industries can be exciting places for people and we have to compete with those to attract the long-term talent we need.”

On the positive side, he says, the digital design tools and analytical methods that have been developed over the last decade or so have made the design process more efficient. “But we have to work hard to find ways to use those tools,” he adds. “I don’t think we’ve found a way to fully exploit them yet. We have opportunities to get more good work done with fewer people, and that will be a very important part of the future in our industry.”

At the same time, Anderson says, “much of the talent inside our airplane interiors world has been home-grown. Lots of companies have brought on skilled people and they’ve learned their craft and trade inside the business. I think we have to continue to remember that and know the investments we have to make in order to have the skills available.”

★ YOUR INDUSTRY NEEDS YOU! ★

RESOURCE INTENSIVE Aerospace products are more engineering-intensive than any others, says Mike Pervan, general manager at New Zealand’s Altitude Aerospace. “As a cost proportion of engineering to a unit price, when we talk to business analysts it’s just a hugely higher ratio than other industries,” he says. “I think that’s quite often not appreciated by the customers and the wider commercial audience – the level of engineering that goes into a single product at a per-unit ratio.”

There are multiple reasons for this, Pervan explains. An aircraft interior has to put safety first while accommodating passengers and helping the airline create some sort of differentiating experience. “It has to be structurally efficient, it has to have light weight and there also have to be high levels of confidence that it’s safe and complies with the very onerous regulations that apply to aviation,” he says.

Altitude specialises in custom furniture for premium cabins on wide-body jets, as well as Boeing Business Jet completions. “One of our basic products is a closet,” says Pervan. “It’s a closet, you put coats in it. But before you

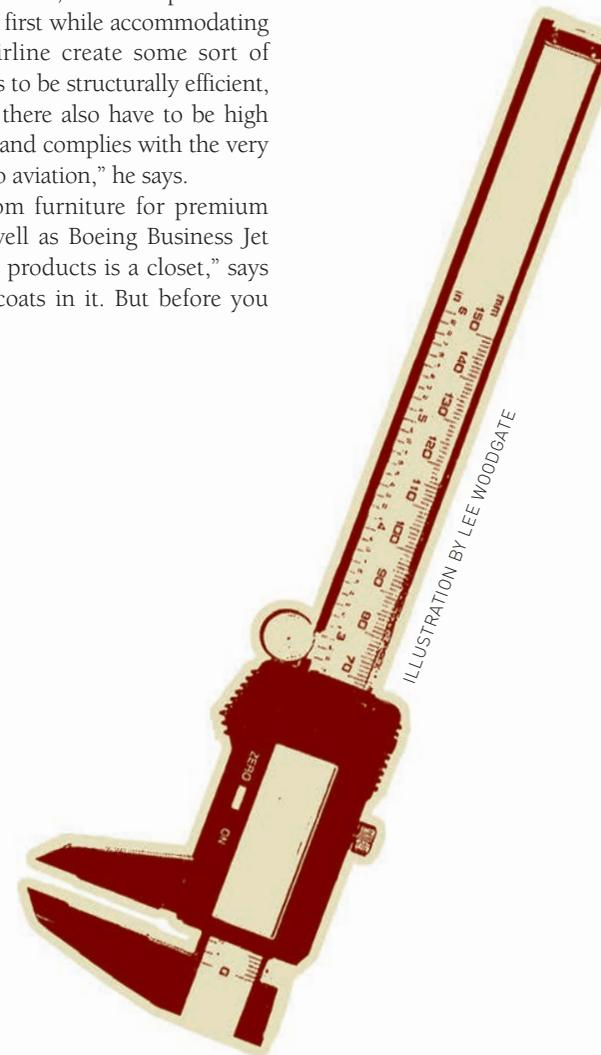


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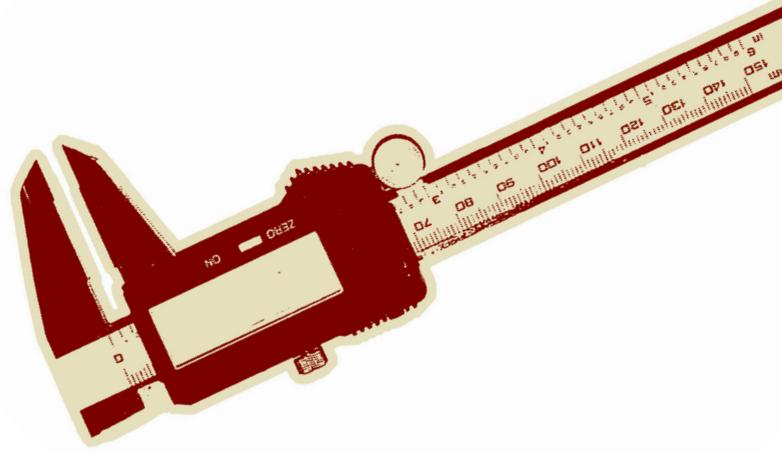
BUT THERE IS DEFINITELY A SHORTAGE OF EXPERIENCED AEROSPACE ENGINEERS



know it, its got to be something that's so light that one person can easily lift it – because you can't afford to add weight to the aircraft – and yet it's got to take huge payload weights. They've got to be able to take bags and oxygen equipment and bottles and all sorts of other ancillary stuff, and there's half a chance they're going to mount a cabin attendant seat to it. So before you know it, this simple closet – that your local cabinet maker could knock up in no time – turns into a highly efficient structural system that also has the cabin attendant's seat mounted and all the safety systems, and the engineering that goes into that suddenly becomes enormous.”

And that is a relatively simple piece of furniture. “When you get into seats and galleys, with the complexity of the system and the safety and weight requirements, you really have to push the limits.”

COMPETITIVE ADVANTAGE Altitude is relatively well placed, Pervan considers: a young, dynamic company in a country that not only produces a good supply of engineering graduates but is also attractive to older engineers with one eye on retirement.



“We look at it as a strategic opportunity,” he says. “The industry we're in continues to grow at a faster rate than global GDP. The demand side is very favourable, with lots of new aeroplanes, all needing interiors. Then you look at the supply side of that situation, you look at materials and tooling and manufacturing facilities, and there really isn't any shortage of those of any consequence or for any duration. But there is definitely a shortage of experienced aerospace engineers.”

One alarming fact, Pervan points out, is that 58% of aerospace engineers are over 50 years old. “So a substantial part of the industry is going to retire in the next 10-15 years, yet demand continues to grow, it doesn't abate,” he says. “And of course we're competing for those with other industries, such as automotive. On many programmes, whether it's big manufacturers like Airbus or Boeing, or smaller players like ourselves, it's often the choke point on the critical path to delivering a project on time.”

The shortage is not necessarily a downside for Altitude, he says. “As a new player in the market we see that as an opportunity, because at Altitude our average age is just over 30 years old, we have a really strong base here



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apprentice approach

Jeffrey Forsbrey, who started as an apprentice with British Airways' forerunner BOAC in 1970 and is now a senior executive with European seating supplier EADS Sogerma, believes apprenticeships are good both for the industry and the apprentices themselves. His specific concern is for the UK skills base, but his views have a wider resonance.

The problem, as he sees it, having started at 16 himself, is that the academic barriers are too high, requiring 18+ or degree-level academic qualifications. "The UK is losing out on a skill base that's there but not being tapped because academically they don't qualify," says Forsbrey. "I think there is a gap in the way we think and 16-year-olds with GCSEs [school exams] can apply for an apprenticeship and still make a contribution to the industry."

Forsbrey's own contemporaries have gone on to be everything from workshop technicians to airline CEOs. "When I was an apprentice there were 350 of us in one year's intake. That was huge, and it's certainly not replicated anywhere in the industry now. All the baby boomers and people my age are going to be retiring in the next eight years. What's happening that's going to fulfil the requirement for technicians?"



ALL THEIR EXPERIENCE WALKS OUT THE DOOR AND RETIRES



regarding engineering schools, and we've been able to grow our engineering base organically to an extent. But it is a constraint on the growth of our business and a constraint on the growth of the industry."

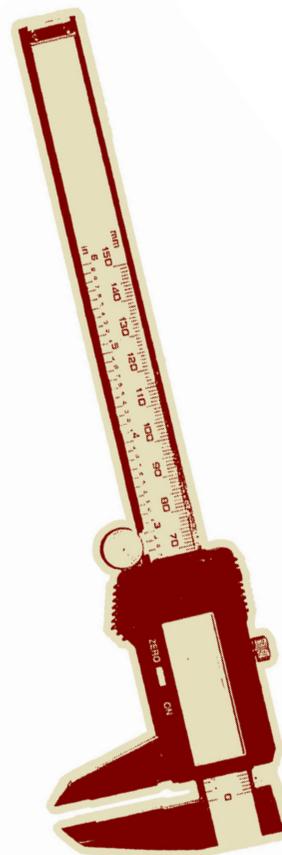
The skills required for interiors engineering cover a broad range of disciplines, including structural, mechanical and materials chemistry. "On the materials side there are a lot of increasingly exotic materials used in our products," Pervan says. "And of course you have electrical and electronics engineers. There's a growing electronic element to interiors, whether it's an IFE system or cabin management systems on the VIP side or mobile telephone networks for the airlines." Probably the biggest group are the mechanical and structural engineers and the engineering designers – "the people who drive the CAD machines" – says Pervan.

Despite both local and global competition for engineering talent, Pervan thinks Altitude has a compelling proposition. "We're a young, fresh, start-up company, charging hard, whereas some of our competitors are possibly a bit more staid and elderly and possibly a bit more focused on an older generation than we are," he says. "We've taken a generational opportunity for a bunch of younger people to get into the industry where there's a huge demographic gap."

Elsewhere the picture is less rosy, with an alarming number of the most experienced engineers likely to retire in the next few years. "For the major manufacturers that's a huge issue," comments Pervan. "All their experience walks out the door and retires. You can't recreate that overnight."

INTERIORS IMPACT Many manufacturers are constrained by engineering resources, Pervan says. And that spells problems for airlines trying to innovate. "As those operators try to do something outside the norm, try to push boundaries – which requires a heavy level of engineering – they are struggling to get the attention of manufacturers who are just struggling to produce and develop and deliver on time their apparently standard products," he says. "If you go back into the supply chain the constraint is engineers. Whether it's seat manufacturers or galley manufacturers or another area such as structural components, it's the same thing."

The major manufacturers have expressed the same concerns, Pervan says: "We're seeing it, everyone's seeing it, so what you are seeing is that the airlines trying to push the boundaries are really struggling to get the manufacturers to want to put their precious engineering resources onto those programmes."





ill wind

One company's shortage can prove another's opportunity. Germany's AIDA Development is a specialist engineering design firm that has worked on cabin projects for Airbus and other companies as well as innovations of its own such as the movable aircraft passenger seat. Now part of international consulting group SII, AIDA stands to benefit from the engineering shortage. But, like Airbus, it can do so only by hiring engineers from abroad.

"For us it's a good situation," comments Heino Krüger, manager of AIDA's cabin, systems and equipment business unit, though he acknowledges that the market for engineers is very tight. "There is some shortage, and of course we do have some chance to cover those gaps," he says. "We hire some engineers from abroad, and so we can deal with it. If there is a request from our customers because they have trouble finding the staff they need, we always try to help and mostly we can help."

The situation in 2011 provided the opportunity to grow, Krüger says: "We can get more business, if we get the right people in. This is the challenge, but we are very successful in recruiting and getting the right people and the right skills."

Pervan also detects an element of inertia. "The industry has become a little bit captured by the complexity of the engineering and certification process such that it struggles to innovate without huge pressure and effort from the customer, and our feeling at Altitude is that's probably not acceptable," he says. "We can't hide behind that, substantial barrier that it is. We have to get out there and do something different and we have to get our engineering back on the horse of pushing the boundaries and adding innovation and making the cabin different."

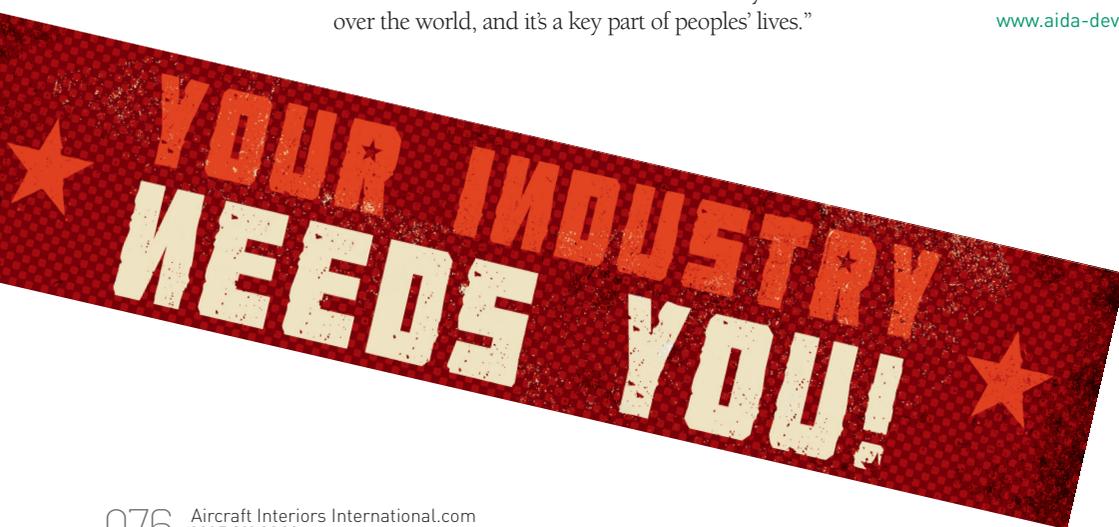
Despite similar calls from some of the more innovative airlines, Pervan considers: "The manufacturing response to date has been rather muted, again because they feel constrained". Altitude's reaction is that that's not acceptable: "You've got to do something different, especially long haul. Travel is an onerous undertaking for the passengers and we have an obligation to try and make that better. More and more of us travel because more and more of us have friends and family and business all over the world, and it's a key part of peoples' lives."

CAREER OPPORTUNITIES Given the competition for talent from other industries, Anderson emphasises the importance of incentives. "I think we also have to make sure that the work we do is challenging and rewarding so that people are attracted to what we do and remain in our business," he says. "We in aerospace have to realise that this is what we were born to do. Rather than wringing our hands we should focus on how we become innovative, challenging and make sure people understand these should be the times of their lives."

Anderson believes the most motivating rewards are the non-financial ones. "The accomplishment of the job, the ability and the need as engineers and designers to do innovative things and create – I think that's actually more important to cultivate than just worrying about monetary issues," he says. "It's not just who can pay the most, it's who can provide the most gratifying career opportunities." ☒

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02



From the moment it entered service on 21 January 1970, the Boeing 747 has offered two of the most unique cabin features of any aircraft: the forward first-class 'Zone A' section; and the upper deck. "The exclusivity of Zone A – no one else has it," says Tarun Hazari, Boeing's regional director of passenger satisfaction and revenue. Other airliners, including Airbus' flagship A380, have an entrance forward of their front section, meaning passengers in other zones have to pass through. On the 747, only Zone A passengers turn left upon boarding. "The upper deck is the most preferred place to fly for business travellers," continues Hazari. "It's just a very, very unique, special place."

Passengers in both spaces feel like they're on their own private jet, rather than an airliner with hundreds of other people, according to 747 brand manager David Okrent: "Even though it's a big airplane, it has these intimate spaces that make you feel that you're being cocooned in a warm environment that's quiet and comfortable."

Perhaps that explains why readers of *Global Traveler Magazine* have named the 747 as the best aircraft for five years in a row, suggests Okrent. Passengers will be relieved to hear that both the upper deck and Zone A continue to be featured on the newest, stretched 747 – the 747-8 Intercontinental. But there also are many changes, largely inspired by Boeing's latest all-new aircraft, the 787 Dreamliner.

DARE TO DREAM During the development phase of the 787 (and as featured in previous issues of *Aircraft Interiors International*), Boeing consulted focus groups, psychologists

guess what's on board

747-8 launch customer Lufthansa may have inadvertently revealed its plans for the Intercontinental last March, when it announced it would cut the number of first-class seats on its 747-400s to eight and give each passenger a separate flat bed, along with a 17in IFE monitor, strongly suggesting that it may install luxurious 'super first class' suites on its new 747s.

The German carrier's 747-8s will also see a new business class. Lufthansa currently only offers lie-flat-at-an-angle seats in business on its long-haul fleet. But the airline has confirmed that the new business-class seats it plans to roll out on its 747-8s from March will convert into completely flat beds, but declined to give any further details on its plans for the aircraft.

After Lufthansa, Korean Air is next in line to receive the 747-8 – its current 747-400s have first-class Kosmo sleeper seats that are 21.1in wide and convert into 78in beds, and feature 17in monitors. In Prestige (business), Korean's 747-400s feature lie-flat-at-an-angle seat beds with 10.4in monitors. Korean declined to discuss its plans for the 747-8, but the new jet will probably match its A380s and extended range 777s, which offer Kosmo suites that are 5.4in wider and feature beds an inch longer than its Kosmo sleepers, with 23in monitors; and lie-flat Prestige seats with 15.4in monitors.

and cultural anthropologists to ascertain the key drivers of passenger satisfaction: "Different cultures around the world describe flying as a magical, mystical, amazing thing," explains Hazari. "So the main thing we wanted to do was to re-excite and re-energise people about the magic of flight. The second thing we wanted to do was create a very welcoming environment."

Boeing's research identified just how stressful the experience prior to the flight can be. The 787's design team therefore decided to search for ways to separate the flight itself from the hassle of getting to and through the airport, which, according to Hazari, "is not the most pleasant experience". Hence the 787 welcomes passengers with an entrance featuring a high, arched ceiling that provides a contrast to the low, narrow jetway – rather like moving from the vestibule of a cathedral to the nave.

The 747-400 offers more of a traditional experience: "The -400 has a lot of straight edges, flat ceilings, lowered ceilings, the staircase is straight," admits Hazari. However, The Dreamliner-inspired 747-8 Intercontinental has an arched, scalloped entry, and blue LED lighting that make the ceiling appear higher: "There are certain wavelengths of blue

01. The upper deck remains popular with passengers due to its 'club like' atmosphere
02. The quieter ambience of the upper deck makes it an ideal zone for sleeping and work

747-8 versus 787

While Boeing's new 787 Dreamliner inspired the interior of the 747-8 Intercontinental, there were some features the Intercontinental couldn't copy. This starts with the new arched entry that welcomes passengers into the 747-8. It isn't as high as that of the 787 for one simple reason: "The 747 is a double-decker airplane," explains Tarun Hazari, regional director of passenger satisfaction and revenue for Boeing Commercial Airplanes. "You can't really have the super-high archway because you've got upper-deck floor beams you're going to hit."

The other big differences have to do with the fact that the 787 has a carbon-fibre composite fuselage, while the 747's is aluminium. As a result, the 787 has larger windows – but windows of the same size on the aluminium 747-8 would require too much reinforcing. "With a metal airplane, obviously, if you punch a hole in the side, you're going to have to beef it up with structure," says Hazari.

Similarly, the 787 allows pressurisation to the equivalent of 6,000ft – some 2,000ft lower than what an aluminium fuselage would bear. And composites allow a level of humidity that would corrode metal. The pressurisation and humidity are not visible, but make passengers feel better.



MEET AND GREET Upon entering the aircraft, passengers will also notice a new purser station to the right: "It's almost like a command centre," says Okrent. The station can be used by the crew to control lighting and the IFE system, but also provides a dedicated location to greet boarding passengers. "People look at them and say, 'There's the guy I need to go to if I need something.'"

The familiar stairway is still there by the door, but now sports a graceful new curve, with two new windows at the top. "The 747 made the staircase iconic," says programme spokeswoman Joanna Pickup. "We've taken the iconic staircase and redesigned it – people like me who sit in economy really want to go up it even more now."

Boeing studied the idea of moving the staircase early on, programme spokesman Jim Proulx says. "But we found we could open the overhead space over the existing staircase without moving it from its established station at Door 2."

The Intercontinental's full-spectrum LED lighting can simulate various times of day, helping passengers to acclimatise to their destination. It can also create lively, rather more unnatural disco-like scenes of pink, purple, orange, green and blue, should an airline wish to create something more dramatic for branding purposes.

The 747-8 also has larger, 787-type bins that hold roller bags on their sides, fitting 58% more baggage than the 747-400, while somehow improving headroom for passengers

03. Integrated mood lighting helps create a more spacious and airy feeling

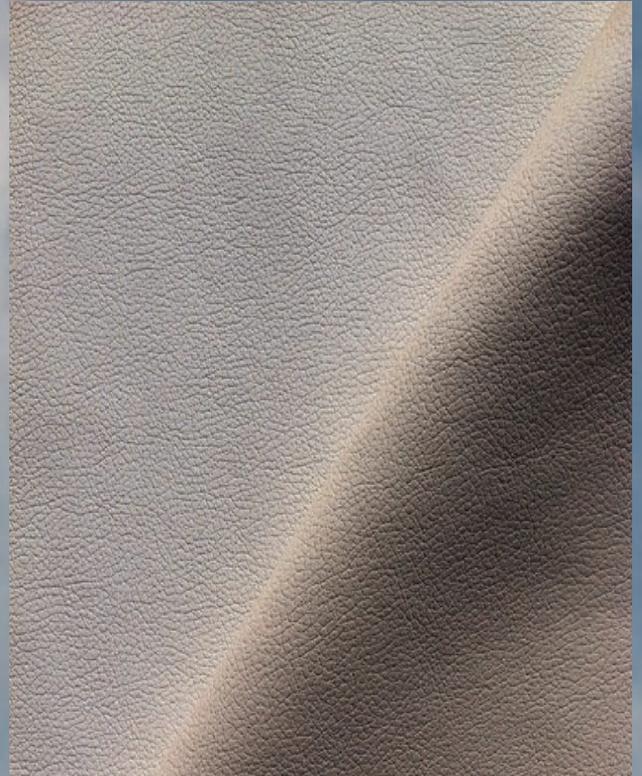
that the human eye can't really focus on," notes Hazari. "I have a hard time telling where that ceiling actually ends."

The result is an entry that feels wider and more airy, says Okrent: "Passengers are going to react to that physically and emotionally in that they're going to feel more relaxed, they're going to feel that they've made it through all of the hassle of getting to the airplane, etc, and this is now a place where they can sit down, relax, feel comfortable and have 'me' time."

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below, with new two-way latches to enhance safety. Hardware, wiring and ducting were moved outboard of the bins to increase storage volume.

While the 747-8 Intercontinental's windows aren't as big as those on the 787 (see 747-8 versus 787 sidebar on previous page) they are bigger than the 747-400's, matching those on the 777.

OFF CATALOGUE The Intercontinental also varies from the 787 with regard to the level of customisation offered to airlines. Boeing executives initially envisioned an all-catalogue approach for the 787, requiring airlines to choose from a menu of pre-certified options. The company ended up acceding to airline demands for some customisation, but the 747-8 Intercontinental will have even more, as it serves routes more suited to first class, with the accompanying accoutrements. "While we will have some catalogue selectable items, certainly we are going to have some more of the unique new and novel type stuff that airlines want," says Hazari of the 747-8.

For airlines, the most-appealing feature of the 747-8 Intercontinental is the 13% more cabin area it offers compared with the 747-400, as a result of its fuselage stretch, which allows it to seat 51 more passengers than the 747-400 in a typical three-class configuration. Yet its new engines and wings give the Intercontinental the same trip cost as the 747-400 (equating to 13% less per seat-mile); while noise is reduced by 30%.

How did Boeing get so much performance from a four-decade-old design? "70% of the structural weight of this airplane is new," says Hazari. "It is essentially a very, very new airplane."

The new passenger-pleasing features will drive demand, particularly from lucrative business travellers, allowing airlines to close down lower fare buckets sooner and boost yields, claims Hazari. "When they see this interior, they see the welcoming experience, they sit in a cabin that's got this beautiful lighting scheme, people are just in a better mood," he says. "We expect a similar surge in demand as there was for the 777."

VIP treatment

One area where Boeing's 747-8 Intercontinental has a big lead over the Airbus A380 is in orders for private and head-of-state jets – with a nine-to-one edge perhaps due to the 747's established image as the aircraft for such VVIPs as the President of the United States. Completion centres also have more experience converting 747s for VIP use, making it easier and cheaper to find slots.

Jet Aviation Basel was the first completion centre to announce a contract a VVIP Boeing 747-8 interior completion, back in December 2010. The company's in-house interior design studio was also awarded with the design of the cabin interior. Following its expected arrival in Basel, Switzerland, in early 2012, the cabin will be completed within 24 months. The completion centre is building a full-size mock-up of the aircraft so the client can experience a 1:1 view of the cabin interior for the final decision-making process.

Meanwhile Waco, Texas-based L-3 announced a VVIP 747-8 aircraft completion contract in February 2011. The company says the interior will feature the latest technologies in entertainment systems, lighting and sound elimination/dampening.

Lufthansa Technik signed its first completion contract for a Boeing 747-8 with an undisclosed customer in May 2011, with the completion due to start in 2012. The Hamburg-based completion expert then announced a second completion contract for a Boeing 747-8 during November's Dubai Airshow.

The first VIP 747-8 customer remains unnamed but reports suggest it will be delivered to the government of Kuwait. And when Boeing showed off the third Intercontinental to reporters in June, it bore markings giving away the identity of its future owner as the United Arab Emirates. As for what a VIP interior costs, don't expect any change from US\$100 million to US\$200 million.



04

04. Will airlines be free to install premium seating beyond Boeing's catalogue?



05



06



ONCE LUFTHANSA'S [PERFORMANCE]
NUMBERS GET PUBLIC, IT'S JUST GOING TO
BE PHENOMENAL



05. Sidewall storage and redesigned overhead bins on the upper deck provide plenty of space for bags
06. The staircase on the 747-8 has been softened with a gentle curve

However, passengers will still have to wait a bit before the aircraft offers connectivity as standard, according to Proulx: "Boeing is actively working with the industry to define the best solution for passenger connectivity, will deliver aircraft provisioned to support connectivity this year and plans to introduce a fully activated in-line solution in 2013."

Of course Airbus' rival A380 has become known for such ultra-luxury options as suites and lavatories with showers. Will the 747-8 match that? "That's up to the airlines that buy the plane," says Okrent. "We look at the 747-8 as a canvas for our customers."

However Hazari says there hasn't been much demand for showers and other novelty features: "You may talk about a shopping mall or a bowling alley or whatever they touted originally [for the A380] but you have to ask what are you going to get for it? Is the airline going to be able to make money with that feature or option?"

Some airlines are interested in suites for the Intercontinental: "We're certainly looking at that, and what the prime locations for them would be."

One distinctive option Boeing doesn't play up these days is the SkyLoft – a section of upper-deck sleeper suites that never drew much interest from airlines. "If an airline wants it, it's certainly something that's feasible," responds Hazari. "As the economy turns around, I could see something like that happening."

Truth be told, there hasn't been much demand for the 747-8 Intercontinental altogether. Boeing has orders for just 36 747-8s – from launch customer Lufthansa, Korean Air, Nigeria's Arik Air and private-jet customers – and 70 747-8 Freighters. Meanwhile, Airbus has orders for 253 A380s.

"We're not in the least bit concerned," says Hazari. "Once Lufthansa's [performance] numbers get public, it's just going to be phenomenal." Hazari also suggests many 747-400s are not yet ripe for replacement, but as they age, more orders for the new Intercontinental will follow. "Those discussions are going to start happening in the next two, three, four, five years," he says. "Furthermore, there are several airlines that have purchased that we haven't announced yet. So there's a lot more good news to come on this airplane." ☒

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definitely maybe

The APEX Technology Committee's High Definition Working Group closes in on a standard, while at least one HD initiative has deployed with limited Hollywood support – but a few obstacles remain

MICHAEL CHILDERS, AIRCRAFT INTERIORS INTERNATIONAL

□ Is high-definition (HD) video coming to in-flight entertainment (IFE)? Can you really tell the difference on a small screen? What about content security – will Hollywood studios support high definition with early-window content? And with HD movies won't the storage requirements limit the number of movies that airlines can offer?

With some constraints, HD has already come to IFE; you can tell the difference on some screens and not others; several Hollywood studios are not yet prepared to support HD with Early Window content; and, yes, HD storage requirements do limit the number of HD movies that airlines can offer.

We could leave it at that – with a very short article. But while these are the core issues, there is more to it than that. One group that is making a difference is the High Definition Working Group (HDWG) of the Airline Passenger Experience Association's (APEX) Technology Committee (TC). Formed in November 2010, and mandated by APEX's board of directors to deliver an HD standard within a year, the HDWG has established the core parameters of a high-definition content delivery specification.





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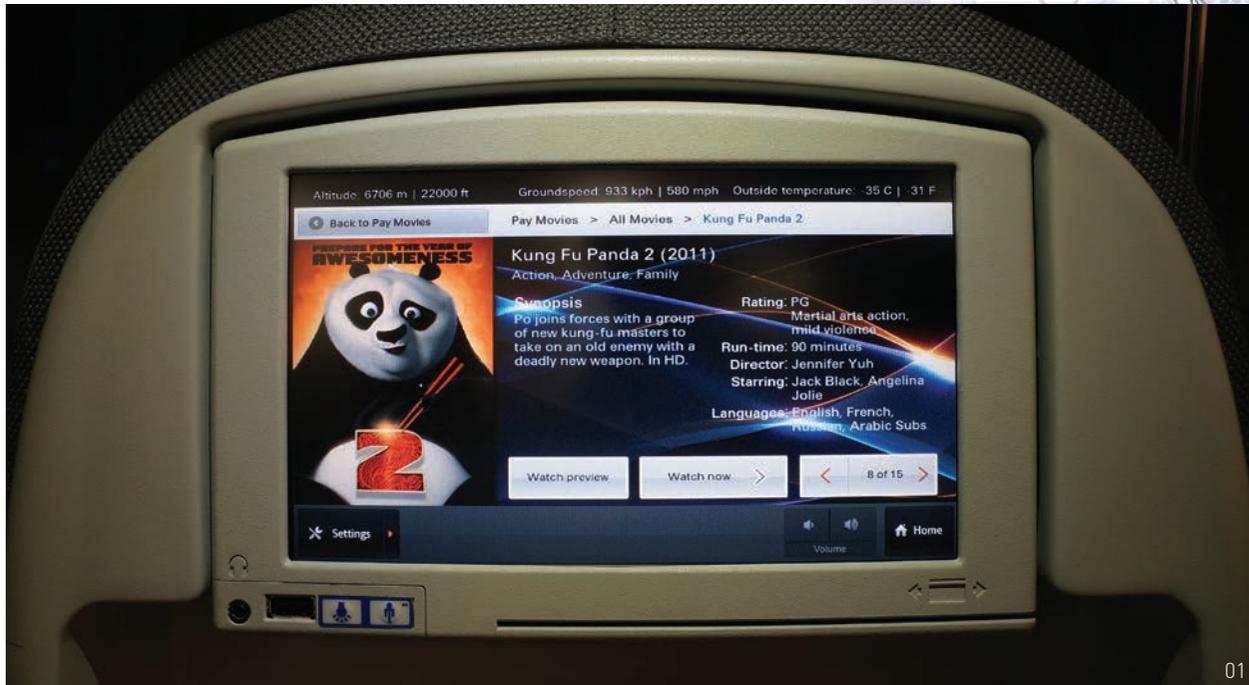
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Wi-PAX \wye'pax\ noun 1. A data delivery network comprised of an ultra-high power content server, electronic data switches and wireless access points (WAPs), for delivery of video and data to airline passengers' Personal Electronic Devices (PEDs). 2. The fully integrated content delivery system comprised of content management, delivery network and secure transaction processing, derived from Lumexis® FTTS®.

[Wi abbrev. from Engl. 'wireless fidelity'; and PAX from Engl. slang for Passengers]

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01



ILLUSTRATION BY JASON COOK

But much work remains. First, these parameters are currently being written into the APEX 0403 digital delivery document by HDWG chairs Pierre Schuberth of Thales, and Bryan Rusenko of Technicolor. Several weeks of drafting remained after the group's last meeting in November at Technicolor's facilities in Burbank, California. The final draft is likely to come to a vote at the next Technology Committee Meeting in May. And second, the group still needs to address the security concerns of some Hollywood studios still reluctant to provide HD content in IFE prior to its release in packaged media such as DVDs and Blu-ray Discs.

None of this has prevented HD from entering IFE, however. Southern California-based Lumexis – whose IFE solution is based on fibre optics – has championed HD in IFE from its inception in 2003, and first deployed HD content on flydubai's B737-800s in November 2010. Built around a uniquely high-bandwidth network throughout the cabin, Lumexis' FTTS (Fiber to the Screen) in-seat AVOD IFE system seems a natural platform for HD, and Lumexis saw it as a marketing differentiator from the beginning.

Despite Hollywood's apprehensions about HD, Lumexis is still able to support its HD offering. According to Lee Casey, vice president of customer programs at Lumexis, "Our airlines are presently requesting about 30% of their titles in HD, but the proportion will continue to increase as more titles become available in the [HD] format."

An increase in the Early Window titles available will be contingent upon the establishment of industry standards, both from a content delivery perspective and from a content security perspective. And while APEX' HDWG is on the verge of codifying delivery parameters, security standards

are more elusive – a circumstance that has characterised APEX efforts to codify content delivery standards from the beginning, i.e., the early 1990s.

Support for HD is clearly in Thales' product plans as well, according to its chief engineer, Ken Brady: "There are some substantial elements that need to be resolved before widespread use of it by airlines will occur. We agree with the recently agreed standards for HD at 720p. The bit rates and characteristics are consistent with a visual product that is compatible with the vast number of LCDs available in the sizes appropriate for in-seat IFE equipment. We are supporting the standardization effort at 1080p as well," he continues. "The equipment and hardware will support both. Whether they make financial and business sense for the airline remains the big question."

Brady says that Thales' plans for supporting HD content on their IFE systems have been underway for some time. "Our participation in the APEX standards activity keeps us informed as to the general direction of the industry," said Brady. "It gives us an opportunity to influence the standardisation activity, and assures us that we will not be caught off guard when consensus for a standard is achieved. Nothing that has been proposed in the [HD] working group is inconsistent with our future plans," he concludes.



OUR AIRLINES ARE PRESENTLY REQUESTING ABOUT 30% OF THEIR TITLES IN HD





02

02. Panasonic's new Altus monitor fitted to a Super First Class suite – gesture control advisable

Panasonic Avionics' new Altus, Elite and Eco series monitors are all HD-capable, and Neil James, executive director of corporate sales and product management, says the company expects to begin delivering HD content "in the short term". "HD is important now and so is part of our current and future product plans," he says, "not just for video but for apps, e-books, games, browsing and more. We have several customers who will launch the Eco monitor this year and next, and we expect that those airline customers will want HD content."

PROTECT AND SERVE Typically, hardware suppliers' participation in industry standards committee efforts have been one part altruism – a sincere effort to develop standards that benefit the broad industry – and one part protectionism.

Lumexis' chief technical officer, Rich Salter, has participated in the ARINC Cabin Systems Subcommittee and APEX's Technology Committee (TC) – frequently as its chair or co-chair – and feels strongly about the need for such standards committees to break away from the limitations of older legacy systems.

"The airline industry continues to be held back by delivery constraints imposed by decade-old network designs," he asserted passionately. "That is why the APEX TC's specification providing the option for HD video to be encoded in MPEG-4 at variable bit rate (VBR) up to 8Mbps



THE AIRLINE INDUSTRY CONTINUES TO BE HELD BACK BY DELIVERY CONSTRAINTS IMPOSED BY DECADE-OLD NETWORK DESIGNS



is so important – slower constant bit rates (CBR) simply cannot provide a true HD experience."

While Salter and others – including Sam Carswell of The IMS Company and this writer – advocated including VBR in the spec for the first time to improve quality, it was the storage improvement capability of VBR that provided the final impetus for its adoption with the HDWG. Carswell reported that IMS' testing had indicated that VBR might save as much as 15% in storage capacity versus CBR.

"Constant bit rate (CBR) encoding has been our standard for IFE," explains Bryan Rusenko, vice president strategy at Technicolor, and co-chair of HDWG. DVD has always leveraged variable bit rates (VBR), where the instantaneous bit rate – the number of bits used to represent any scene – can vary by the requirements to best encode the scene.

"VBR is sometimes referred to as 'constant quality' – something of a generalisation as the maximum bit rate is still retained," according to Rusenko. "We found application for the two clear advantages of VBR: higher overall quality, where the bit rate can be increased during complex scenes; and smaller file size where the maximum rate is no greater, but [the] less complex 'easy' scenes use a lower bit rate leading to reduced overall file size. Each system operator may want to focus on leveraging one – or both – of these advantages, depending on the system architecture and objective," he continues. "Some systems may be unable to realise benefits if VBR is not supported by their design."



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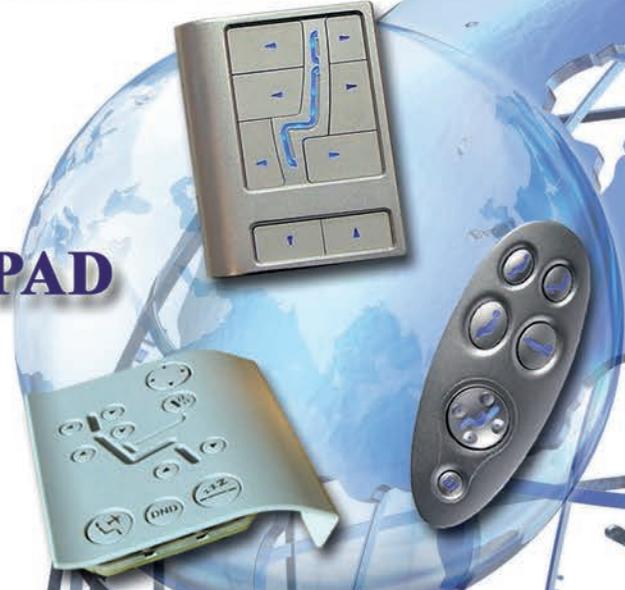
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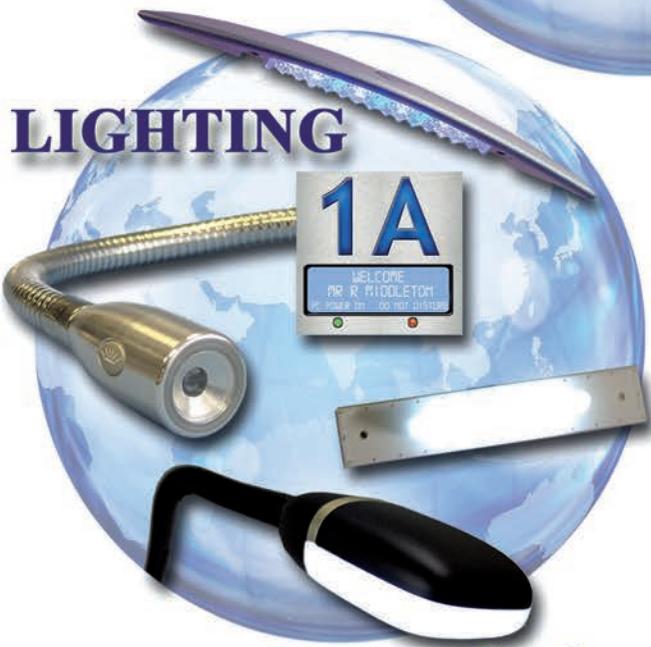
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PICTURE THIS Thales' Brady takes a practical stance when weighing up the importance of display quality versus number of movies: "While current displays rarely support any higher resolution than 720p, there is evidence that a number of displays are going to be available capable of 1080p video," he says. "This move is as much a marketing ploy by the device manufacturers to advertise higher resolution than the competition as it is a true usable quality improvement."

"High resolution carries with it a downside," continues Brady. "The security requirements will be more strict, the direct costs for early-window content may be more, and the file sizes are going to be substantially larger resulting in indirect cost increases in loading time and preparation time."

"The hype over HD could easily decrease the variety of available material and increase the cost of providing it with little or no real, tangible benefit to the passenger," opines Brady. "A good DVD still looks great on my 55in LCD at home. I find it difficult to believe there is any problem with the presentation of the same resolution on a 10in display."

Panasonic acknowledges that "there is a technical trade-off" between offering more quality or a greater quantity of movies. "Our servers are doubling and tripling in capacity and our streams are getting faster and faster in anticipation of the growing need for more and more content in higher resolutions," says Panasonic's James. "Today's passengers expect the same type of HD experience that they enjoy at home, and from devices such as the iPad, iPhone, and Android tablets, regardless of cabin class."

James says Panasonic's new displays offer an HD experience "that is similar and often superior to these types of personal electronic devices; and when you combine this type of performance with early window content, games, etc, it becomes a powerful differentiator for our airline customers." James believes that there will be many airlines that will want to offer HD at every seat.

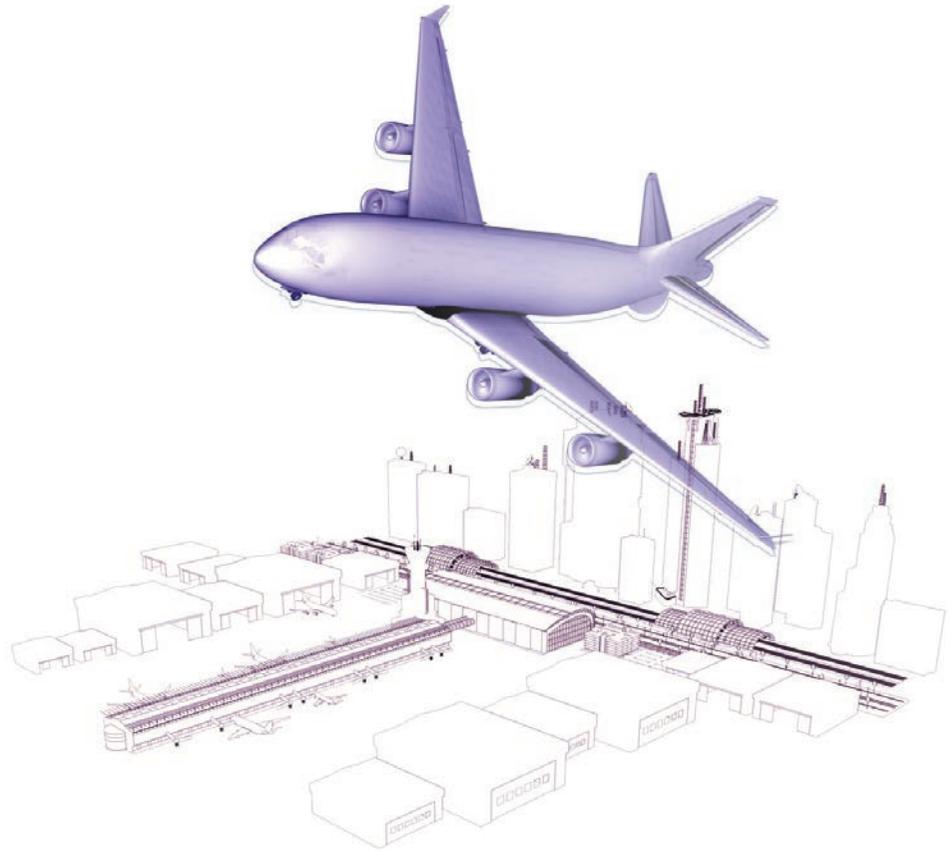
BIT BETWEEN THE TEETH The Best Practices statement covering VBR in the proposed HD spec calls for a CBR range between 4.0Mbps and 8.0Mbps with 4.0Mbps as the default. The VBR peak is set in a range from 4.0Mbps to 8.0Mbps with a 6.0Mbps default. The proposal provides that "when visual quality requires, the default value may be varied from with the concurrence of the stakeholders who may include the compressionist, the content provider, the system provider and the airline."

That language was first used in the latest version of APEX 0403 to address the use of a range – versus a single data point – for bit rates. The objective for many years has been to establish a single parameter for each codified feature to enable the creation of a single encoded file that could be recalled without variance for nearly all uses.

But in reality, the ability to limit the number of encodes created for a single title has been elusive. And the ability to transcode rather than re-encode has reduced the economic consequences of having more than a single version. With file-based workflow, the industry is moving in the direction



“JUST AS VIEWERS AT HOME WANT EVER GREATER RESOLUTION AND CLARITY, SO DO TRAVELLERS IN EVERY CLASS”



of transcoding all files out of a mezzanine file rather than uniquely encoding each version.

The first HD spec to come out of the HDWG will address HD at 720p. This means that the resolution will be 1280x720. It is probable that a 1080p spec – meaning 1920x1080 – will come out of a second effort by the HDWG.

“From my perspective,” Technicolor’s Rusenko observes, “bit rates that we have looked at are adequate in most scenes in 720p (1280x720 @ 23.98 frames per second). The side-by-side tests compared encoded files at 720p resolution at bit rates ranging from 3.5 to 6Mbps. For most scenes,” Rusenko continues, “there was little difference between the encodings.”

“When a scene increased in complexity, either due to motion or great amount of detail, even during static scenes,” Rusenko says, “the lower bit rates degraded in quality. A few scenes degraded at every bit rate we tested. For reference, Blu-ray encodings are usually between 15 and 30Mbps. Our discussion centered on how much visual degradation was acceptable.”

SOUNDS SENSIBLE In order to take back some of the storage capacity sacrificed to the higher bit rate, the working group took a fresh look at audio encoding. “IFE audio encoding by the MPEG-1 Layer II standard has not changed since 1995 when we first codified our original standard,” Rusenko explains. “As we discussed increasing the video bit rate we found [that] some systems had a design limit as to bandwidth. Lowering the audio portion of the file left more room for HD video on legacy systems planned according to

third generation cabin networks (3GCN) guidelines. The equivalent MPEG-4 audio standard, HE-AACv2 (high efficiency advanced audio codec, version 2) provides the same quality at half (or less) of the current 128Kbps,” Rusenko continues. “Incorporating HE-AAC at 64Kbps maintains the quality and frees bandwidth for HD video.”

The HD spec will limit the aspect ratio to 16:9. Content originating in other aspect ratios will be framed in 16:9 under this spec.

The HDWG works in conjunction with APEX’s Digital Content Management Working Group (DCMWG) that focuses on the broad content delivery ecosystem in IFE. Its ruling on a standard can’t come fast enough for passengers with ever increasing expectations: “Passengers love the format,” concludes Doug Cline, CEO of Lumexis. “Just as viewers at home want ever greater resolution and clarity, so do travellers in every class. Especially with airline marketers now selecting minimum monitor sizes in economy class greater than 10in and first-class passengers already viewing 23in or more, you really have to provide HD feeds for the crisp images they are used to at home.” ☒

Michael Childers is chief consultant, content and media strategy, for Lufthansa Systems. He is also a member of the APEX Technology Committee’s Leadership Team and has chaired the Digital Content Management Working Group for more than 10 years. He is also APEX’s liaison to the MPEG Industry Forum.

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Bombardier's CSeries is a great example of clean-sheet thinking. Finally on its way to market, we spoke to Bombardier and C&D Zodiac, the collaborative team behind the innovative and integrated cabin design.

It's obvious really, but when a good design team is allowed access and freedom to influence all aspects of a project – including how the shape of the fuselage impacts on interior room – the potential for a more unified end result is much greater. So it would seem was the case with the Bombardier CSeries due to the massive influence of C&D Zodiac's industrial design and mock-up shop – now called Zeo – in developing the whole cabin.

The product of a long gestation, 10-12 years ago Bombardier started its research into narrow-body aircraft that could do a better job in the 100 to 150-passenger segment. As Rob Dewar, Bombardier vice president and general manager for the CSeries, recalls: "In our opinion, the 100 to 150-seat market was not served sufficiently either by downsized Boeing and Airbus products or upsized ones from other players."

With some market reports estimating the segment to be worth nearly 20,000 aircraft and US\$250 billion over 20 years, it's clearly a big target to aim at. To succeed, Dewar knew he needed an aircraft that would stand the test of time: "We wanted a cabin for the future, a platform to last two or three decades."

Luckily Bombardier had a clean sheet of paper to work from and a trusted design partner to work with, in the shape of C&D Zodiac, from first research right through to final production. As Scott Savian, EVP customer & product at C&D Zodiac boldly claims: "We offer complete process and product capability, from industrial design to engineering to production. It's a unique perspective in the aero industry to be able to manage all three."

Due to a good previous working relationship, Bombardier's Dewar says the manufacturer gave C&D Zodiac the chance to apply all these skill sets to the whole CSeries cabin where normally there might be six or seven different suppliers. "We wanted a turn-key solution for the

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01

01. The C Series mock-up shown at last year's Paris Air Show included leather seating fitted with IFE from Panasonic
02. The seats are Weber's popular 5751 units

whole interior, which we believe allowed C&D the flexibility to get on with the job."

A great commission for C&D Zodiac no doubt, but a brave decision from Bombardier too, effectively putting all their eggs in one basket on what was to become the design firm's first complete interior project for an OEM.

TALL STORY Starting from mid-2004, around 50 virtual cabin iterations were made, including some with three rows of two seats divided by two aisles (2-2-2) and more conventional single-aisle layout with two seats on one side and three on the other (2-3).

Emphasis on space maximisation and ease of passage and use by all sizes of passengers was key as Dewar only half-jokes: "I'm 6ft 11in – a 95th percentile human – so I made sure I could fit everywhere in the cabin but it was



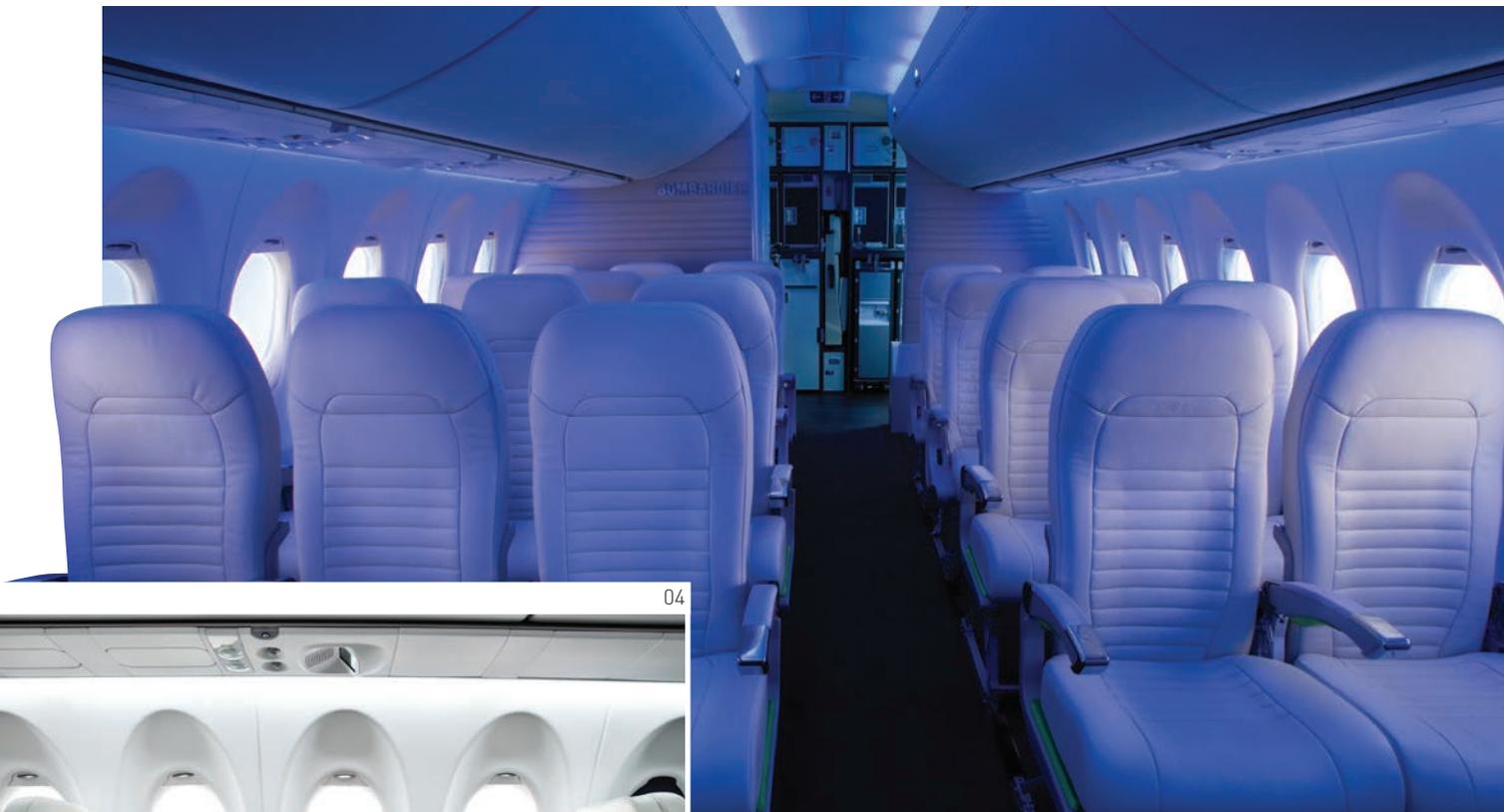
02

one software fits all

"It's crazy that nobody else does it all in CATIA," exclaims Scott Savian, EVP Customer & Product at C&D Zodiac, believing his firm is the only design group to use 100% CATIA software (from Dassault Systems). He explains: "Up until recently, it might have been considered restrictive in its creative abilities, and a little price-restrictive [for industrial design firms that do other kinds of work and don't need to use it all the time] but CATIA surface modelling is now as good as any, and we're committed to it. It gives us a unique advantage as the stuff our design group does goes straight to tool and engineering with no conversion and the associated 'lost in translation' issues of cost and time that can create. We've done five mock-ups with Bombardier and we really learned from those, they're not just pretty demonstrators. How we integrate the systems behind the A surfacing is all figured out through CATIA in-house."

“

I'M 6FT 11IN – A 95TH PERCENTILE HUMAN – SO I MADE SURE I COULD FIT EVERYWHERE IN THE CABIN ”



04



03

- 03. Economy cabin – each seat is 18.5in wide, apart from centre seats, which are 19in wide for more comfort
- 04. Larger windows at eye level improve the onboard experience

equally important that the space would work for someone only 5ft 4in too.”

Areas paid particular attention to included the size and positioning of the windows, seats and storage bins, the width of the aisle and even the height of the front lavatory (so taller people could stand up straight). At this stage, remarkably even the shape of the fuselage was up for discussion, before five mock-ups were built, including two radically different proposals. According to Dewar, one had a fully circular cross-section fuselage (and was the cheaper of the two options) while the other – and finally chosen configuration – was a ‘multiple-bubble’ fuselage where the overall shape was dictated by interior space. “Normally outer seats by the window are compromised,” says Dewar, “but we were able to modify the contour of the fuselage to gain two inches of extra shoulder width.”

MOVE TO THE MIDDLE This lateral thinking from a passenger perspective was also applied to the seats. The middle seat on three-seater layouts is traditionally the least comfortable and therefore least desirable. And with the average human now bigger than in decades past, Bombardier decided to make the middle seat more

appealing by making it wider than the two outer seats – 19in versus 18.5in. Indeed both types of new C Series seats are significantly more spacious than regular 17in seats on regional jets. Knee room between rows has also been enhanced by 1.5in due to a newly sculpted back – previously many were straight – and the view out of the window has been improved too. Bombardier C Series windows are bigger – expanded to 11 x 16in – offering four inches more height and an extra inch of width.

To enhance the view for all heights of passenger, the centre of the windows has moved up by an inch, with three inches added on top and one inch at the base. Every seat row has a view of one and half windows. “Compared to conventional aircraft this is unique within the industry,” says Dewar. “Normally a few rows are compromised by the routing of the electrics.”

Another claimed ‘first’ for this size of aircraft is a rear lavatory with a window and a two-stage double-hinge door to allow wheelchair access. The galley areas and mood lighting were also designed to be highly customisable for individual carrier specification.

To aid turnaround times, the single aisle was widened, while the overhead bins above the two-seat area were made 25% bigger to accommodate three standard IATA-size 22in roller bags. Given that the trend for customers wanting to keep their baggage with them looks set to continue, Bombardier has made the bin above the three-seat section cavernous enough to take a super-sized IATA roller bag plus a standard 22in bag. This could allow carriers to charge passengers who want to take bigger bags on board or offer the option as a free perk to business-class passengers. The conventional cargo bay has also been made bigger too.



Zodiac Seats

Sicma - Weber - ZS California

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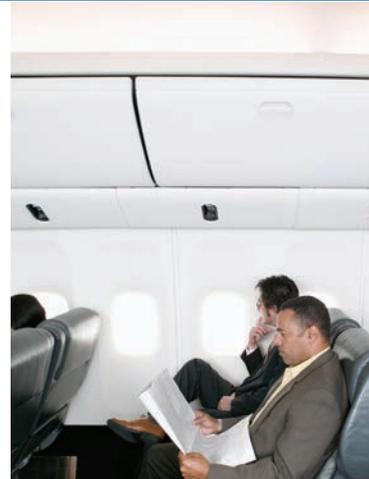
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new eco materials

The C Series features two new interesting materials: one a cost saver, the other 'greener'. C&D Zodiac's Scott Savian says the C Series was originally due to use more carbon fibre but C&D found it too expensive for Bombardier's cost targets so devised a new glass composite instead for the galleys and elsewhere. "We developed some structural glass products – they're typical composite panels but they've been optimised – they simulate the strength of carbon fibre without the cost and at the same weight. It's still a composite but just an optimised glass one rather than a carbon fibre one."

Another exciting product adapted for the C Series is a recyclable thermoformed liner system to replace old phenolic composites. "It was an existing material Ford used as an automotive interior lining panel on the GT supercar," Savian explains, "but we developed it for aircraft certification and this is its first aeronautical use. It's super exciting as we're actively bringing it to Boeing now. Existing liner and sidewall panels are not the prettiest products to manufacture [from an eco point of view] and eventually become landfill. We're currently producing hundreds of tonnes a year of this material but this new recyclable product should replace it in years to come."

To benefit those not tall enough to see into the bins, the circular bucket rotates downwards about one foot, and when closed, intrudes less into the cabin to improve the feeling of space. This style of bin opening has featured before on wide-body aircraft, but C&D Zodiac's Savian says it is a 'first' for a narrow-body. He says such a mechanism is usually more expensive and heavier but the design team found a way to make the overall package a similar weight by making savings elsewhere. For example, the structure that supports the bin bucket is made out of lighter weight carbon fibre.

INTEGRATE AND OPTIMISE Crucially, this potentially costly decision was resolvable precisely because C&D Zodiac was in charge of the design and engineering of all of the parts around the new bin rather than buying them off the shelf. Thus it could look at solving the problem in a holistic way. As Savian puts it: "Normally such parts optimisation between suppliers is very hard as effectively you have to persuade different companies to trade weight and cost.

When we were pushing for this pivoting bin solution rather than a fixed one – before we'd even done our first full mock-up – where other aircraft manufacturers might have killed such an idea, Bombardier's then EVP Gary Scott made a special effort to visit us and was convinced to push it through despite it being the potentially more expensive option at the time. As it turned out, we made up the savings elsewhere later, but to have that high level executive involvement from Bombardier so early on in the project was absolutely awesome."

This joined-up design approach meant C&D Zodiac was able to integrate the lighting, air distribution and electrical systems within the overhead bin unit, creating major time savings when fitting the aircraft. "Typically these items would be treated separately as they are certified separately and involve multiple steps and many suppliers," says Savian. "But there's nothing to say one supplier can't do all these things. Now when Bombardier installs the 22 bins on the C Series, all the other systems are installed with it." Multiplied across a whole aircraft, Savian estimates this can

- 05. The C Series will feature recyclable liners, made of a material first used in the Ford GT supercar
- 06. Entrance area monuments
- 07. The lavatory has been designed with disabled access in mind



08



09



- 08. Single/dual head-up displays feature in the cockpit
- 09. The flight deck also features five 15.1in LCD displays

make an install three times as quick and involve 50-70% fewer components too.

Integrated is good, but couldn't that affect assembly and maintenance issues if any of the individual parts fail and then become harder to reach and fix? "No, it's actually really neat," continues Savian. "Take the bin for example. If a light went out there that lit up the ceiling, we've designed it to make the light directly accessible – it's a very quick line replacement unit. Bombardier came up with a maintenance cost target for the entire interior. It was an aggressive requirement but since we owned all the components we could optimise the overall solution not the individual one. If you want to get to the lights, wiring harness or the environmental control system when you swing the bin down you have direct access. Typically on other cabins you'd have to remove the bin first, so it's a big win."

“ WE’VE DESIGNED IT TO MAKE THE LIGHT DIRECTLY ACCESSIBLE ”

INVENTION FROM NECESSITY Dewar says the project was “99% nailed down in late 2005 in terms of the cross-section” but in January 2006 Bombardier announced a ‘go slow’ on its plans due to a lack of orders from carriers. This gave the small team that remained working on the project a chance to reconsider some of its detail. Two crucial changes were new full carbon fibre wings and new Pratt & Whitney geared turbofan engines that Bombardier says helps make the plane much quieter and more fuel efficient – a 20% fuel-burn advantage – with up to 20% fewer CO₂ and 50% fewer NOx emissions.

At the same time, new lighter weight seats were developed that reduced the usual 11-12kg per seat to 9kg while lighter carbon fibre and other composites were implemented where previously aluminium and other metals would have been used. Dewar says Bombardier’s centre of excellence in Belfast, Northern Ireland was crucial in assisting these changes, claiming the site to be a “world leader in the use of composites”.

Formally re-launched in June 2008, the C-Series now offers two options: The CS100, catering for 100-125 passengers in three modular seat densities; and the CS300, able to take between 120 and 145 people, also within three configurations. The revised aircraft boasts operating costs 15% better than rivals and has upwards of 150 orders with first flights due in 2012 and first deliveries in late 2013. Boeing’s 737, Airbus’ A320 and Embraer’s E-Jet series may not be troubled by those figures today but Bombardier is now at least finally ready to challenge in the narrow-body sector with an aircraft that may yet change the game. ☒

CONTACTS
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friend or foe

First perceived as a threat to embedded IFE, and then deemed too complicated to repurpose, consumer tablet devices are slowly working their way back into the cabin conversation

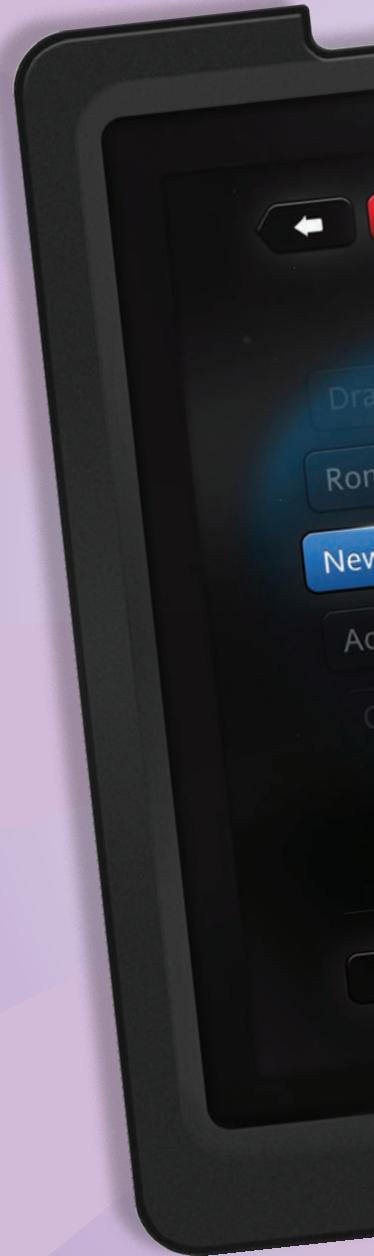
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When Australian low-cost carrier Jetstar announced nearly two years ago that it was opting to use iPads for in-flight entertainment (IFE), one of its executives mused that traditional IFE would not survive this exciting new platform. But faced with greater-than-expected challenges in repurposing the device so that Hollywood would approve it for early-window movies, such ebullient optimism soon waned and doubts about the suitability of such devices for use in IFE re-emerged.

That was then, this is now, and not only are iPads and Samsung Galaxy Tabs finding a mainstream role in IFE, once again pundits are asking whether tablets spell the end of embedded IFE, with an ongoing LinkedIn discussion string recently bringing out both sides of that argument – and finding some sensible middle-ground in which the marketplace has use for both.

In November – leaving most of its earlier issues behind – Jetstar launched its iPad2 tablets with the iOS5 system. Its original plan was based on the iPad1, but the iPad2 and iOS5 proved far friendlier to its content protection objectives – even if it did mean retooling the protective housing. Three thousand units were scheduled to roll out before Christmas, with additional units to deploy in early 2012. Four of the six Hollywood studios are providing early-window content at launch, with Jetstar's content service provider and consultant on the iPad project – Stellar Inflight





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it's complicated

More and more fliers – like actor Alec Baldwin – are ignoring flight attendants' instructions to shut down electronic gadgets such as iPads during take-off and landing, according to an investigation by USA Today. The report says that while individual devices are unlikely to cause electromagnetic interference, the cumulative emissions of dozens or even hundreds may be a different story. The US FAA said that pilots' use of iPads "involves a significantly different scenario for potential interference than unlimited passenger use...."

– expressing optimism that remaining studios would soon capitulate.

And airBaltic, which claimed to be the first European airline to use iPads in IFE, announced in December that it has recorded 30,000 hours of iPad usage per month with 10 iPad2 devices available on each flight. It should be noted, however, that airBaltic deployed iPads without the benefit of Hollywood early-window movies, thus sidestepping the major security obstacle faced by Jetstar and others.

In December, American Airlines was responsible for two milestones involving tablets. American became the first airline in the world to be fully FAA-approved to use iPads during all phases of flight, including take-off and landing. The ruling, however, applies only to the flight deck – not to passengers, nor even Alec Baldwin (the actor who was ejected by American Airlines for non-compliance) – who are still required to shut down any devices with an electronic pulse of any kind from the moment the aircraft leaves the gate until it reaches 10,000ft. The holy grail of gate-to-gate connectivity remains elusive, and frustrated passengers wonder why it's OK for the flight crew but not them (*see sidebar*).

On the flight deck, American's pilots use the iPads as electronic flight bags, i.e., electronic chart and digital flight manual platforms. American will begin iPad flight deck operations on B777 aircraft and will then implement the programme across all other fleets. The use of electronic

charts and manuals enhances safety and efficiency, says American. It has been reported that a 1.5 lb iPad replaces about 35 lb of paper and saves an estimated US\$1.2 million worth of fuel per year.

And in the premium passenger cabin, on 14 December, American became the first North American airline to offer a branded tablet on board its aircraft for IFE. While the pilots on the flight deck are using iPads, American's passengers in its first- and business-class cabins on certain trans-continental and international flights began using the Samsung Galaxy Tab 10.1 device, replacing the earlier portable entertainment devices on those aircraft. American obtained 6,000 of the ultrathin devices.

During the initial rollout, passengers can choose from over 70 movies, including 30 new releases, as well as a variety of television programmes.

The interest in the repurposing of consumer electronics technology for inflight use was the subject of an APEX-led panel at the 2012 International Consumer Electronics Show (CES) in Las Vegas in January. In the advance marketing for the event, reference was made to "sweeping statements that tablets will replace conventional embedded IFE systems," suggesting with considerable understatement that "these statements may well be too binary in their outlook".

GIVE OR TAKE There are significant differences between tablets provided by the airline, and tablets carried on board by passengers. From the Hollywood studio perspective, airline-provided tablets are significantly more secure – if properly repurposed – while passenger-owned devices are infinitely more suspect. "The airline-supplied devices... are a lot more palatable as our security group gets to test them and [we] are a lot more comfortable that content won't go walking off the device and get pirated," says Richard Ashton, vice president of non-theatrical at Sony Pictures.

Warner Bros' senior vice president, Jeff Crawford, mirrors that position: "If the airline controls those devices and they stay on the aircraft the whole time – and have extra security... we'll do early window. But if that passenger device is your own personal device and can walk off a plane,

01. American Airlines' new 'paperless cockpit' initiative sees iPads replace flight manuals and maps



01



IN THE PAST, I'VE OFFERED LIBRARY CONTENT THAT'S BEEN OUT ON DVD FOR A WHILE – IT DOESN'T SELL WELL



02. American's Galaxy tablets come loaded with over 70 movies, as well as TV and music options

then we're doing late window [referring to post-packaged media release].”

“Tablets will be quite widespread over the next five years,” adds Mark Horton, vice president of non-theatrical distribution at Paramount Pictures. “To the extent that they enable the use of content on aircraft that today have no IFE, we're excited about it.” However, Horton cautions that “early window content will continue to be an essential part of the [IFE] experience”.

Though their window is shrinking, early-window movies remain a significant differentiator between the kind of content the airline can offer and the kind of content the passenger carries on board, which is one reason that airlines won't be turning content procurement responsibility over to passengers any time in the near term. At an APEX Technical Committee Meeting in November, Alf Veretto, manager of IFE content for Virgin America, said that early window “is still the major product on board our aircraft. If you look in the past, I've offered library content that's been out on DVD for a while – it doesn't sell well.”

American's Samsung Galaxy Tab 10.1 devices were repurposed for IFE by The IMS Company, a long-time systems integrator and provider of handheld IFE and content loading services for American. IMS has always focused on consumer-off-the-shelf (COTS) repurposed for IFE versus purpose-built handhelds such as those produced by competitor digEcor. IMS's deployment of these devices is the first IFE deployment of an Android OS-based tablet.

When asked its opinion of whether tablets will kill embedded IFE, or whether they are complementary solutions, an American spokesperson responded by saying that customer demand and feedback will ultimately determine that, but “at this time, we cannot say whether tablets will replace in-seat entertainment”. In the meantime, however, “the Samsung Galaxy Tabs will be enhanced with additional tablet functionality and content will be rolled out

in subsequent phases over time, beginning in the first quarter of 2012”. The additional functions include WiFi capability, games, and eReader publications.

The airline also declined to say whether the Galaxy Tabs will be increased beyond the initial 6,000 units. However, American has been a leader in providing apps for smartphones and tablets that enable the use of mobile boarding passes and flight status updates, so this form factor is very much on their radar.

PLATFORM GAME IMS says that it has now changed its focus from 'device-specific' to 'platform-specific' in its COTS repurposing efforts, enabling new tablets using the Android OS platform to be more easily repurposed for IFE use. In the current generation of consumer media devices, with much of their value generated by the volume of applications support, operating systems take centre stage. Consumers have developed familiarity with Apple's iOS system and Google's Android OS and are drawn to these operating systems by this familiarity and the plethora of apps that only such ubiquitous operating systems support.

Consumer familiarity with these OS platforms has also resulted in their use by IFE systems providers such as Thales and Panasonic, anxious to duplicate the consumer experience on board. The Android OS will be used to provide IFE on the Boeing 787 Dreamliner. Every 787 that went into production last autumn will have an Android-



02

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based server and touchscreen from Panasonic or Thales in screen sizes that range from 9-15.4in, and for the larger screens in premium cabins, the system will reportedly be gesture-based – since the distance between the premium passenger and his/her screen precludes touchscreen control.

In addition, according to IMS CEO and founder Joseph Renton, these operating systems represent continuity and evolution. This is particularly true of content security, which increased dramatically from Apple's iOS4 to iOS5 and from Android's Honeycomb to Ice Cream Sandwich.

Content security experts at the major studios say that each new release of these operating systems offers a higher level of content security than the one before. The same experts also say that as consumers and systems integrators are increasing their focus on these ubiquitous operating systems, so are pirates. So while these operating systems are constantly increasing content security, pirates are constantly increasing the threat level. Hence, the content security developed by IMS for the Samsung Galaxy Tab 10.1 and by Lufthansa Systems for iPads and other devices is – and must be – significantly stronger than previously required on devices such as ARCHOS.

PRACTICAL TEST The momentum of COTS repurposed tablets raises the question of their impact on the future of purpose-built media players, which some observers suggest

deployment race

The UK's Bluebox Avionics was the systems integrator for Jetstar's iPad project, and Stellar Inflight was engaged as a consultant to oversee the project. With 3,000 iPads in the process of being deployed, this will be the largest iPad deployment to date in IFE.

Southern California's The IMS Company was the systems integrator for American Airlines' Samsung Galaxy Tab. With 6,000 units, this will be the first Android OS deployment in IFE, as well as the largest tablets deployment to date.

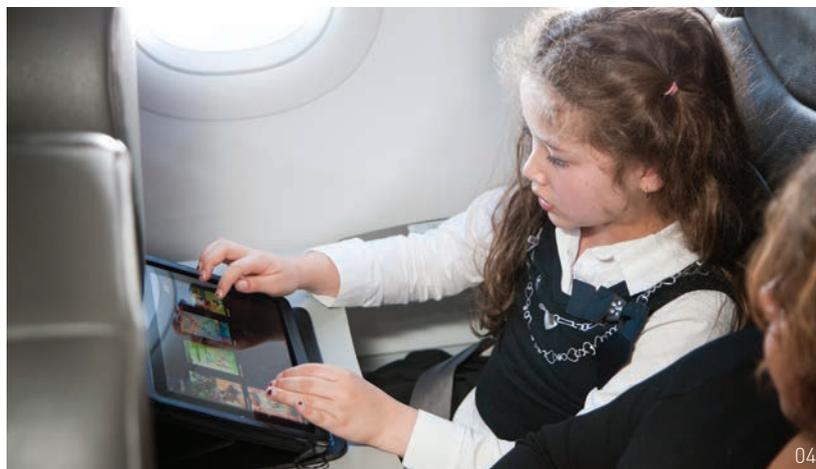
A number of airlines have deployed iPads on the flight deck or for crew applications. At this writing these deployments, which include United Airlines, Alaska Airlines, American Airlines and ANA, involve more units used in the flight deck and crew than for passenger IFE. However, with Virgin Australia and Qantas trialling Lufthansa Systems' BoardConnect using iPads as the clients, iPads in the hands of passengers will bypass crew applications rather quickly.

may be out of fashion long before embedded screens. DigEcor's Adam Williams ripostes this notion, saying: "The decision between a COTS solution and a purpose-built PMP has really become one of brand association versus practicality. Some airlines want to align their brand with that of Apple's or Samsung's. However, COTS devices are not

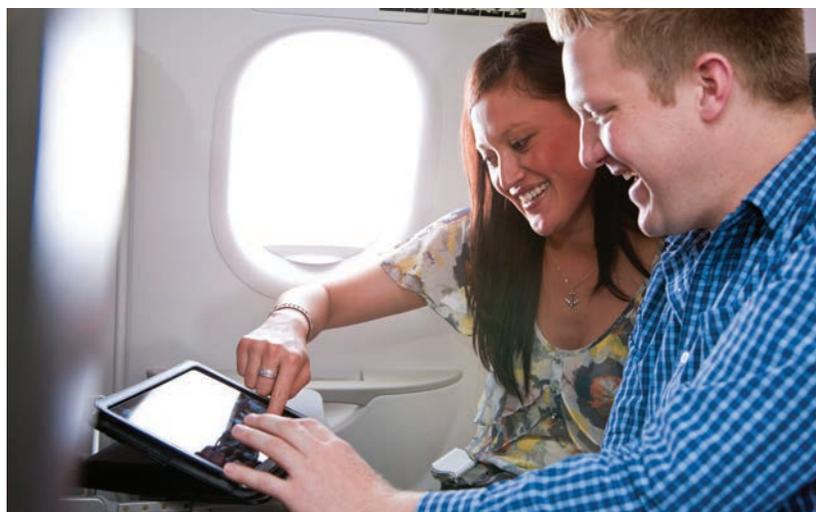
03-05. Jetstar passengers flying longer than two hours can hire an iPad from AU\$10-15 per flight



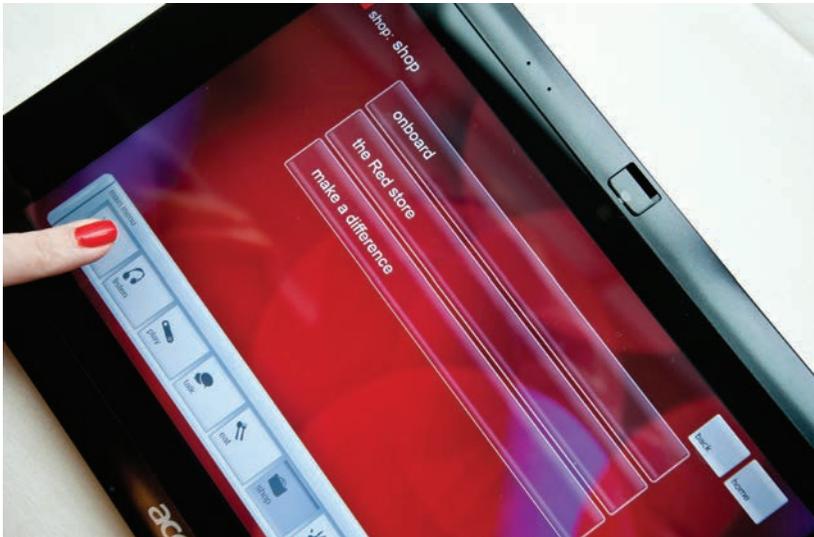
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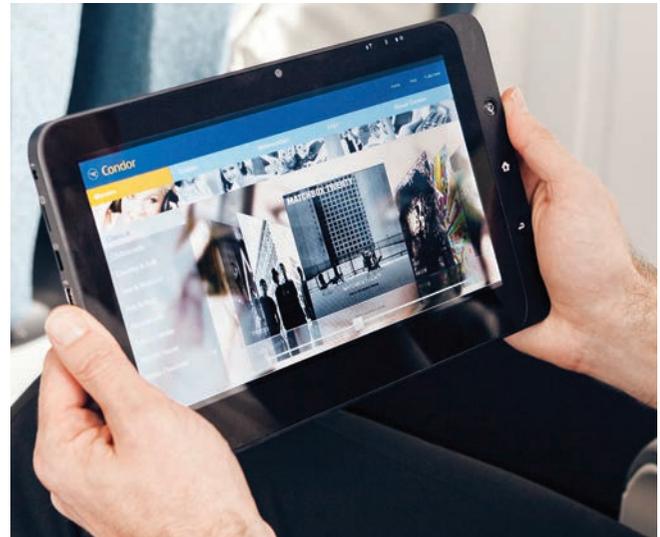
04



05



06



07



ONE OF THE HOLLYWOOD STUDIOS' BIGGEST CONCERNS IS 'SCREEN-SCRAPING' OR 'SCREEN-GRABBING' 

- 06. Virgin America will stream content from its Red IFE system direct to passengers' own devices
- 07. Passengers on Condor's 767 fleet can also use their own devices to access IFE content

built with airline and passenger use in mind. They require repurposing, ruggedisation, battery packs, etc.”

But repurposing is increasingly aided by cooperative relationships such as IMS with Samsung and Lufthansa Systems with Apple. Even though the Android OS is open source, the newest versions are available to partners like Samsung in a pre-release form, which enabled IMS to gain access to 4.0 before its release to the public. Lufthansa Systems enjoys an enterprise relationship with Apple, which provides developer assistance for BoardConnect.

One of the differences between Apple's iOS and Google's Android is that iOS is proprietary with Apple reviewing every app before it appears. Google's open development process does not review developer apps before they appear. Juniper Networks observes that while Google may well pull malware, it does so only after it has been reported and has had an opportunity to infect an Android device.

One of the Hollywood studios' biggest concerns is 'screen-scraping' or 'screen-grabbing' (depending on whom you're speaking with) software. This refers to programs that capture and save images from the screen as they appear. This means that even with content which is streamed to the screen of a tablet with only a few seconds of cached frames being decrypted at a time, it is still possible to copy the entire movie frame by frame in real time.

While Apple says that screen-scraping software cannot be downloaded through iTunes, studio security people maintain

that such software can be loaded to an iPad via a 'jailbreak'. Both Apple and Microsoft are said to be developing solutions that will counteract screen-scraping, which is currently the principal obstacle to streaming early-window content from an airline file server to a passenger-owned device.

ONE STOP SHOP Among the reasons that the last wave of ebullient optimism for tablets replacing embedded IFE is being tempered with a bit of pragmatism is Panasonic's billion-dollar deal with Etihad. Announced in November, Etihad Airways has contracted with Panasonic Avionics to provide IFE and connectivity – including broadband Internet and live TV – for Etihad's long-haul fleet of wide-body aircraft under a decade-long deal reportedly worth more than US\$1 billion at list prices.

One of the things that the Panasonic/Etihad deal reflects is that the integration of IFE and connectivity is desirable to airlines. In The IMS Company's deal with American as systems integrator for the Galaxy Tab, IMS will integrate Gogo's inflight connectivity capability on the tablet using the Galaxy's native WiFi. Similarly, in announcing its selection of Lufthansa Systems' BoardConnect, Virgin America reaffirmed its commitment to connectivity.

Lufthansa Systems' BoardConnect offers three components – streaming to airline SDUs, streaming to airline-provided tablets, and streaming to passenger-owned tablets, smartphones and laptops. Wires will disappear from IFE before embedded screens, in the view of many industry observers. And hybrid solutions involving streaming to both airline-provided screens and passenger-owned tablets will be likely to survive any propensity by passengers to bring their own content onboard. ☒

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splitpersonality

United Airlines' chief makes a plan for the future by leaving past troubles behind

CHRISTINE NEGRONI, AIRCRAFT INTERIORS INTERNATIONAL

On its face, the lapel pin bearing the word 'TORQUE' was designed to remind United Airlines employees at Denver's Stapleton International Airport in the 1980s to do their best to woo Continental Airlines' customers over to the competition. But quite literally behind the word, which was an acronym for Try Our Real Quality United Experience, was an unmistakable message in the form of an illustration depicting a screw drilled into the globe that was Continental's logo.

Now, 25 years later, the two airlines are one. Clearly, working through old resentments is one of many challenges facing the new United. "Its water under the bridge," was United CEO Jeff Smisek's feeling about the 25-year-old feud,

according to a former United Airlines employee who was present when Smisek was asked to apologise on behalf of United for the hostilities back then, even though Smisek didn't work at United at the time. Charles Hobart, a spokesman for United wouldn't confirm Smisek's quote, but the tone is in keeping with the pragmatic, future-facing approach taken by the chief of the world's biggest airline.

In a lecture at Stanford Business School six months after the merger was announced, Smisek made it clear that unifying employees from two airlines with very different cultures would be challenging but he had a plan to bring together "the best of both". He told the audience: "People want to believe in the future, but you've got to show them





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01

01. Continental's BusinessFirst product

what that is going to be. It is important for everybody to understand how they fit in.”

With all there is to do to blend not just the people, but the machines, systems and finances of two legacy carriers, Smisek, a 56-year-old Ivy League graduate, is keeping focused on the route ahead: “If you don’t know where you’re going, any road will take you there.” Fortunately, United knows just where it is going and has already filed the flight plan. And even though some difficult issues remain unresolved, including how to unify separate unionised workgroups, the airline has cleared the way with some of the compromises it has already made (*see sidebar*).

BUSINESS PLAN “We’re investing half a billion dollars in aircraft interiors,” said Smisek in an interview in December, explaining a strategy that concentrates on business travellers. “We’re investing in our onboard product, investing in the fleet and also the general service levels,” he continued. “You have to spend money to make money.”

All airlines covet the premium customer, but what helps United’s ambition is the pre-merger reputation of both airlines for catering to this segment of the market. They are “a driver of profits for the industry”, said Mark Bergsrud, United’s senior vice president of marketing shortly after the

02



two companies became one. “The most profitable segment is the business travel segment.”

Despite their common focus on travel-savvy customers, when the two airlines were independent, they had very different approaches when it came to cabin interiors. Continental replaced first class with an improved business-class product in the early 1990s, however United hung on to first class, business and economy – and even added premium-economy seats.

With the ease of someone who has laboured over the spreadsheets, Smisek rattles off what models of aircraft will have what kind of seats, and when those changes will be complete. It’s a hodgepodge – albeit a well-considered one – that will include retaining first-class seats on United’s older 767s, 777s and 747-400s until the aircraft begin to go out of service, starting with its 747s in 2016 and 2017, explains Smisek. “International first class works for a limited number of markets,” he says. It makes no sense to rip out seats that

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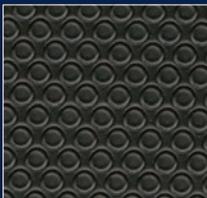


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CUSTOMERS CAN SEE THE NEW FACE OF
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03

conflict resolution

In creating the new United, both airlines [United and Continental] had to give in on some issues. The airline's headquarters will be in United's hometown of Chicago, not Continental's Houston. United's CEO Jeff Smisek comes from Continental's C-suite, but the name Continental is gone. "Continental is more challenging to pronounce throughout the world, especially in Asia," explains United's director of brand and customer communications, Maggie Lang.

United's signature tulip-shaped U logo is gone, replaced by Continental's globe logo. In time, Continental's 'business is the new first class' philosophy will spread through the fleet as well, since Smisek believes "international first class is sort of a dying breed". United's premium-economy seat; its exclusive Channel 9 IFE channel that allows passengers to hear the cockpit transitions from the pilot to the tower, ground crew and air traffic control, from gate to gate; and its signature tune, Rhapsody in Blue, will play on into the future on all aircraft in the fleet, explains United spokesman, Charles Hobart: "Rhapsody in Blue will remain part of United's brand identity, though the extent to which we'll use it in advertising remains undetermined."

do not need to be replaced: "Nobody would do that," he says, before conceding that, "International first class is sort of a dying breed."

Meanwhile Continental aircraft will continue with business class, however, United's popular Economy Plus seats will be extended throughout the Continental fleet. Long lead times on aircraft orders and the high cost of retrofits means the new airline will not have a uniform fleet for at least a decade. However, it has opted to modify 14 Boeing 767-300s, adding B/E Aerospace's Diamond seats at 57in pitch but offering an impressive 75in-long fully flat bed in business class; and AVOD IFE from Panasonic featuring 15.4in monitors in business and 9in monitors in premium-economy and economy.

EARLY SIGNS Customers can see the new face of United on a dozen Continental 767-400s – the first of which was delivered in November – and on the Boeing 787

Dreamliner. United has 50 on order with service entry scheduled for the second half of this year. United will not reveal details on suppliers for its 787 interiors, but the 767-400s feature B/E's Diamond business-class seats installed at 57in pitch and capable of converting into fully flat beds. Economy Plus and economy seating is provided by B/E's popular Pinnacle platform, with 35in pitch in Economy Plus and 31in in economy. Panasonic is providing AVOD IFE, including its 'Eco 9' integrated smart monitor. There will also be power ports throughout the economy cabin.

The new aircraft will also feature United's popular Channel 9, which allows travellers to keep an ear on radio communications between the cockpit and air traffic control. Economy Plus and Channel 9 are examples of products that differentiate United from other airlines, according to United spokesman, Charles Hobart, who describes them as "a nice introduction – here's what to expect from the new United".

- 03. Airport check-in rebranding has begun in earnest, leaving some with Continental tickets a little confused
- 04. Panasonic will continue to provide IFE in all classes
- 05. United's popular Economy Plus will be retrofitted to Continental aircraft



04



05



IFE PRESENTED THE SAME INTEGRATION CHALLENGES AS PASSENGER SEATS



06



07

- 06. United First will continue to be offered on certain routes – for now
- 07. Rebranded check-in area – customer service, rather than signage, will ultimately decide the airline’s fate

IFE presented the same integration challenges as passenger seats – but with an added twist. Unlike seats, which an air traveller will always need, passenger taste in IFE is constantly evolving, making anticipating what the customer will want five years into the future a difficult call. Smisek says the airline must offer internet connectivity – opening the door to many possibilities. With passengers bringing their own devices onto the aircraft, United and many other airlines are considering whether to remove onboard, legacy IFE systems and just provide access to internet-based entertainment. “You can see a day, far in the future, and I don’t know where it is, where aircraft have fewer built-in stuff and more wireless video,” says Smisek. This could be the “wave of the future,” including yet unknown opportunities for airlines to produce revenue.

TAILFIN TAILSPIN The enormity of the task ahead and the volume of decisions are head-spinning, according to Maggie Lang, whose job as director of brand and customer communications means she is involved in many of the processes uniting the two airlines. The company name and logo were settled early on, after what Lang describes as a global investigation into what each proposed airline name would mean and even how easy it is to pronounce in the languages and cultures of the countries where the airline flies.

The decision to replace United’s long-standing, tulip-shaped U logo was much debated, as well. There were those

like Ken Bundelmann, president of the firm People Design and author of the book, *Brand Identity Essentials*, who thought combining the United name with the Continental globe yielded an unsophisticated result: “My perception is that this is something the executives decided to do as a compromise – ‘We’ll use our name and your logo and it looks like that and we’ll call it good,’ – a way to ease the internal politics if you will,” he says.

Nevertheless, United’s Lang says the design is not a place-holder. The decision has been made and she knows of no plans to change it. While the new logo and livery may be the most visible representations of the new airline, far more work is being carried out behind the scenes, coordinating the new graphics on everything from office stationery to toothpick wrappers on the aircraft. And at the end of the day, these details are unlikely to be a big deal to passengers: “What people really want is the functional – the actual getting me from A to B – I want a totally seamless expanded network I can tap into right away,” says Kevin Lane Keller, a professor at Dartmouth College and the author of a textbook on brand management.

SIGN LANGUAGE Unfortunately seamless integration has not been accomplished at United – it has been delayed by the fact that the two former airlines’ reservations systems remain separate. A lot of technological wizardry is required to get both airlines on a unified platform ready for

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CONTINENTAL'S CUSTOMER SERVICE, BY
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poor relations

United Airlines was the first scheduled carrier in the United States, founded in Idaho as Varney Airlines and making its first flight in 1926. Walter Thomas Varney the pilot/businessman started another airline in 1934 that went on to become Continental. So from a historical perspective, the airlines are siblings – separated at birth.

United Airlines grew by buying Capital Airlines in 1961 and beefed up its overseas operations with the purchase of a dozen of Pan Am World Airways Asia routes in 1985.

Continental Airlines merged with Pioneer in 1953, before being purchased by Frank Lorenzo's Texas Air in 1981. Over time, Continental's operations were merged with Lorenzo's other purchases, Eastern Airlines, People's Express and New York Air.

Both airlines have had their fair share of financial woes: United Airlines filed and operated in bankruptcy from 2002 to 2006; and Continental Airlines was in bankruptcy twice, from 1983-1986 and from 1990-1993.

08. United's new livery and logo fails to excite brand experts, but the airline insists it's here to stay

passengers to use this spring. That means that many customers still hold tickets on Continental. To avoid confusion, temporary Continental signs were hung over the new United signage at airports. "It's not pretty," admits Lang, "but this is temporary."

The most important factors in choosing an airline continue to be price, routing and loyalty programmes. Even so, United is in the position of being able to win new customers by showing them the new airline is providing something of higher value, according to Michael Levy, a professor of marketing at Babson College in Massachusetts: "We use branding to help make people less sensitive to price," says Levy. He uses designer fashion as an example: "What Ralph Lauren has done is build a brand that is so strong that people are willing to pay less attention to price." In a rapidly globalizing industry, United must be clear about how its product offer separates it from the competition. Just being a legacy carrier is not enough.

United is not his client, but Peter Knapp of the London-based Landor brand consultancy says his advice to airlines in a similar situation is: "This is the beginning of a new era and you are at the vanguard." He advises them they must tell their customers: "Come and join us – we're looking to do things differently."

In deciding to concentrate on what both the old United and Continental did well – cater to the travel savvy flyer – the new United is planning to zero in on what its customers want. "We want to make sure we're the airline that anticipates their needs and offers what they need," explains Lang. For all the delicate debate over customer touch points and product consistency, she says it all takes a back seat to

the passenger's highest priority – a pleasant travel experience – which must be the airline's too. "Experience makes or breaks the brand," she says. "The experience is what the customer is going to walk away with."

That's a lesson United learned the hard way. In 2009, Dave Carroll, a Canadian musician who claimed United broke his guitar and then refused to pay for the repair, skewered the company in three music videos he posted on YouTube. The videos have been viewed more than 11 million times. Two years passed but still United ranked poorly with customers in 2011, scoring below average and in seventh place on the JD Power's North American Customer Satisfaction Survey. Continental's customer service, by contrast, ranked third.

MISSION STATEMENT As the world's largest carrier, with more than 86,000 employees and 700+ aircraft flying to 376 destinations, more than ever the new United will compete with global carriers, some of whom have stellar reputations for customer-centric service. "We compete with Singapore [Airlines], we compete with British Airways, we compete with everyone around the world and we need to have a globally competitive product," replies Smisek when asked how the airline plans to recover from the customer satisfaction deficit and compete against the Gulf and Asian carriers. "That's part of the cultural transformation of the new United to imbue our coworkers with a desire to deliver really good service, not because they're told to but because they want to – because they're proud of the work they do." ☒

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headline**news**

2011 may well be remembered as the year of the celebrity cabin eviction – what is it that makes some passengers lose the plot?

CHRISTINE NEGRONI, AIRCRAFT INTERIORS INTERNATIONAL



The removal of 30 fare-paying but allegedly unruly passengers from a New York flight in January 2011 helped to set the tone for a year that would see a string of celebrities – including athletes, musicians and film stars – behave badly enough to get themselves booted off the aircraft.

It all began in Buffalo, New York, one week into the new year, when the Russian junior hockey team was escorted off the first leg of its Delta Air Lines flight home. The young athletes may have had reason to celebrate – they'd just clinched a gold medal – but they apparently chose the wrong venue. Back they went to their hotel, where Mikhail Zislis, a team spokesman, said Delta's decision to evict them "was not fair".

The idea that "the party starts now" is not an uncommon attitude for people travelling together, according to Nicole Domett, CEO of Aviation Travel Training Group in Auckland, New Zealand, which trains flight attendants. "People do things in groups they wouldn't do on their own," she says.

Things were relatively quiet for the rest of the winter, but with spring, mischief began to bloom in the fertile air of the passenger cabin. Another athlete, University of New Mexico football player Deshon Marman, fell foul of a flight attendant and was escorted off a US Airways flight in San Francisco. Marman, 20, was wearing the low-slung pyjama bottoms favoured as daywear by many men of his age and when asked to hike them up he did not respond quickly enough.

There's some cleavage between the story told by Marman and US Airways officials but airline spokesman, John McDonald, issues a reminder – flying isn't like taking the bus. "There is a contract and that governs the relationship between the passenger and the rider," he says. "With security and everything else it is different than hopping in our car and going somewhere."

Passengers behaving badly may seem like a trend and McDonald suggests the stress associated with travel in the 21st century may be a factor. "We have lots of people



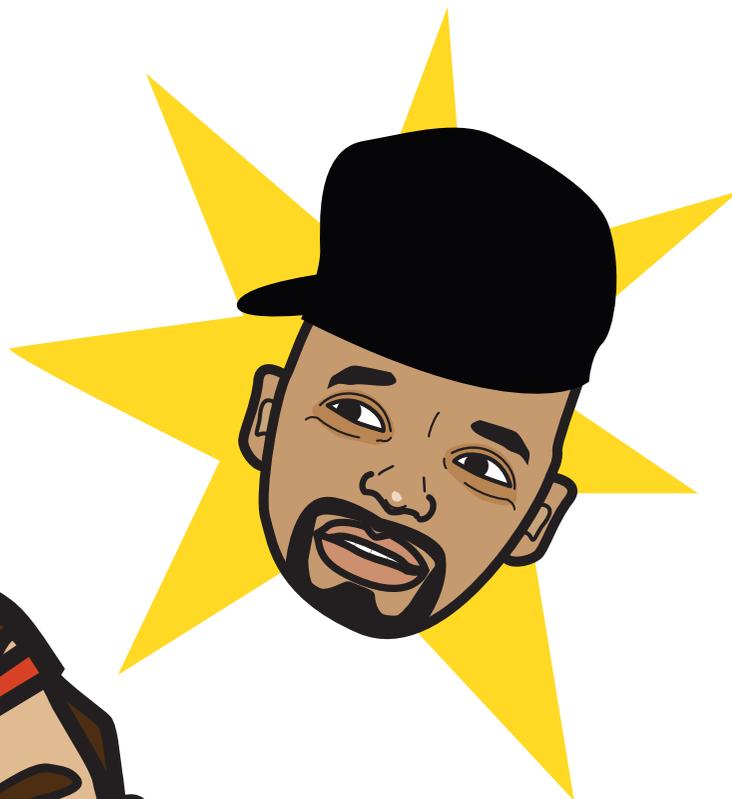


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ILLUSTRATION BY TRACY WORRALL



AT 37,000FT, THERE IS NO SUCH THING AS DUE PROCESS



travelling,” he says. “The flights are really full. Security is tight. People are under stress.” Still, as McDonald warns, at 37,000ft, there is no such thing as due process.

DIVIDE AND RULE If common folk find flying in the 21st century pushes them to the edge, celebrities may be even less tolerant. Like all passengers in every class of the cabin, stars must also follow rules that restrict their activities, dictate their posture and control what they say. Of course, celebrities have large audiences to which they can whine, tweet and post their complaints about airline indignities on Facebook and YouTube, and indeed they have, although it had little effect on the outcome for Ghanaian-British musician Dizzee Rascal and his travel companion.

The two were in British Airways first-class seats awaiting a departure for Lisbon on 9 July 2011 when the rapper sent some choice words in the direction of a flight attendant, according to the airline’s account. Rascal’s removal from the flight caused him to miss a performance in Portugal.

A week later, celebrity versus flight attendant played out on a United Airlines flight awaiting departure for Cancun, Mexico. Brooke Mueller, the ex-wife of US bad-boy television star Charlie Sheen, reportedly crossed words with the flight crew. Mueller is said to have been angered because she was not allowed to go to the bathroom despite telling the flight attendant she was going to be sick. The aircraft returned to the gate and Mueller got off. Whether she chose to deplane or was asked to leave is not known.

In another ill-timed biological break, French film star Gérard Depardieu made wee-wee on the floor of a CityJet aircraft awaiting take-off from Paris. Depardieu offered to clean up the mess, but instead the aircraft returned to the gate and the actor was deposited back at the airport.

Leisha Hailey, an American musician and actress, was the next celebrity to make headlines for getting thrown off an aircraft, when she was ejected from Southwest Airlines Flight 2274 from Baltimore in September 2011, after allegedly kissing her travel companion – girlfriend and bandmate Camila Grey. It was all too much for one





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passenger, who asked the flight attendant to have the ladies cool their jets. A verbal altercation followed, prompting the flight crew to boot Hailey and her girlfriend off the aircraft.

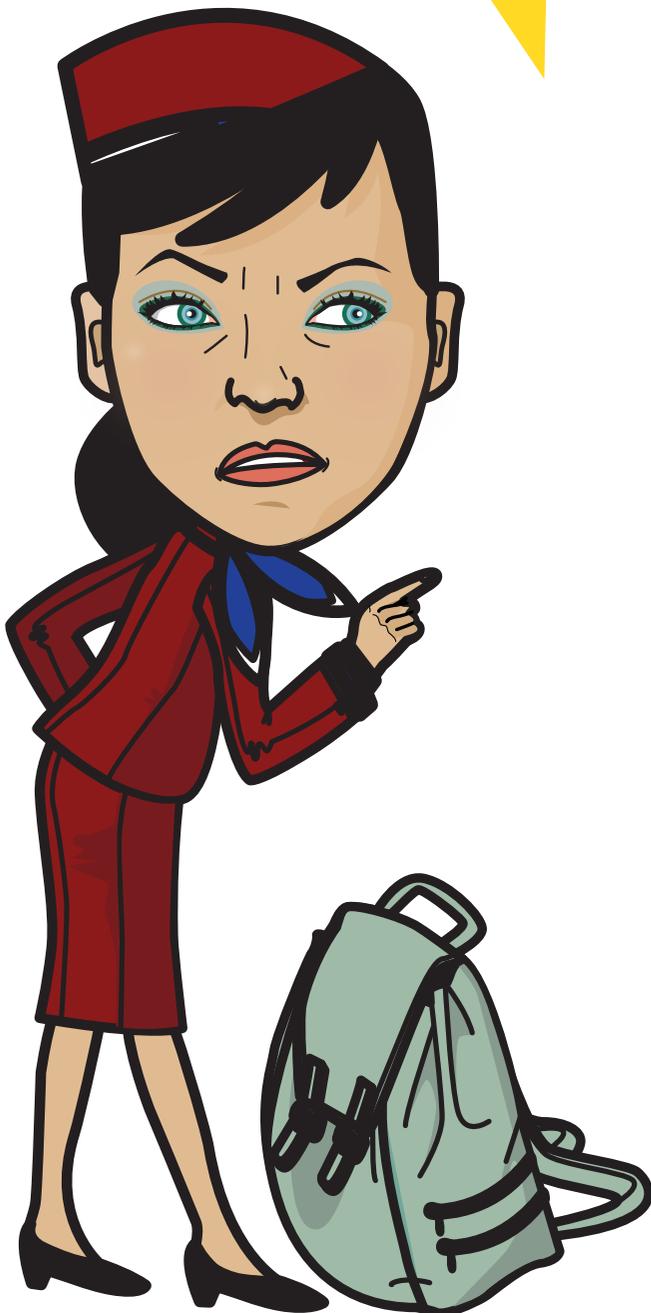
Southwest, based in Dallas, Texas, frequently makes headlines for ejecting unruly passengers from its aircraft. The same month as Hailey's eviction, rocker Billie Joe Armstrong sent this tweet to his followers: "Just got kicked off a Southwest flight because my pants sagged too low! What the [expletive]? No joke!"

PUBLIC GALLERY Southwest doesn't necessarily consider this bad publicity. Its 'passengers of size' policy requiring extra-large travellers – even those as famous as Hollywood film director Kevin Smith – to buy two seats is almost as famous as the fact that on Southwest, 'bags fly free'. And back in 2008 it made a Californian waitress famous for 15 minutes when it declared her skimpy outfit too sexy to fly.

Whether it is passengers who encroach onto the adjoining seat or who offend fellow travellers, Southwest spokesman Chris Mainz says: "We feel like we have a very good, positive, ongoing relationship with our customer base." However, he admits "Southwest is a quirky airline" and one that isn't afraid to tell some people to fly someone else's sky.

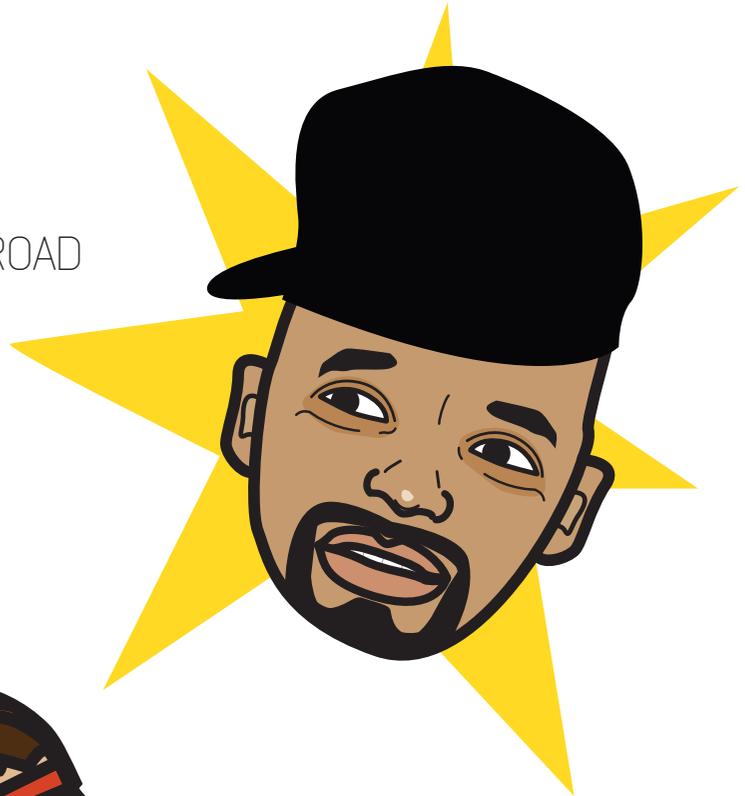
"If a customer poses a potential safety risk or our flight attendants have a concern about a customer's ability to follow crew member instructions for any reason, then we must alleviate those concerns before a customer can travel," says Mainz. "Ninety-nine point nine per cent of our customers understand and follow these simple guidelines."

Before her untimely death this February, singer Whitney Houston came close to making the list of celebrities who got the hook when she refused to buckle her seatbelt on a Delta flight to Detroit in October 2011. Just in time, though, she permitted a flight attendant to strap her into her seat.





THE MYSTIQUE OF FLYING IS DIFFERENT TODAY... PEOPLE SEE IT AS MORE OF A ROAD TRIP MENTALITY



In December 2011, Southwest was back in the news for evicting country singer John Rich from a flight from Las Vegas to Nashville. Passengers reportedly complained that the 37 year old was quarrelsome and possibly intoxicated when he boarded the Boeing 737 on a Sunday morning.

DRINK AWARE Domett says, famous or not, alcohol is often a factor when passengers misbehave. Many flight attendants these days are taught to use the 'Three D' technique on passengers who fly too close to a state of intoxication. They can distract them, they can delay delivering the cocktail and if all else fails they can dilute the alcohol in the drink.

"The mystique of flying is different today," says Domett in polite understatement. "People see it as more of a road trip mentality. It's less glamorous and that seems to change the way people think about it."

However, that's still no excuse for some passenger behaviour, according to psychologist Pamela Rutledge, director of the Media Psychology Resource Centre in Palo Alto, California. "Everyone knows what's good and what's not good; what's acceptable and what's not," she says.

FINAL ACT The year of airlines showing celebrities the door came to a close when Hollywood megastar Alec

Baldwin threw caution and FAA rules to the wind and kept the switch of his portable electronic device in the on position. The 53 year old was "asked to leave the flight for playing Words with Friends (WWF) while parked at the gate", according to a Twitter statement from his spokesman. "He loves WWF so much that he was willing to leave a plane for it."

Joining the twitterfest was Michael J. Wolf, a passenger on Baldwin's flight, who was unhappy about the delay caused by the petulant actor. "Terrible that everyone had to wait," tweeted Wolf. Meanwhile Baldwin was not content with the week's worth of news coverage that followed his onboard antics, going on to spoof the airline on a national comedy television show.

It is worth noting that the celebrity aircraft eviction began long before Baldwin was a household name. For years the fabulously difficult have been drinking too much, smooching too long, dressing too provocatively and even relieving themselves too publicly on aircraft. But even if that all seems so yesterday, Baldwin shows us what new technology can do. Looking to get kicked off an aircraft? There's an app for that. ☒



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SHOWPREVIEW

Aircraft Interiors Expo 2012



Aircraft Interiors Expo returns once again to Hamburg, Germany, on 27-29 March 2012 – with a couple of important changes.

Firstly, the show will co-locate with the World Travel Catering and Onboard Services Expo, its organisers having acquired the event from the International Travel Catering Association (ITCA).

“It makes absolute sense to co-locate the biggest European onboard service sector event with the world’s largest dedicated cabin interiors

exhibition,” says Stephen White, president of ITCA.

Also new for 2012 is the Cabin Innovation & Strategies for the Future Conference, which will be held on 26 March. Speakers confirmed so far include Michael Childers of Lufthansa Systems (see pages 88 and 108 for articles written by Childers); Jeremy White of Seymourpowell (interviewed on page 142); Ian Dawkins, CEO of OnAir (interviewed on page 169) and representatives from Airbus, Lufthansa, Eurostar, Panasonic, Thales, B/E

Aerospace, Recaro, Teague, Priestmangoode and more.

Meanwhile, the Crystal Cabin Awards, which celebrate interior innovations, will once again coincide with the show. The awards will be handed out on 27 March, with the winners and runners-up displayed in the Crystal Cabin Award gallery on the show floor.

The exhibition itself will feature more than 500 suppliers displaying their wares. From seating to IFEC, galley inserts and materials, we’ve discovered some of the

gems to help you make the most of your time. Over the following pages you’ll find new products, updated favourites and a wealth of capabilities. There are also interviews with Chris McBean of E-Leather, on the new Southwest order; Doug Cline of Lumexis, who details how the company has built on FTTS for its new IFEC system; and Christian Körfggen, VP of product management inflight for Lufthansa, who reveals details of a new business-class seat, and what he’ll be looking out for at the show.

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digital revolution

Intelligent Avionics will display its broadened product line. Joining the Aura Works seat-centric IFE system, introduced at Aircraft Interiors Expo 2011, are Aura One and Aura Connected.

Aura One is designed as a lightweight, inexpensive way to replace analogue (tape-drive) systems with state-of-the-art digital IFE. Starting at US\$10,000 per aircraft, literally overnight, airlines can upgrade from analogue to digital – without changing existing overhead screens or wiring. The company says Aura One provides an easy way to tailor media and advertising by route; and

that content is refreshed quickly and simply with secure MPAA-approved processes via hard-drive swap, USB stick or 3G/4G modem. Aura One also provides a path to upgrade some or all of the old overhead screens with Aura Works in-seat IFE screens.

Aura Connected is designed to be a lightweight, low-cost onboard wireless intranet system offering passengers an extensive range of content, advertising and digital products and services streamed to selected mobile devices. In-seat power is optional (to make sure batteries never run out mid-flight).

As all three solutions use common components, Aura Connected can be deployed on its own, or as a complement to Aura One or Aura Works.





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weight watch

Aerocare International will exhibit its galley cart, which utilises the latest polymer and coated technology to achieve mass savings of more than 70%.

The product is designed to offer advanced thermal efficiency, to enable airline operators to back-cater for specific sectors, removing the need to purchase catering down route.

According to the company, the galley cart is lightweight and enables the removal of large mass items such as galley chiller units, to give substantial fuel cost savings. The cart has been designed to offer rugged construction and ease of maintenance. It also includes features for the display of duty-free goods and to extend the servicing area for cabin crew.

Aerocare provides interior refurbishment and component manufacture services.



BRILLIANT BATHROOMS

MacCarthy Aviation will feature a concept lavatory retrofit module, building on the success of high-volume retrofit projects performed over the past year.

Working with DuPont Corian, MacCarthy has produced Corian worktops and steel basins for Boeing 737, Boeing 767, A330 and A340 lavatories. The company says these ready-to-fly products are lightweight and longer lasting – a perfect solution to older stained and scratched models – and with removable sink basins, they have lower maintenance lifecycle costs.

MacCarthy will also showcase its patented Infant Safety Cradle, which it says is certified for turbulence to EASA 21J. There are two variants of the cradle, suitable for all Airbus and Boeing aircraft. The cradles have a maximum carry weight of 11kg and can be used in a sitting or lie-flat position. Made from stainless steel coupled with a five-point safety harness, the cradle packs away into a small stowable bag.

The company says it can also modify galleys from KSSU to ATLAS standard and is certified to EASA Part 21 G & J and Part 145 in all aspects of work.

WELL CONNECTED

Thales will demonstrate new applications and GUI features for its TopSeries AVANT IFE system. In partnership with Siemens, Thales is adding to the scalability of TopSeries AVANT with wireless streaming media to a wide range of passenger devices. Thales will also highlight TopConnect, its suite of connectivity solutions for ground and air communications.



SAFETY FIRST

Schroth Safety Products will present its latest restraint designs and technology innovations. Exhibits will include the new “ultra-lightweight” Schroth AirLite passenger lap belt, which has already been chosen by many airlines for their aircraft cabins. Schroth will also present its latest inflatable restraint technology, cargo nets for Part 23 and Part 27 aircraft, as well as a variety of refined and plated restraint systems for VIP and business jet cabins.

In addition, Schroth offers highly customised engineering solutions for specific cabin interior applications such as fixation systems for cabin trolleys and other equipment. The company has also developed energy conversion systems for different applications, including a protective device designed to mitigate the effects of rapid decompression.



MATERIAL DIFFERENCE

Tapis will introduce Ultraleather Bolero, a fabric designed to offer outstanding sound absorption and breathability. The company says Bolero boasts improved low- and mid-frequency absorption, leading to lower cabin noise and higher sound quality; and passes the most stringent commercial aviation standards (including FAA flammability requirements) without sacrificing luxury, durability or maintainability. All Ultraleather products are made of polyurethane polycarbonate, which does not contain volatile plasticisers and stabilisers. Tapis suggests applications such as outer and inner back shells, footwells, literature pockets, console shelves, centre dividers, seating, headliners, bulkheads, sidewalls, headrests, trim and more.



hold the floor

S&S Numerical Control, part of Satterfield Aerospace, will highlight its fully flexible seatback solution for the iPad and similar tablet PCs. The product allows the tablet PC to be mounted firmly and/or removed and manipulated manually by the passenger, thereby preserving the important mobility feature of the device. When mounted to the seatback, the tablet PC can be rotated into portrait or landscape mode or to any position in between, while also tilting back and forth to obtain the best viewing angle. The company says its solution is easily adapted to any model of passenger seat, and while the tablet PC is fully encased and protected, it also retains a thin, compact configuration. For those airlines concerned about the certification of permanent installations, the tablet PC can be easily and rapidly removed during taxi, take-off and landing.



Jeremy White

HEAD OF TRANSPORT,
SEYMOURPOWELL

What are you speaking about at the conference?

The critical trends shaping consumer expectations. At Seymourpowell, we are continually tracking consumer trends and monitoring the big picture drivers that are shaping the future. We extrapolate this information to help us determine what will happen next and how this will affect our clients' products and services going forward. We have a long track record of turning these insights into game-changing designs and innovations.

How are passenger expectations changing?

Generational, cultural and gender differences mean we all expect different things. If you look to please everyone, then you end up with 'lowest common denominator' products and services. Consumers are demanding a more personalised service; they want brands to know them, know their desires and specific needs.

How best can airlines identify these expectations?

It is the mix of trained intuition, observation and validation that allows us to make accurate predictions about the future and identify opportunities that are relevant to our clients. To look forward you have to look back. It's a constant monitoring process; all the information is out there, you just need to know where and how to look. Most trends don't appear from nowhere; instead they evolve, so to accurately predict their trajectory you have to consider their origins. It's important to consider the motives and dreams of your consumers – explore their aspirations and needs.

Airlines need to speak to innovators and early adopters, because they are the first people to make a trend visible and tangible.

What influences customer expectations?

Customers' expectations are often formed by the experiences of others. Everyone has an opinion, but today they can express these on a global scale. We are now so deeply connected to each other and to multiple streams of information that we can find out almost anything we like about anyone and anything. The super-connected consumer is more powerful than ever... and they know it. Be sure to look after them properly.

How do you tell a trend and a fad apart?

Fads tend not to last because they don't form a deep and emotional connection with people. We can identify a trend by using cross-cultural analysis – we need to find evidence of the trend in different categories. For example, if we see a trend in the fashion industry, the automotive sector and the cosmetics industry at the same time, then we know it's not a fad.

Does the length of the certification process mean that airlines will always be behind?

No, you just need to cast your eyes further into the future. Aircraft products need to respond to the big picture changes of the future and long-wave trends. For example, they should already be preparing for the ageing and rapidly expanding population and environmental instability. Some trends are not about to go away any time soon, like open-source culture, changing opinions of ownership and the rise of 'womenomics'. Interpreting how all this is going to affect your business and reacting to it is much more complex. However, innovation doesn't need to take a long time; small changes can make big differences to products and services.

Consumers are demanding a more personalised service; they want brands to know them

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bright young thing

Driessen-Zodiac Aerospace will launch its new Hybrite container, which it says is up to 2.6kg lighter than a conventional aluminium container – a 10% weight reduction. This will be presented with the full Hybrite trolley line and the new Hybrite folding trolley.

The company is also developing a new version of the A330 Lower Deck Mobile Crew Rest (LDMCR), aiming for lower weight, reduced noise, enhanced lighting and improved comfort. Driessen's in-house engineering team has completed the process to define four concepts to improve the overall experience in the crew rest, says Abraham Sarraf, sales and marketing director at the company. After intensive investigation and research with flight attendants worldwide and with the help of engineering students from Delft University in the Netherlands, Driessen is now working on new conceptual designs



that will evolve into an LDMCR model for launch in 2013. An LDMCR mock-up using several elements from each of those concepts will be presented at the expo.

NEAT SEATS

ZIM Flugsitz will present its BC-01 business-class seat for short-, medium- and long-haul flights. The model boasts new kinematics, many customisable features and multimaterial design for weight savings. The product fulfils the new DOT requirement for disabled passengers and allows easy egress to the aisle, even when the meal table is deployed. The first delivery of the BC-01 to the launch customer is scheduled for March 2012.

ZIM Flugsitz will also show the ECO-01 range of modular economy-class seats. ECO-01 seats have been delivered to seven airlines, with additional orders for four airlines. The range covers short, medium and long haul and ranges from a basic economy-class seat without recline up to a fully equipped customised premium-economy seat, with options such as seat pan articulation, six-way headrest, footrest, cup holder, coat hook, and slidable meal table.



FOOD FOR THOUGHT

Altitude Aerospace Interiors will highlight its ongoing galley innovation project. Altitude and its partners are investing heavily in galley technologies to enable them to sell an entire suite of monuments, throughout the cabin. Altitude believes customers want to simplify their supply chain and at the same time have an interior that is different from their competitors'. The company has experience in designing and manufacturing other complex monuments.

"This is a natural progression for us, and I think we can bring something new to the galley market," says Baden Smith, Altitude's head of airlines.



COMFORT ZONE

Supracor will show Stimulite honeycomb, an alternative to traditional foam cushioning that can be used for seat cushions and sleep surfaces. It is designed to provide comfort and support in a low profile, giving more living space in the cabin. A flexible form of aerospace honeycomb that is fusion bonded without the need for adhesives, Supracor says Stimulite relies on the optimum strength-to-weight characteristics of structural honeycomb to provide uniform load distribution at a fraction of the thickness of foam cushions. Perforations in the cell walls circulate air to eliminate heat build-up, while the 'footprint' of the cells and their flexing action are designed to promote circulation. Where cushion thickness cannot be altered because of the seat frame design, Stimulite can be integrated with foam.

For more than 20 years, Stimulite has been used in medical support surfaces for pressure sore prevention. It is used by the US military for ejection seat cushions in F-18 Hornet fighter jets. The Boeing 787 Dreamliner and 747-8 feature Stimulite mattresses in the crew rest. Supracor reports that since its debut at Aircraft Interiors Expo 2011, Stimulite has received strong market interest from OEMs and airlines.



GOOD VIBRATIONS

InSeat Solutions will introduce the PA Aircraft Massage System. The system features vibration massage with a variety of modes, intensity levels and speed settings, which together enable each passenger to customise their preferred massage levels. The system also features an interactive movie mode in which it responds to the low-frequency audio output from the IFE through feedback movements. Its purpose is to enhance the passenger inflight experience by simulating a high-end cinema.

HOT SEATS

EADS Sogerma will display two different mock-ups of its Equinox business-class seat (pictured); the Ultimate 17 super-first-class suite; the Ultimate Sleeper (which consists of Lufthansa Technik's aerosleeper bed assembly integrated in the Ultimate 17 seat); Solstys full-flat business-class seat; and in a private area, a new concept.

Equinox is a full-flat 78in-long business-class seat/bed that can be installed at 58in pitch. It is 22in wide and can be installed six or seven abreast on wide-body aircraft and four abreast on single-aisle aircraft. It weighs 94kg per double seat without IFE.



LIGHT DUTIES

Sabic will highlight its Lexan XHR (extremely low heat release) sheet. The product has been chosen by Geven for its new seating in Caribbean Airlines' Armonia interiors. The challenging goal of limiting the seat weight to a maximum of 9kg (19.8 lb) pressed Geven to explore new, high-performance lightweight materials. Sabic says Lexan XHR sheet was the solution because it complies with the stringent flame, smoke, heat release and Airbus toxicity requirements. It can be used for aircraft seating, cockpit linings, window surrounds, door shrouds and other interior components.

LEADING EDGE

The IMS Company will demonstrate its RAVE and EDGE IFE products. The company has increased its booth size by about a third, and will show examples of RAVE installed in premium- and economy-class seats. RAVE will also be installed in various seat suppliers' exhibits.

RAVE is an AVOD IFE system delivered for the first time in 2011 – three airlines and five aircraft were put in service in December. 2011 also saw the first delivery of EDGE, a portable media player based on the Samsung Galaxy Tab and Android operating system; as well as the company's AS9100 and ISO 9001 certification.

feathered friends

Timco Aerosystems will showcase its FeatherWeight line, starting with its new lavatory unit. The company says this unit, configured for various positions and already certified and flying in service, boasts a 25% weight advantage over comparable units. Timco's full line of passenger seating will also be on display,

including the new FeatherWeight 3200 full-recline economy seat (pictured), the 3100 high-density fixed-recline economy seat, the 3050 premium-economy seat and the 3500 full-recline economy seat for the Boeing 787. In addition, TIMCO will display its next-generation 3700 economy concept to select customers at its stand.



VANTAGE POINTS

Thompson Aero Seating will display its Vantage business-class seat (pictured) and 20in Cozy Suite. The economy-class Cozy Suite provides two armrests for each

passenger, as well as optimised legroom. A fixed backshell with forward-moving recline means it does not encroach into the space of the passenger behind.

In March 2011, Thompson Aero Seating moved into new facilities in readiness for commencing manufacturing on both models. Since that time, successful deliveries have been made to its first two customers and deliveries to a third customer are scheduled to start in the middle of 2012. Plans are also underway to expand the current production facilities by 30,000ft².





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Part 148 (manufacture)
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enter the dragon

Sicma Aero Seat will show several seats, plus some new concepts, on the Zodiac Aerospace stand. Seats on display include the economy-class Dragonfly seat (pictured), launched in 2011, the standard version of which weighs 7.5kg per pax with foam and covers. Having passed the development tests and changed its engineering approach to "green conception", Sicma reports it has already obtained airline orders. In the business-class sector, Sicma has decided to improve its successful Skylounge product by creating a new generation, Skylounge 3. The design is still a staggered configuration with a light angle on the seat, designed to optimise the layout with more living space for the passenger. Continuous improvement has also been made on the company's other business-class seat, Cirrus.



Chris McBean

CEO, E-LEATHER

What's happening with your leather alternative product, E-Leather?

Southwest is preparing for the next 40 years with a total fleet modernisation programme known as Evolve: The New Spirit Experience. Within this refreshed design, the new style seats are upholstered throughout in E-Leather. The new trim installation programme will cover the Southwest and integrated AirTran fleets at a rate of one aircraft a day. Initially the programme will cover the new Boeing -800 series and current Southwest fleet of 372 Boeing 737-700s, and as integration of AirTran moves forward, its Boeing 737s and 717s will also be retrofitted. The retrofit will commence during the first quarter of 2012 and run through 2014 into 2015.

How did Southwest make the decision to use the E-Leather product?

The Green Plane Initiative was launched in 2009 to test the market's latest sustainable products on board an aircraft. E-Leather was selected as one of the materials for trial following physical testing of alternative materials by the leading test house in the USA. Half the Green Plane was upholstered in E-Leather and the other half in an alternative material. The aircraft was then put into normal service over a two-year review period. Previously Southwest flew traditional leather and it was looking for weight

savings and improved performance. After two years of high-traffic inflight service, E-Leather had demonstrated how well it performs in service.

How does the product fit in with Southwest's aims?

Southwest is proud of its performance in looking after customers and providing comfort and service, its environmental stewardship programme as well as providing excellent returns for investors. E-Leather enables it to improve performance in all three of these areas. E-Leather provides an eco-friendly, hard-wearing and comfortable seat that is easy to clean on the aircraft, while returning a weight saving of approximately 2 lb per seat place.

Have you tailored the product to suit Southwest's specifications?

Specific colours have been developed to match the design concept Southwest wanted. The product technology is consistent for all the airlines using E-leather products, which is why we can be so confident of the exceptional performance.

Do you have any plans to develop the product further in the future?

E-Leather has a new generation of cladding materials that are suitable for a wide range of monuments and composites, offering exceptionally low and consistent heat release and smoke emission. These materials have already been qualified on several programmes and this is enabling marketing and design teams to specify finishes that deliver the cabin appeal they and their customers desire. These new products will be launched at Aircraft Interiors Expo 2012.

After two years of high-traffic inflight service, E-Leather had demonstrated how well it performs

LONG SIGHTED

Geven will exhibit its new Piuma Alta Quota long-haul economy-class seat (pictured), which is designed to offer long-haul comfort within a high-density cabin arrangement on wide-body aircraft. The company says it can be installed at pitches normally typical of the single-aisle cabin, while maintaining the ergonomic support required on long-haul flights, and accommodating IFE solutions. Weight and part count have been kept as low as possible. Geven also offers a single-aisle variant, Piuma.



GET CONNECTED

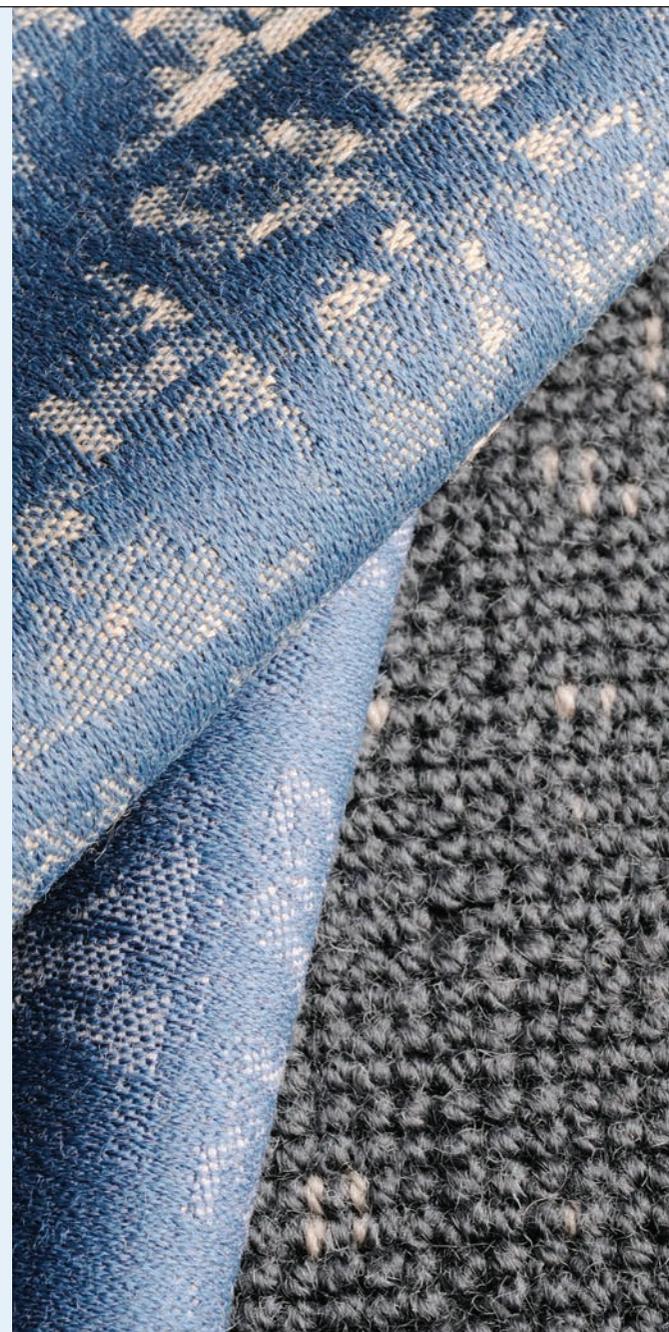
TriaGnoSys will focus on its AeroBTS+ platform for IFEC. It can be used by airlines and business jet operators across entire fleets to provide mobile phone and WiFi services, as well as wireless AVOD and other services, to passengers' devices. AeroBTS+ uses TriaGnoSys' system intelligence software, which is designed for efficient use of the available bandwidth, as well as the efficient and reliable streaming of data.

The central hardware element is the AeroBTS+, a flange-mounted line-replaceable unit with passive cooling. It incorporates the server, the GSM base station transceiver and controller, an Ethernet five-port switch and storage for 512GB of IFE content.

material world

Lantal will present its latest Conceptional Forecast collection, which features seat cover fabrics with large-repeat colour gradations and relief effects, complemented by smooth stripes, granular textures and waffle patterns. Colour-wise, the emphasis is on subtle blues, graphite greys, earthy hues and zesty accents. In carpets, fishbone and tweed classics have been reinterpreted and paired with structures as well as novel patterns featuring generous faded repeats. Matching curtains and leathers round out the collection.

The Swiss company will also highlight its all-in-one solution expertise for total cabin concepts. Through its new Design Organisation Approval, Lantal's engineering division now has the authority to approve minor cabin infrastructure changes and can leverage its 3D design resources in the development of low-pressure pneumatic comfort systems, seat covers, curtain systems and textile floor covering configurations. Aircraft seats including the fully adaptive Pneumatic Comfort System and ready-to-fit products such as laser-cut designed and pleated curtains, pre-cut carpets and seat cover variations will be exhibited at the stand. The company says its one-stop-shop approach benefits airlines through reduced paperwork, lower costs and less complexity in process management, plus minimised uncertainties and operational risks.



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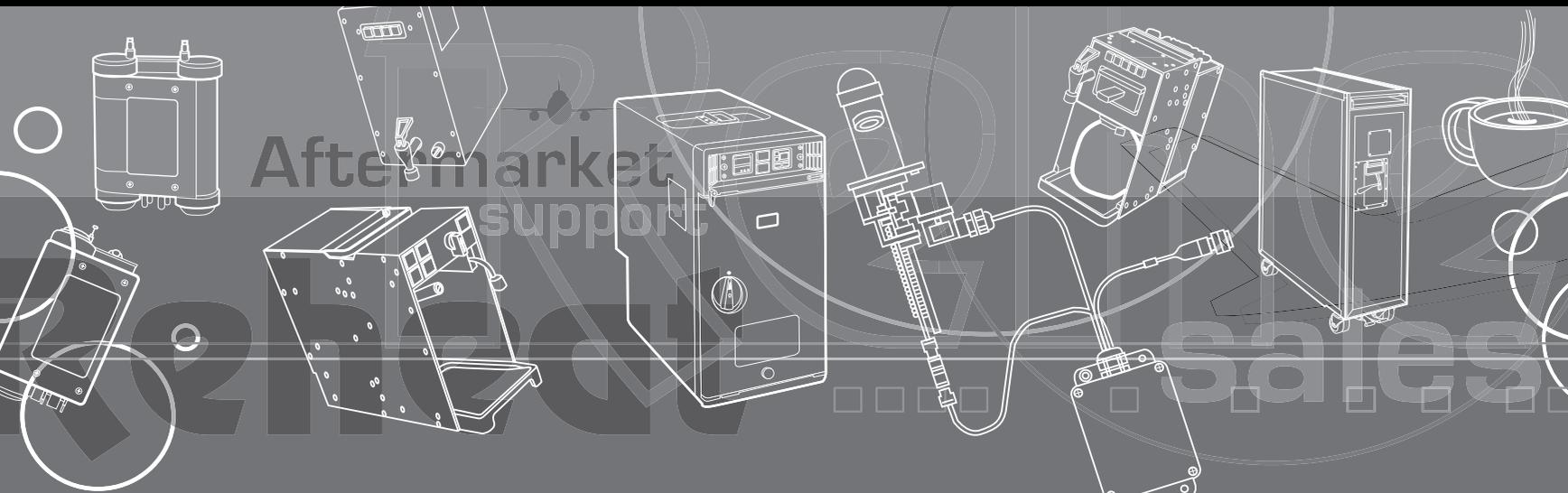


Ipeco's new ARINC galley inserts will be presented at the Aircraft Interiors Exhibition this year. The new units encompass new technologies & materials & addresses flaws in current standards.

ATLAS & custom engineered galley equipment from Ipeco will also be on display including the new Beverage Maker, Ovens, Refrigerators/Freezers/Wine Chillers & Water Boilers.

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fantastic voyage

Andrew Muirhead & Son will launch the second generation of its Voyager range of leather. The company says the enhanced product leads the field in sustainable leather manufacturing, is light in weight, and boasts increased fire retardancy and smoke density, without affecting the quality. Gulf Air has specified Voyager for the next stage in its A330 programme, continuing a long association with the manufacturer.

In addition, the company will introduce a new finish print for leather, Tay (pictured),

which has a cellular grain. A Library of Leather card is also being developed to show all 150 colour variations and different finishes, all available from stock.

“Our policy of continuous improvement means we are constantly reviewing our offering and tailoring it to customer demand,” said Archie Browning, sales director for Andrew Muirhead & Son. “We are delighted to introduce the new improved Voyager and Tay print at the show and look forward to any feedback.”



LEADING LIGHTS

WASP will have a new lighting suite featuring new reading lights, up- and downlights, feature and shelf lights, as well as the company's standard range of mood, wash, puddle, snake lights and SIPS. WASP will also demonstrate its stowage lighting, which is activated by the use of a Hall effect sensor. Lighting for small spaces is catered for by a new miniature PCB-based LED light module, which measures 34mm long and 14mm high on a 54mm PCD.

Designed to meet the appropriate environmental and electrical qualification test criteria, including RTCA DO-160, WASP's lighting solutions will also include new RGB lighting, which will be exhibited for the first time. The company's core business of the design, manufacture,



production and qualification of seat/suite controls will still be to the fore, with several new designs on display.

BOXING CLEVER

B&W Engineering will showcase its complete range of A-LogEqu thermally insulated catering equipment, which is already flying with various airlines.

According to the company, its Magic-Boxes and Cold-Boxes enable frozen, chilled and hot meals and beverages to be stored for many hours, helping to maintain a closed temperature chain without any electricity or dry ice, even at extreme ambient temperatures.

A-LogEqu products enable airlines to offer food service without galley inserts. A-LogEqu boxes are compatible with ATLAS and KSSU carts and carriers. All meals are brought on board ready to be served.

The Magic-Box is equipped with a new speed-flow tap with a 50% higher flow rate – 13.5 litres of hot water can be tapped in less than three minutes.



MAGIC CARPETS

Tisca Tiara mobility textiles will launch a new carpet quality designed for very low lifecycle costs, as well as an inspirational new Trend collection of carefully harmonised carpets, seat cover and curtain fabrics. This new collection aims to reflect the latest global trends in terms of designs, textures and colour combinations. Also on display will be a variety of steam-pleated, ready-to-fly curtains. The company not only produces the curtain fabrics, but processes them to steam-pleated, ready-to-install curtains, all in-house under one roof, without subcontracting to other companies. Instead of being stitched, the curtains are steam-pleated, which Tisca Tiara believes produces a more premium and elegant look. The company maintains a huge stock programme with more than 1,500 curtain fabrics – all sorts of colours, patterns and qualities are available immediately. As a result, customers can be served with ready-to-install, steam-pleated curtains within a couple of days.



BROAD APPEAL

Row 44 will display new entertainment content and other revenue-generating broadband services available in its inflight broadband entertainment portal – including partnerships with major networks and entertainment providers. Row 44's portal is now operating commercially on airlines on two continents.

PLAY TIME

digEcor will showcase the digEplayer L7 handheld IFE system. Using a global distribution network, the company also sources, encodes and integrates content for handheld and embedded IFE systems. There will be several new products and services shown to airline representatives.

FIT THE BILL

Lufthansa Technik will showcase the Skycycle, which is on the shortlist for a Crystal Cabin Award. The Skycycle is an exercise bike certified for permanent installation in the aircraft cabin. In cooperation with the sports equipment manufacturer Technogym, Lufthansa Technik modified a premium off-the-shelf exercise bike to comply with EASA airworthiness regulations. The qualification process required the selection and testing of new materials for seat cushions and trim covers to fulfil the flammability requirements. Furthermore, electrical components had to be shielded to eliminate electromagnetic interferences. The Skycycle attachment can be invisibly integrated in the floor structure under the floor covering. Lufthansa Technik says the de- and reinstallation of the equipment can be performed by any Part 145 organisation in less than 30 minutes.

**SHOW OF POWER**

Astronics Advanced Electronic Systems will display its EmPower in-seat power system, which produces up to 200VA for each passenger. The system, which is installed and flying today, also includes a USB power output for charging passenger devices such as smartphones, iPods, cameras and other standard +5VDC devices. This is all accomplished in a smaller form factor than previous generations of the EmPower line.

gorgeous greys

rohi will feature its Colour The Grey textile concept on its joint stand with Anker. rohi has noticed there is a trend towards grey cabins, as airlines try to promote a smart, professional look. Instead of supporting this palette with purely grey and black yarns, rohi has combined various shades to create what it calls "the smarter grey". The colours are apparent when viewed close up, for a more lively appearance, but at a distance the overall appearance is grey. The subtle colours can act as a base and interplay harmoniously with stronger

There is a trend towards grey cabins, as airlines try to promote a smart, professional look

accent colours in other areas of the seat or with amenities such as pillows and blankets. Anker offers carpets to match.

**SCREEN STARS**

Imagik will show its full line of LED IFE monitors, which ranges from 32-55in. Over the past two years, the company has been changing its product range to all LED monitors. The products are slightly more than 1in in thickness and are designed to lower weight and power consumption. Design of the electronic components (hardware, software and firmware) as well as the external hardware and shroud is undertaken in-house.

The company is also currently completing an STC for the installation of 32in monitors on all monuments on Boeing 747 aircraft, adding to its list of ready-to-install monitors, brackets and shrouds. It was recently awarded the retrofit of Air China's Boeing 777 fleet and its third project for British Airways on its Boeing 767 short-haul fleet.

HOT PROPERTY

Sell will show its latest series of galley inserts on the Zodiac Aerospace stand. Highlights include an insulated serving pot; a steam oven without internal overpressure; and an oven door with double safety latching that can be operated with a single hand. The range includes ovens, coffee maker, beverage maker, water boiler and bun warmer. The challenge was to combine form and function, delivering an attractive and elegant outer appearance and also incorporating the increased functionalities required by airlines today. There is also a clear focus on weight and maximising safety.



IFE SOLUTIONS

Carlisle Interconnect Technologies designs and manufactures easy-to-install, cost effective solutions for the integration of next generation in-flight entertainment and connectivity systems. Our solutions are simple in concept, lightweight, and combine full electrical and structural integration. In short, we offer effective, efficient system installation solutions that stand up to the rigors of in-flight and ground operations for **When Performance Matters...**



1



2



3



4



5

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- 3 » OPTICAL FIBER ASSEMBLIES
- 4 » TRAYS & LRU'S
- 5 » RACK & PANEL STRUCTURES

INTRODUCING TRI-STAR ELECTRONICS



CQ Connectors



CarlisleIT is proud to introduce the addition of Tri-Star Electronics International, effectively broadening our IFE-related connector offerings. The CQ connectors displayed above feature audible click confirmation and a built-in locking and unlocking mechanism, making blind mating applications simple and reliable.



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all right jack

IFPL will show three products. The first of these is the Self-Testing Jack, designed to make audio jack maintenance easier and quicker. An indicator means that every jack can be checked with just a glance.

The second of IFPL's exhibits is the Breakaway Jack, a new version of its Long Life audio jack. The jack is designed to be reliable and robust, the aim being to reduce headset breakages and save money. The product accepts regular headset plugs.

Third, IFPL will highlight near field communication (NFC) technology. Mobile phone technology has moved into producing devices with NFC, including mobile wallet applications. NFC enables passengers to pay for items without having to accept cash or have a card swipe. The system can also include a chip and pin reader and link to loyalty programmes.



Doug Cline

CEO, LUMEXIS

Why did you create your new product, WiPAX?

With the success of Fiber-To-The-Screen (FTTS) in-seat high-definition TV, a number of airlines asked us to create an end-to-end solution based on that integrated system. We moved ahead to create a product complementary – and supplemental – to FTTS.

What does WiPAX enable?

It offers connectivity to the passenger, through his/her personal electronic device (PED), that is, access to all video, audio and website data cached on board (which can be huge). Moreover, it will connect the passenger to any satellite or air-to-ground communication service that the carrier has installed, including real-time satellite video. From the airline's perspective, it is a seamless system for obtaining, integrating, loading and delivering content, as well as accepting payment and off-loading transactions for fulfilment/billing off the aircraft. For the first-class passenger, we believe WiPAX is unique in its capability to provide HDTV on large embedded monitors while simultaneously streaming video over WiFi in coach. WiPAX is a drop-in addition to FTTS and is able to interface with any off-aircraft communication system having an Ethernet interface.

What was the most challenging part of development?

Clearly, we were most burdened by our discomfort in being unable to assure a quality video presentation that might not be supported by each passenger's PED. For example, every Apple device, in coming from a single manufacturer (and one that is strongly

focused on video quality), easily displayed streaming video. But disparate manufacturers of mobile phones and tablets have not applied other operating systems the same way or with sufficient hardware capability. So it's frustrating when an older phone or tablet will handle only SMS, email and browsing, but not video.

How long has it taken?

Development has taken less than nine months because so much was already done for FTTS. The entire head-end aircraft interface system, fibre optic network and end-to-end content handling system were lifted directly from FTTS, as was the video processor. We will wrap up final testing over the next several months, with certification following the first installation, later this year.

What hardware is needed on the aircraft?

A flight attendant panel, a wireless server unit, a monitor power supply (so named for its FTTS application), the firewall router unit and usually three wireless access points (WAPs). We would also recommend two small units that interface with aircraft parameters and a third that securely offloads data over cellular upon landing, but they are optional units from FTTS. Three WAPs provide ample support for typical passenger use in narrow-body aircraft. There are practical limits to wireless throughput that limit the quality and volume of video offered, but these are well beyond expected use in pay-per-use operations. Premium-class seats are offered HDTV, with a guaranteed service level unaffected by the number of wireless users.

Do you have a launch customer?

Absolutely, and we will identify the carrier in line with its marketing schedule. Our target market is the short-to-medium stage length, narrow-body operation (for long haul, we would always recommend FTTS in-seat HDTV).

Development has taken less than nine months because so much was already done for FTTS

KEEP TRACK

EAM Worldwide will demonstrate Tag the Craft, a scalable solution that allows clients to choose which assets to tag and track in the aircraft interior. The company's most recent product launch was the EAM-T56 life raft, the largest-capacity raft that EAM has manufactured to date.

SOFT FOCUS

Schneller will introduce its second annual collection of laminate and non-textile flooring designs. The collection was inspired by the evolution of design through the centuries: beginning with Arts and Crafts, to Form Follows Function, through Bauhaus to the most recent ideas combining aesthetics and sustainability. The Schneller team has translated these concepts using the full range of its manufacturing processes – from multiprocess printing to new texture development – to show customers and designers unique and inspiring creations.

SPEEDY CONNECTION

Lufthansa Systems will present BoardConnect, an IFE solution based on a WiFi network that passengers can log on to through seatback screens or their own devices to access a wide range of content. The company says it can be fitted during routine overnight layovers or maintenance checks. Condor and Virgin America are the first airlines to opt for the system.



plugging the gap

Recaro Aircraft Seating will unveil a new business-class seat for short-haul flights, designed to offer more comfort, living space and storage compartments. The company is aiming to bridge the gap between the sort of seat it says is usually found in short-haul business class – that is, one based on economy class – and the full-flat seats found on long-haul flights.

The new seat has a fixed shell that allows the passenger to change the position of the seat without disturbing other passengers. A kinematic system with dual actuators enables the passenger to move the seat to pre-programmed positions at the push of a button. The backrest and the footrest are individually

adjustable. Recaro has optimised weight by using carbon fibre materials, and says the slim design of the shell ensures extremely good passenger comfort – even at a 42in seat pitch.

The company will also present the latest highlights from its economy-class portfolio – from short-haul to long-haul products. Alongside the CL3620 model, with the latest Thales and Panasonic video screens, Recaro will be showing the BL3520 seat in a range of variants, including models that have headrests and integrated video monitors.



Recaro has optimised weight by using carbon fibre materials

PERFECT PINS

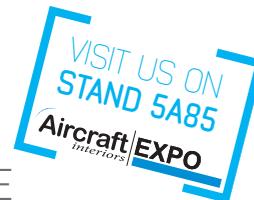
Phitek Systems will highlight its SmartMagJack quick-release audio jack, which it says can eliminate headphone pin breakage. The product is a replacement RJU that fits into existing seat cut-outs and is



designed to release headphones when excessive forces are exerted in any direction. The jack mates with a patented, magnetic plug that can be made compatible with all headphone types.

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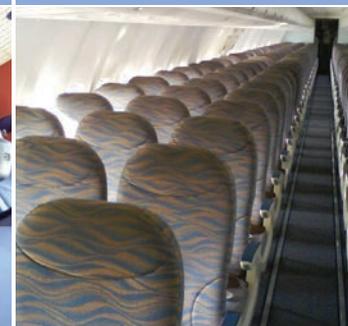
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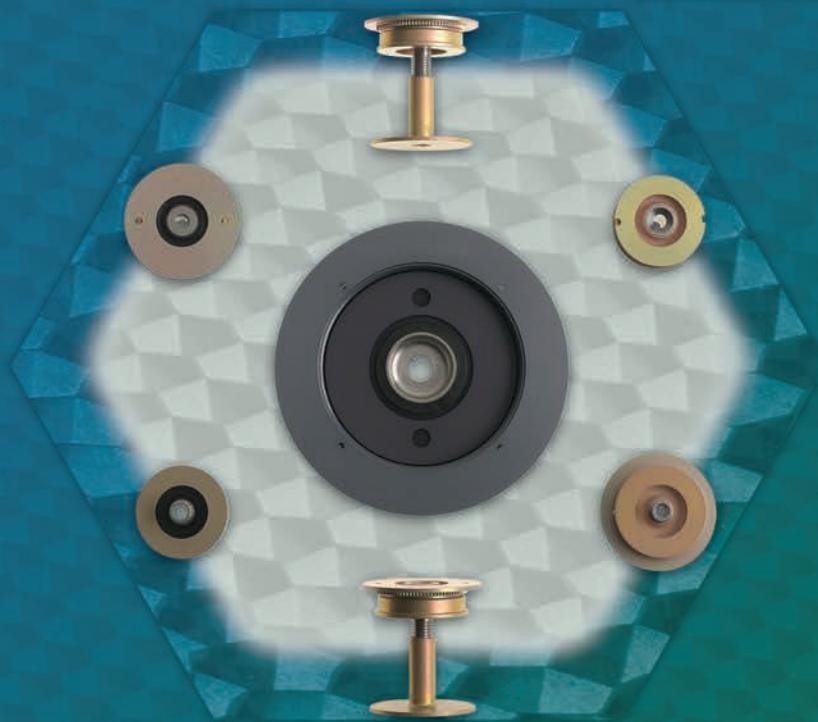
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space travel

Heath Tecna will introduce its A320 Pillow Door System as a retrofit solution for overhead bins. The kit offers new pillow-shaped doors and reinforced hinges that replace the OEM's doors. The doors have a pronounced convexity, allowing roller bags to be stowed transversely, increasing capacity by two bags per bin module.

The company will also demonstrate a refined prototype of its Project Amber

interior, which is a retrofit kit to upgrade architectural elements of the Boeing 737NG. Beyond offering new pivot bins with electronic latches, PSUs, sidewalls and LED fixtures, a recent development in the bin's design includes a lift assist feature, which senses baggage loads and helps passengers with bin closure. The interior has been shortlisted for the 2012 Crystal Cabin Awards.



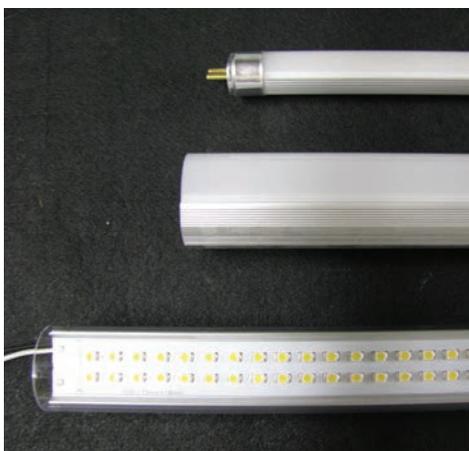
SWATCH AND LEARN

Kydex will present a new aviation-specific palette of colours for its thermoplastic products. Designers will be able to review a completely new swatch book with "surprising" hues, varied moods and a vast array of contrasting and complementary combinations. They can choose colours directly from the palette or call on the Kydex Design Lab to formulate any colours that they envision or match existing colours and schemes. New finishes and textures include metallics, sparkling pearlescents, iridescents and even translucents.



DROP IN

Madelec Aero will showcase a new range of drop-in replacement 115V 400Hz LED tube lights, available in white light or coloured versions. The Stage One LED tube lights have an integral power supply that can connect to the aircraft wiring. These tubes have been designed to fit directly into the existing aircraft light fittings. According to the company, advantages include reduced maintenance, reduced overall weight, improved energy efficiency and reduced heat. Coloured versions are available at the same cost.



STUDY BUDDIES

The German Aerospace Industries Association (BDLI) will present cabin integration concepts resulting from a comprehensive study that aimed to understand the market needs for future cabin and cargo systems, as well as potential fields of innovation. The BDLI Competence Network Cabin/Cargo 'Cooperate to Innovate' project invites all interested parties to discuss the outcomes of the process and to look into selected innovative integration ideas. Contributing companies include Airbus, AOA apparatebau gauting, Diehl Aerospace, Diehl Aerosystems Holding, Diehl Aircabin, Diehl Comfort Modules, Diehl Service Modules, Goodrich Lighting Systems, Hutchinson Aerospace, Recaro Aircraft Seating, Sell, Telair, Wittenstein aerospace & simulation and Zodiac Cabin Controls.

SECOND SKIN

TTF Aerospace will showcase its TSkin lining system for passenger stowage bins, designed to provide a fresh look for old bins or prevent damage to new bins. TSkin is a multilayered sheet assembly sized to install as a simple peel-and-stick application. The company says that when using TSkin, a whole Boeing 737-800 can be refinished in about six hours.



NEW LEASE OF LIFE

Fokker Services will showcase its retrofit capabilities for Fokker, Dash 8, CRJ, Boeing and Airbus single-aisle aircraft. For the interior, it can offer WiFi capability, LED cabin wash lighting, lightweight seats and bin-to-bin panel refurbishment, as well as smaller items such as self-illuminating escape path markings, power outlets and LED reading lights.

The company also offers an iPad EFB solution that enables pilots to get rid of the paperwork in the cockpit, using the iPad to view navigation charts and aircraft manuals. Optional expansions include ARINC 429 connection and the use of the iPad as a monitor for surveillance cameras.



viewing pleasure

PGA Electronic will introduce an HD 3D IFE monitor that enables passengers to watch 3D movies in high resolution, without special glasses. Other new products on display will include a 64in full HD monitor and a tablet docking station. This latter product enables passengers to view their tablets in portrait or landscape orientation, charge the device and connect it to PGA monitors and speakers.



Christian Körfgen

VICE PRESIDENT OF PRODUCT
MANAGEMENT INFLIGHT, LUFTHANSA

What are your plans for the show?

The show is the perfect meeting point for all experts in the field of aircraft interiors, inflight entertainment and communication as well as – for the first time – the catering solutions. Once a year you just need to travel to one location to meet the world. That's very efficient and the strongest asset of the show.

How will you make the most of your show time?

Time is valuable, so good planning helps and many visits and appointments are scheduled beforehand. But I also always need some flexibility for last-minute meetings or interesting product presentations. Of course, networking and the Crystal Cabin Awards will complete my show experience.

What can you reveal about your new business class?

The upcoming roll-out of the Boeing 747-8 Intercontinental also marks the world premiere of our new business class. It's a completely new development and will combine a comfortable full-flat seat with efficient utilisation of the cabin 'real estate'. It fits perfectly in our overall service offering for business-class passengers. We involved more than 3,000 passengers in our development process for this product.

As an example, feedback from more than 1,300 passengers has been taken into consideration after a secret trial on flights to North America in 2010. Twelve pre-serial seats were installed on a Boeing 747-400 and were tested under real conditions on a dedicated rotation to New York. This is unique in the industry and gives us a significant advantage over the purchase of an off-the-

shelf solution. We have decided to work together with B/E-Aerospace to develop, engineer and produce the seat. So far, it is the largest business-class programme we have had within Lufthansa. Over the next cycle, more than 4,000 seats are needed for new aircraft, as well as retrofit of all our long-haul aircraft.

How much is Lufthansa investing in inflight product?

We are investing more than €3 billion (£2.5 billion) into our inflight product over the coming years. This includes the new business class, the award-winning first class, as well as our broadband service FlyNet and any future IFE solutions, which are currently under evaluation.

We are finishing the retrofit of our economy class on some remaining aircraft, including the personal in-seat monitors. Besides the soft skills of an airline and its service professionals, the hardware on board – and its comfort – as well as connectivity are key decision factors for passengers.

What technological advances are particularly exciting? Is there anything in particular you are curious to test or learn about at the show?

We are very much interested in participating in the next steps in new IFE solutions; how to combine the offer of an interesting entertainment programme on board with the reality that nearly every passenger boards the aircraft with their own device. We will be working with dedicated tests in this field.

What are Lufthansa's plans in terms of connectivity?

As the pioneer for broadband internet connectivity in the sky we are completing the retrofit of FlyNet soon. It is the most comprehensive offer, including the use of PDAs and smartphones to go online or send short messages. As in the past, we are sticking to our decision to disable the classical phone function of these devices on board.

Twelve pre-serial seats were installed on a Boeing 747-400 and were tested under real conditions on a dedicated rotation to New York

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light and low

Panasonic will show eXLite, its lightest-weight and lowest-power X Series IFE system. It is a retrofit solution with a streamlined architecture designed to offer big improvements in weight, power and cost, yet still deliver an amazing passenger experience. eXLite leverages Panasonic's Eco series monitors, which include capacitive touch, proximity sensors and next-generation processors. Depending on the configuration, the system can weigh as little as 3.2 lb per passenger seat. Like all Panasonic X Series solutions, eXLite features a flexible architecture that lets airlines customise according to cabin class. As with eX1, eXLite also leverages Qt and Android technologies for its interactives.

The company will also highlight eXW, a line-fit and retrofit solution that lets airlines deliver content to personal electronic devices (PEDs). With the eXW system, passengers can access services such as onboard movies, music, news and in-cabin services, all through a personalised portal on their own WiFi-enabled laptop, tablet, smartphone or other



PED. The portal can be configured to airline requirements, including airline branding and passenger personalisation. eXW systems will be capable of storing a minimum of 40 full-length multilanguage movies, 100 short programmes, 100 audio CDs, electronic newspapers, digital magazines and cached web content. When combined with Panasonic's eXConnect solution, eXW will be able to offer broadband-enhanced applications such as high-speed internet access, social media services, email and live television content through the company's eXTV service. Panasonic will continue to enhance eXW with features including food and beverage ordering and payment, duty-free shopping, games, moving maps, tail camera display and connecting gate information.

HOT TIP

Franke Aquarotter will display a new standalone water heater. Developed completely in-house, the heater is based on the same unit that is in use on the A380 lavatory water supply system.

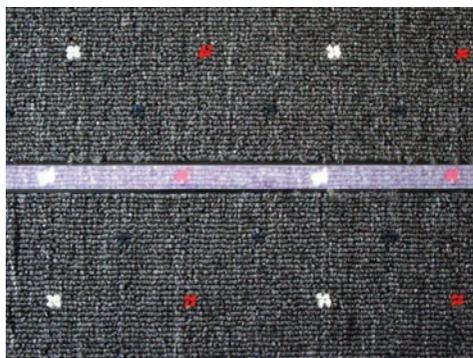
The product has a water volume of 0.8 litres, and a "special temperature regime" minimises potential lime precipitation during heating. The heater is suitable both for conventional and latest-generation carbon-based aircraft types. Besides its application as a single component, the heater can also be combined with the new three-part washing-unit system (LWSA). Installations with self-closing or electronic taps are also possible.



PERFECT MATCH

STG Aerospace will exhibit its SaftGlo range of photoluminescent floorpath marking systems, including the PatternMatch system, which the company reports has excited "significant interest" since its launch at the 2011 show. SaftGlo PatternMatch is made to match precisely the pattern of even the most intricate carpet designs, but is just as effective as other SaftGlo variants if the lights go out.

"Hamburg is always a highlight in our calendar and we look forward to showcasing innovative, effective and cost-saving solutions for safety-critical systems at the show," said the company's new chief executive, Richard Moore.



CLEVER CUSHIONS

Greiner Aerospace will present new aeras knit and Bio³SPHERE application developments. Designed to be ultra-lightweight and boast optimal micro-climate properties, these knit-based seat cushion products are attracting increased interest from seat manufacturers and airlines. Visitors will be able to try out more traditional foam products – from basic PU to the newer "extremely lightweight" options. Greiner Aerospace says visitors will get an idea of the various production methods, how they can be applied, and decide for themselves which product they find the most comfortable!



CARBON TRADING

Cutting Dynamics will exhibit its new line of carbon fibre-reinforced thermoplastic seat components. The company says the range meets all the requirements of FAR 25.853 and is at least 40% lighter than aluminium components. Products include a newly redesigned composite back frame, food tray support arms, armrests, centre consoles and end bays. All the components are 100% recyclable.



SILENCE IS GOLDEN

Long Prosper Enterprise will highlight its LPE-P3NC active noise-cancellation headphones for first and business class. The earcup style can be designed or customised to reflect the airline's branding. Long Prosper Enterprise adopted a special painting technique to achieve the metallic finishing, which it says is also environmentally friendly.



LIFE SAVERS

Servecorp will show its new range of Servestow LVS99 life vest stowage products. The company says the LVS99 can typically save a minimum of 70g per seat. The stowage can be secured with a self-adhesive tamper-evident label – a security feature designed to assist airlines in complying with aircraft search requirements – provide additional cost savings in search and turnaround times, deter life vest theft and promote efficient data collection for maintenance records.



firm support

MERU, a children's charity, will display AirChair, designed in conjunction with Graham Race. The product is designed to offer firm postural support for disabled children between the ages of 3 and 11 (depending on the weight and height of the child). It has been developed with advice from the EASA, the CAA, several key airlines and parents with disabled children. MERU is currently working towards authorisation. The AirChair is to be issued with a Form 1 manufactured in the UK by Balforn.

Certain airlines have been using an earlier version of the chair for many years. Parents simply advise the airline of their need to use the AirChair at the point of booking and the airline ensures it is on board for both outbound and inbound flights, at no extra charge. Virgin Atlantic has been quick to purchase the new, improved version, which should be available from summer 2012.

The new AirChair has been upholstered in black leather and cloth. It fits into a standard airline seat and can be stored in the overhead locker. Features include movable headrests to accommodate various ages; waist, hip and leg support; a removable pommel strap; and foot support. It can accommodate feeding tubes for children fed enterally (that is via gastrostomy, jejunostomy, jejunally, either by bolus feed or continual feed).

The existing AirChair (called the Travel Chair) will remain available through Monarch, Virgin Atlantic and British Airways until the new version is launched in summer 2012.



Virgin Atlantic has been quick to purchase the new, improved version

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Equipment: Life vests

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E		NP			G
		E			
	G			NP	NA
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E: Expired
NP: Not Present
G: Good
NA: Not Assigned

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essential kit

B/E Aerospace will introduce its Essence galley insert collection, which includes a wide selection of beverage makers, ovens and chiller products. According to the company, the range delivers weight reductions; simplified user interfaces; and improved performance, power efficiency, reliability, ergonomics and aesthetics.

B/E Aerospace will also showcase the modular lavatory system (MLS), which was recently selected for installation on Boeing's 737 Next-Generation aircraft, as well as the 737 MAX. The MLS utilises patent-pending Spacewall technology, which frees up floor space in the cabin, creating the opportunity to add up to six incremental passenger seats on each aircraft. The MLS also integrates many other B/E products, including its vacuum toilet, LED lighting and lavatory oxygen system. The MLS is designed for improved reliability, simplified maintenance and an improved lavatory environment. First deliveries will be for Delta Air Lines' new-buy Boeing 737s, scheduled for the third quarter of 2013.

B/E Aerospace will also display its Crystal Cabin Award-winning vacuum waste system, and will demonstrate its new composite vacuum toilet system available for retrofit on Boeing 737, 747, 767 and 777 aircraft. The new vacuum toilet has a modular design for simplified maintenance and ease of removal.



Ian Dawkins

CEO, ONAIR

How are passengers' expectations changing in terms of inflight connectivity?

Airlines used to contact OnAir to ask if they could provide inflight connectivity for their passengers. Now they ask how soon they can have it. It's no longer a nice-to-have: it is a must-have.

What types of aircraft and routes are equipped?

Across the world, airlines now offer connectivity on both short- and long-haul flights. It won't be long before entire fleets, made up of many different aircraft types, will be connectivity-enabled, and all categories of airlines are now providing connectivity. For example, OnAir connectivity is already available on all the aircraft in the A320 family, as well as the Boeing 737, the A330 and the A380, and will soon be deployed on the Boeing 777 and 787, with the A350 to follow.

How are you responding to these changes?

As the market matures and technology develops – such as with the advent of Inmarsat's Global Xpress – the key for airlines will be consistent global coverage, so that passengers have access to the same services wherever and whenever they are flying. That is why OnAir has invested in building the widest network of

regulatory approvals and roaming agreements. We are the only provider offering services in many countries, the latest being Azerbaijan. It is also why we use Inmarsat satellite connectivity.

How are you involved with Ka-band?

OnAir is partnering with Inmarsat to provide Global Xpress, the only global Ka-band network, to the aeronautical market. As one of the two exclusive distribution partners, OnAir will provide Global Xpress to commercial airlines – as well as VIP, business jet and government operators – starting in 2013.

What benefits will Global Xpress bring?

OnAir is a distribution partner for Global Xpress. The service will operate in the Ka-band, thus providing users with significantly higher throughput than other satellite solutions, including the current-generation technology based on Ku-band. Combined with superior economics for services and equipment, it will support the broad introduction of connectivity services to passengers and airlines on a sustainable basis anywhere around the globe and across entire fleets.

How did the partnership with Inmarsat come about?

OnAir and Inmarsat have worked together successfully for many years. OnAir was the first SwiftBroadband distribution partner in 2006, and in 2009 was given an award for being the greatest contributor to SwiftBroadband growth. In particular, the two companies will continue to work on the development of a clear and simple deployment path from SwiftBroadband and other solutions to Global Xpress.

The key for airlines will be consistent global coverage, so that passengers have access to the same services wherever and whenever they are flying

DESIGN PARTNER

Infotech Enterprises, a first-time exhibitor, will showcase its services and expertise in cabin interiors and avionics engineering. The company has expertise in aesthetic and lightweight interior designs for commercial, general aviation and executive jets. It also has experience in modular design and integration of seating, gallery structures, lighting, cabinetry, overhead systems and storage equipment. The company's dedicated interiors team has helped clients in designing seating tuned to ergonomics, while optimising weight and saving space. Other projects completed for global players in the aerospace industry include a mood lighting system, cabin interface systems for multiple airlines, air-conditioning control units, LED lighting units, emergency power supply units and reading lights.

TOTAL PACKAGE

Bower Aero will highlight its expertise in providing integrated cabin solutions. The company is based at the international logistics hub Tullamarine in Melbourne, Australia. Bower Aero has EASA and CASR 145 accreditation (pending audit) that will deliver widening support scope for the interiors market. Its capabilities include C4 – doors and hatches (non-pressurised and secondary structures); C6 – furnishings and equipment (ATA chapter 25, 38, 45); C7 – engines and APU (ATA chapters 49, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83); C8 – flight control surfaces (ATA chapters 27, 55, 57.40, 57.50, 57.60, 57.70); and C20 – structures (ATA chapters 53, 54, 57.10, 57.20, 57.30). Bower AeroAssist provides engineering and on-wing support; Bower AeroTint delivers a cabin refresh system; and Bower AeroManager delivers web-based management information for live updates of work underway.

lighten up

Yarwood Leather will launch Yarwood NT, a genuine leather designed to offer enhanced durability at a weight of 420g/m². The company says it reduces the average economy pax weight by approximately 1kg – potentially reducing weight by nearly 1 tonne on a maximum-configuration A380.

Meanwhile, continuing the company's commitment to offering a fully integrated supply, Seat Cover Solutions is a new service that allows airlines to source leather seat covers from the leather manufacturer. Yarwood believes this

The new service allows airlines to source leather seat covers from the leather manufacturer

vertically integrated supply will ensure that economical and fixed-priced covers can be supplied in shorter lead times and with higher quality.



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12:49 FAR 25.856 (a)	Confirmed
2:50 FAR 25.853 (d)	Confirmed
3:02 THERMOFORMABLE	Confirmed
5:56 LOW OUTGASSING	Confirmed
10 LOW WATER ABSORPTION	Confirmed
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hands free

Asian Pioneer will debut a tablet holder suitable for devices such as the iPad and Samsung Galaxy Tab. The holder is made of resistant material such as leather and enables passengers to multitask – for example, watch a video and have dinner – in comfort. The company envisages it being used by airlines that want to offer free IFE with minimum investment, or as part of a tablet rental scheme. The product can be customised to clients' needs and the type of seat. Two options are available: a headrest version that hangs from the top of the seat supported by double Velcro strips; and a version that is attached to the magazine holder with a strong clip (with inner protection to ensure the seat is not damaged).



WINDOW OF OPPORTUNITY

Magee Plastics will showcase its thermoplastic window assemblies, which are available for all Boeing 737NG, 757-300 and 747-400 series aircraft. The assemblies include the window shade, pane, ring, outer reveal and seal.

THE PRESSURE IS ON

Biolink Tape Solutions will present its range of pressure-sensitive adhesive tapes, films and foils. One of these products is the Relink 2318 carpet tape, designed for quick installation; secure lift-free fixation across all carpet backing types; and rapid residue and damage-free removal, in one piece.

The company is currently developing several new 2318 variants, including non-textile floor (NTF) and flame retardant carpet tape. The NTF tape is designed to provide residue and damage-free removal from moisture liquid barrier films and from composite directly.



VIP SERVICE

328 Support Services will showcase its capabilities as the type certificate holder for the Dornier 328 jet and turboprop aircraft and a registered production, customer support, engineering and third-party maintenance organisation. As well as its 328DBJ VIP interior, 328SSG also works on other aircraft types and has won contracts to make standalone VIP monuments for various sized aircraft, up to the A340.

At its base at Oberpfaffenhofen Airport, Germany, the company's 150-strong workforce offers full maintenance and engineering services, customer support, spare parts and technical services, together with aircraft modernisation, retrofit and customisation. In addition to its VIP conversions and the manufacture of Airbus VIP monuments and galleys, the company embraces an MRO organisation that is dedicated to Dornier 328 maintenance and refurbishment.



SITTING COMFORTABLY

Franklin Products will unveil I-Motion, an "innovation in seating". The seat cushion supplier will also showcase its Style-Pro Dress Covers and Soft-Touch comfort foam. These are designed to enhance the aesthetics of the cabin, while improving passenger weight distribution and lowering pressure points.



COMPLETE PROTECTION

Gore will exhibit its Skyflex Aerospace Materials, designed to protect against corrosion, water ingress and other influences, including fuels and oils. Gore says the product can be formed in place and remains flexible and compliant over many panel and installation cycles.



LIGHT LEATHER

Boxmark will highlight its X-Air-Light-Leather, which is designed to be hard wearing and combine high technical quality with 30% less weight. This leather has special protection against water, oil, alcohol and sweat, and is soil resistant. The company says the leather has a ready laminated weight of about 650g/m².

MODERN CONVENIENCES

Linstol will exhibit its line of headsets (ranging from low-cost to noise-cancelling models); paper and plastic products such as cups, napkins and cutlery; comfort products such as cotton towels, towelettes and amenity kits; and aircraft models and gift items. The company recently appointed a new sales manager, Craig Mitchell, who will attend the show. Mitchell is responsible for all sales-related issues in Europe, the Middle East and Africa, including client relationship and customer services. He holds a degree in hospitality management and a diploma in business and finance, having worked in hotels in the Far East for several years, before moving to Dubai to take up a sales and marketing post within the airline supplies sector.

COMPLETE CONTROL

Vision Systems will showcase Noctis, a shading system for first- and business-class cabins that enables passengers to control light and heat entering the cabin, instantly and uniformly at any level. Shading levels range from very bright to blackout.

The shades can be controlled by the passenger directly at the seat and by the cabin crew through the CrewView CMS. The crew can synchronise multiple tintable windows at the same time. The system can also include light and temperature sensors to control automatically the degree of absorption of light from windows. Vision Systems also envisages Noctis being used as a cabin divider.



HOLD TIGHT

GMT will show a new generation of tie rods that can be used to attach interior parts such as hat racks, walls, galleys, lavatories, water tanks and aggregates. GMT developed a rod body out of carbon fibre to replace metallic rod bodies. In doing so, up to 30% of the weight can be reduced, depending on the length of the rod body. Moreover, GMT developed a new technique for attaching the rod ends to the CFRP rod body. The threaded plastic sleeves are attached to the CFRP rod body during the manufacturing process, which GMT says ensures a tight attachment to the carbon fibre rod and allows very high load-bearing capacities.

working in concert

Monogram Systems, a division of Zodiac Aerospace, will showcase its new Symphony suite of galley inserts. The range includes steam and convection ovens, a beverage chiller, coffee maker, trash compactor and water heater – all of which are designed to work in concert with each other. The range is available in both ARINC and ATLAS standards. Monogram says advantages include reliability, weight conservation, performance, minimal power consumption and user-friendly universal controls.

The range is available in both ARINC and ATLAS standards



FINE FINISH

AkzoNobel Aerospace Coatings will display AeroFine Decorative Films, an expansion of its AeroFine range of coatings. The AeroFine coatings line consists of a waterborne topcoat, a waterborne primer/surfacer and a pinhole filler. They are designed to be easy to apply and to leave a mar- and stain-resistant finish with excellent cleanability properties. By introducing the new AeroFine Decorative Films, AkzoNobel will provide additional design options, including a wide range of colours and effects, such as high-gloss metallic, brushed aluminium and custom-made printed patterns.



GOT IT COVERED

The Car Trim Group will present TecMove, a material for the lower seat structure of seat covers. The company says it boasts big weight savings, and improves the feel and longevity of seat covers. Car Trim will also show a weight-optimised leather from its in-house tannery.





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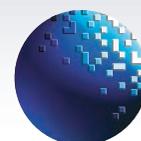
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Rockwell Collins' PAVES 3 is ready to board the single-aisle market

personal touch

The recently unveiled PAVES 3 IFE system from Rockwell Collins is targeted specifically at single-aisle aircraft. It builds upon the company's PAVES family of IFE systems with a large HD touchscreen in-seat monitor that it claims offers maximum reliability for passengers and unprecedented versatility for airlines and OEMs.

"Single-aisle operations present a special set of requirements for IFE," suggests Dave Austin, vice president and general manager, Cabin Systems for Rockwell Collins. "PAVES 3 provides the features passengers want while meeting the needs of airlines to make quick gate turns without extensive content loading or maintenance."

Some industry experts predict that there will be nearly double the number of commercial aircraft flying in the next 20 years. With roughly two thirds being single-aisle aircraft, this represents a substantial opportunity for companies involved in IFE. "The biggest potential, though, is for those companies delivering advanced IFE that can adapt to changes in the consumer technology brought on board," Austin continues. "Technology continues to move at light speed and airlines are seeking IFE solutions such as PAVES 3 that are flexible, to meet their passengers' needs moving forward."

In addition to airlines' entertainment offerings, with PAVES 3 passengers are able to connect their personal devices to access their own content (such as movies) and view it on the HD in-seat monitors. An at-home, on-demand experience is enabled by the intuitive touchscreen user interface.

PAVES 3's architecture is designed to provide passengers with something Rockwell Collins believes is lacking in some traditional IFE systems

– uninterruptable functionality. All content is stored at the seat's built-in media player unit and can operate independently of the cabin's main server, which is important as it removes any single points of failure. "Airlines don't need the ruckus caused by entire rows or sections of in-seat monitors failing," Austin says. "With PAVES 3's design, you avoid this as each passenger essentially has their own tablet PC."

Rockwell Collins says that in the rare event that a PAVES 3 in-seat monitor does malfunction, there is no domino effect of other monitors failing as a result of the one problem monitor. "Single-aisle operators can't afford long downtimes in the event of failed IFE systems," Austin adds.

PAVES 3 is not limited to in-seat monitors however – it's a full overhead and in-seat IFE solution that airlines and OEMs can customise to their needs. The company touts PAVES 3 as a single-aisle digital IFE system that offers customisable cabin configurations, with airlines and OEMs able to select from a variety of overhead and in-seat monitor combinations on board.

"Having full aircraft in-seat monitors doesn't make fiscal sense for everyone," Austin concludes. "An airline might desire in-seat monitors to better serve first- or business-class passengers with HD overhead monitors reserved for economy. PAVES 3 grants this versatility."

Available not only as forward-fit option, PAVES 3 is also offered as an upgrade to existing PAVES and dPAVES IFE systems. Indeed, there are more than 1,600 aircraft now flying that could receive the upgrade and further enhance the passenger experience.

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brightidea

At 2011's Aircraft Interiors Expo, Driessen-Zodiac Aerospace launched its Hybrite trolley line, a stylish and colourful range that garnered both critical and commercial success – an honourable mention from the red dot organisation plus orders from airlines worldwide. The company is following up on this success with a new line of containers for onboard storage and catering.

Containers – sometimes referred to as standard units or boxes – are used for the mobile storage of food, beverages and condiments in the galley, and have runners to accommodate both trays and drawers. Driessen started designing these containers in early 2011 at its headquarters in the Netherlands. The design was led by customer requirements – which included a more modern look and feel, weight reduction, improved maintenance, improved ergonomics and crew handling, as well as the durability and product quality the company prides itself on.

Production of the first batches will start from April 2012. "Bringing this together has been an interesting journey, especially as we wanted to launch the product within a year," reveals Michiel Maris, sales and marketing director at Driessen. "Even before the launch, the new container has been selected as seller-furnished equipment (SFE) for a new extra-wide-body aircraft soon to be introduced."

Although the container is available in ATLAS configuration, Driessen can adjust it for other configurations upon request. Maris further reveals that a 10% weight reduction was achieved (the product weighs 2.6kg) while also improving stackability (through new stackable ribs),

durability (through integrated hinges, rounded corners and a flush top handle) and maintainability. Other enhancements include a new slam latch developed in cooperation with airline crew for ease of opening and closing. Hygiene has been addressed through the creation of smoother surfaces and a closed mechanism.

Transforming the industrial appearance of a classic container into a stylish cabin accessory was important because catering containers can be the first things passengers see upon boarding. Driessen poured most of its design efforts into the visible part of the unit, producing an elegant front panel design with rounded corners and a smooth surface. Similar to the Hybrite trolley, the container's door panel can be powder-coated in any colour or used as a canvas for the airline's branding or other illustrations. Meanwhile the new lock design has a curved flow. While the container body is made of aluminium, the handles and lock are made of composite material for an ergonomic, soft touch.

User-friendliness was addressed through the development of one-finger opening, so the door can be unlocked and opened in one movement. Crew can use the handle from above, below and the side, even in a 270° approach. This is important because containers are sometimes stored above the head, at floor level or in a difficult-to-reach location. The cup behind the latch is designed to direct the hand in a smooth and natural flow, from whichever side it is approached.

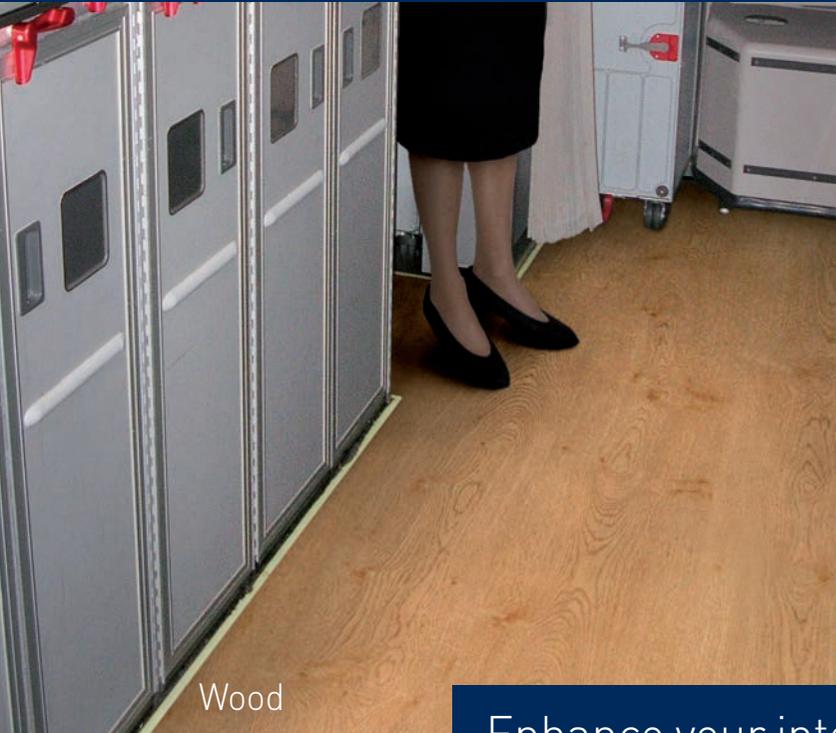
The product will be on display at Aircraft Interiors Expo in Hamburg on 27-29 March 2012.

A new range of stylish inflight containers from Driessen-Zodiac Aerospace

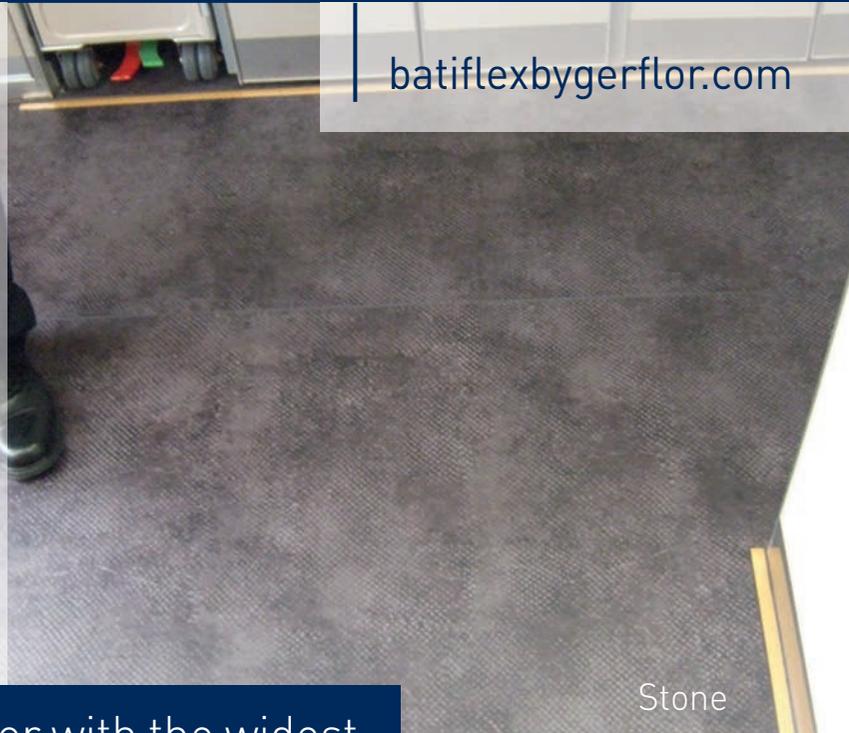
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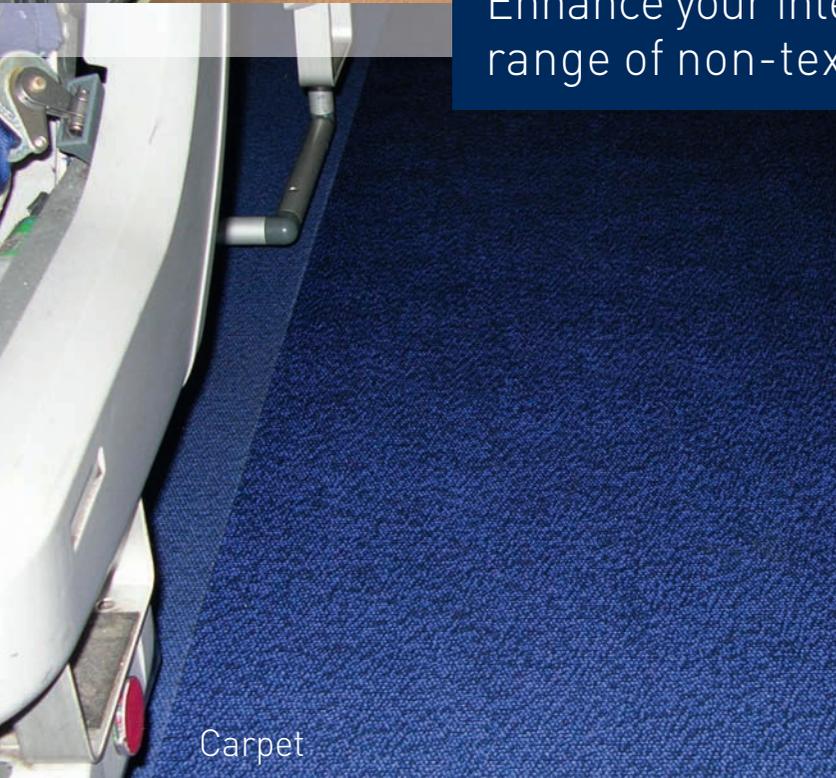


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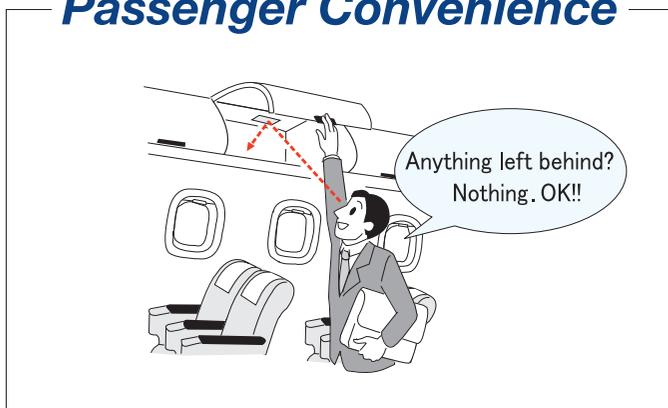
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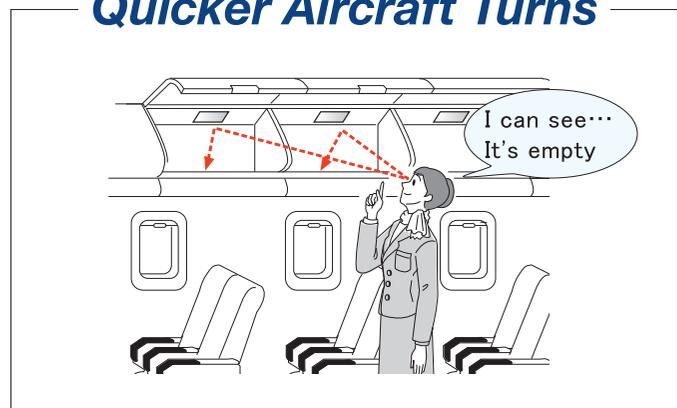
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New IFE supplier
Intelligent Avionics
on challenging the
status quo

shakeitup

Intelligent Avionics entered the tight-knit IFE sector with the launch of its Aura Works product in 2010. Rob Britton, the company's vice president of marketing, concedes it was a challenge breaking into what he calls a "rigid, rule-bound market".

He says the roots of this "inflexibility" are twofold. "Firstly, airline-industry culture developed in an economic environment very different from today – governments at one time either owned or intrusively regulated nearly all aspects of the business," he says. "I am old enough to recall a US dispute over whether Western Airlines, now part of Delta, could give domestic passengers a free cup of Californian sparkling wine; after a tussle in Washington, Western prevailed. The artificiality of these restricted markets created a set of beliefs and behaviours that have often endured into the current era of economic deregulation and true competition."

Britton's second reason for this rigidity lies in the industry's long and understandable goal of continuous operational improvement, in the name of safety. "Rules, unwavering standards and a commitment to precision are what have enabled airlines to create a mode of transport that is far safer than anything ever developed," he says. "So, inflexibility has a place in airline operations."

But he says this 'good rigidity' can also lead to new solutions and innovations being overlooked by overly cautious and conservative managers. "Then add in the reality of leaner and leaner management staffing at almost all airlines, and you have perfect conditions for the status quo."

New suppliers are breaking through though. Two years ago, Intelligent Avionics began with

a clean sheet, intent on developing a lighter, more reliable, cost-effective and passenger-friendly IFE system. "Our initial product, Aura Works, is an ultra-lightweight embedded system that is gaining attention in the marketplace," Britton explains. "But as we began to meet with potential customers, we came to understand that a single solution was not enough – adopting a one-size-fits-all approach would be regressing to the inflexibility we so dislike."

So the company's engineers and developers took two more clean sheets and developed two more solutions. The first, Aura One, recognises that many airlines are still flying overhead IFE systems with tape drives. "It is a fast (literally overnight) and inexpensive way to replace analogue head-ends with digital IFE," Britton reveals. "Without touching wiring or overhead screens, customers get clearer audio and video, and airlines get content flexibility – and lose the headache and cost of tapes."

The second solution, Aura Connected, is expected later in 2012. "It will be a lightweight, low-cost, simple-to-install wireless intranet system that will provide passengers with an extensive range of content, advertising and digital products and services streamed to selected mobile devices," says Britton.

With Aura Connected in-seat power supply is optional, and it interfaces with virtually any internet connectivity solution. As all three solutions use common components, Aura Connected can be deployed on its own, or as a complement to Aura One or Aura Works. "We believe flexibility is the way forward," says Britton.

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tiptop

After many years of success, Sabeti Wain Aerospace has now reached that critical mass where all orders for its laminated seat covers come from recommendations. "We don't have a sales force. Instead, we work hard to ensure that we have supportive relationships with all our suppliers and that our customers receive a quality product and a responsive service," reveals Paymen Sabeti, director of the company. "It's very satisfying for all of us to be approached by companies that have been recommended to us by their industry colleagues. It's the ultimate compliment."

The company says it has never lost a customer and its order book is still growing. In fact, increased sales have led it to boost its manufacturing capability over the past year with expansion in both the UK and Dubai. "In June 2011 we expanded our manufacturing in the UK to adjacent premises and in August 2011 we took the neighbouring manufacturing unit in the Dubai Airport Free Zone, allowing us to double our capacity," Sabeti continues. "The commissioning process for the new unit was a matter of months – evidence of our responsiveness to growing demand and the ease and speed with which we can replicate our manufacturing processes."

A recommendation at Aircraft Interiors Expo 2011 in Hamburg, Germany, resulted in Sabeti Wain Aerospace securing a contract to supply seat covers to a major airline for its new and existing fleet of more than 125 aircraft. Another major airline contracted the company to provide covers for first-class seats across its entire fleet,

with a concurrent 20% per annum replacement programme. Add to this its ongoing spares and upgrade programmes and its order book is very healthy indeed.

Sabeti Wain Aerospace believes its success is also due to the popularity of laminated seat covers. "The majority of all new airline seat programmes now take advantage of the attractive design styles and durability that lamination makes possible," Sabeti says. The company's in-house lamination process enables it to incorporate bespoke design and style features into seat covers.

"With airlines operating on increasingly tight margins, laminated seats make economic sense too," Sabeti adds. "Traditional non-laminated seat covers have to be fitted to a heavy and expensive foam-back and manipulated for optimal fit. Laminated seat covers offer a uniform, neat appearance and have a slim 5mm foam-bonded backing that can replace the need for foam on the seat."

Sabeti believes this one factor gives rise to a range of benefits that go beyond aesthetics. "The initial cost of the seat is less but the weight of the seat is also reduced, helping to keep down operating fuel costs. The seats are simpler and quicker to dress than non-laminated seats, and easy to clean so maintenance time is reduced too," he says. "Airlines recognise both the cost savings and the enduring visual appeal of our laminate seat covers and those that have bought them in the past are returning to us to buy them again when they reach their next upgrade cycle."

Sabeti Wain Aerospace says all orders for its laminated seat covers now stem from recommendations

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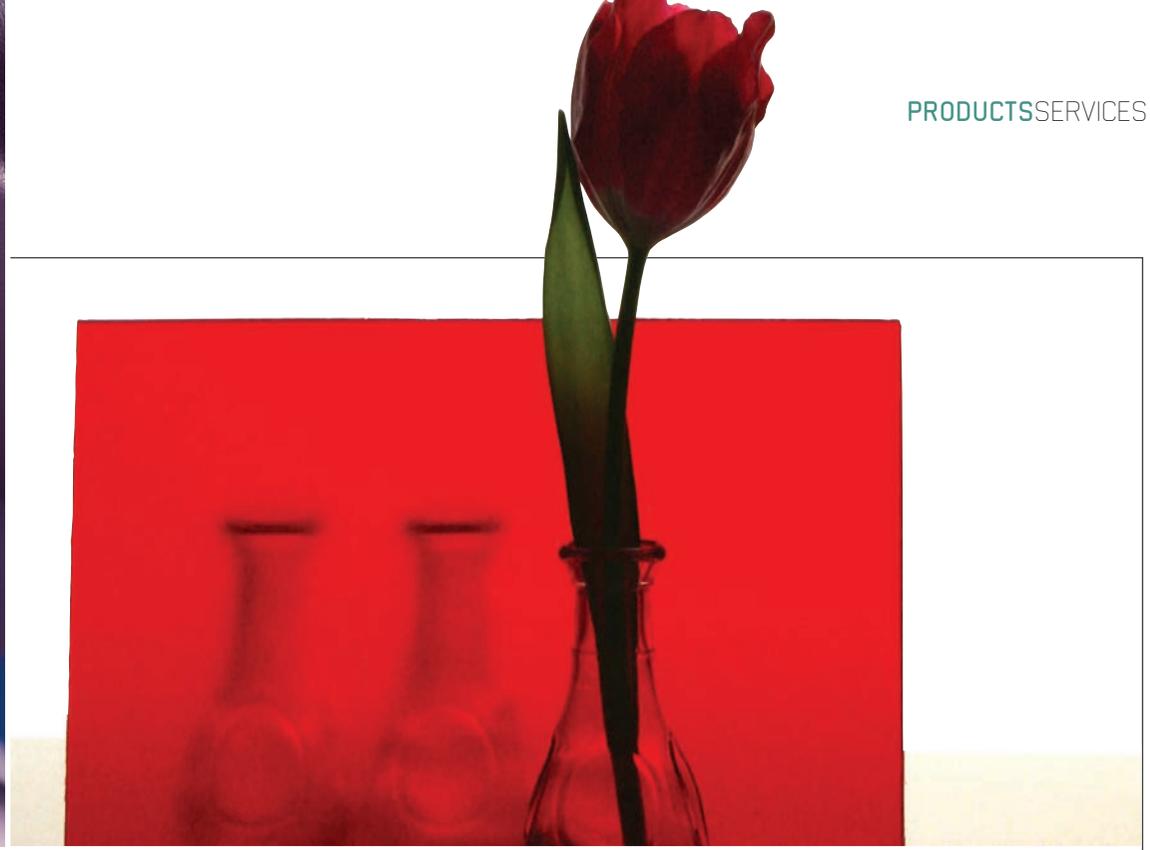


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The latest product of the Kydex designLab is a translucent thermoplastic that acts to diffuse light in the cabin

lightshow

Aviation thermoplastic manufacturer Kydex pays a huge amount of attention to creating new thermoplastic compounds, colours, finishes and textures. It does this through the Kydex designLab, which acts as a point of inspiration, collaboration and customisation for aircraft interior designers. "Many elements thought to be economically prohibitive or even physically impossible are now at the fingertips of designers," suggests Ronn Cort, international business manager at Kydex.

Bold metallic, sparkling pearlescent, translucent and iridescent materials are just some of the solutions to stem from this approach. The company has in fact just updated its swatch book, offering "surprising hues, varied moods, and a vast array of contrasting and complementary combinations", according to Cort. The Kydex 6503 aviation palette is also expanding, with eight new colours that provide more varieties than ever (64 colours in total).

One new option for Kydex thermoplastic sheet is translucency. "Although clear glass can indeed be translucent, countless items such as leaves, gauzy fabrics or champagne also fit the bill," Cort says. "Translucency is not just transparency – it is light diffusion. Light is transmitted, reflected and refracted; you don't see the object behind the translucent material, just its silhouette."

Cort says the light-diffusing properties of this latest sheet can make a real difference to the mood in the cabin. "Long-distance travel can be disorienting," he explains. "Light-diffusing materials can set moods for different parts of the flight, giving subtle cues to passengers as to when it's time to eat, sleep or work. They can

also soothe at take-off and landing, stressful times for many fliers."

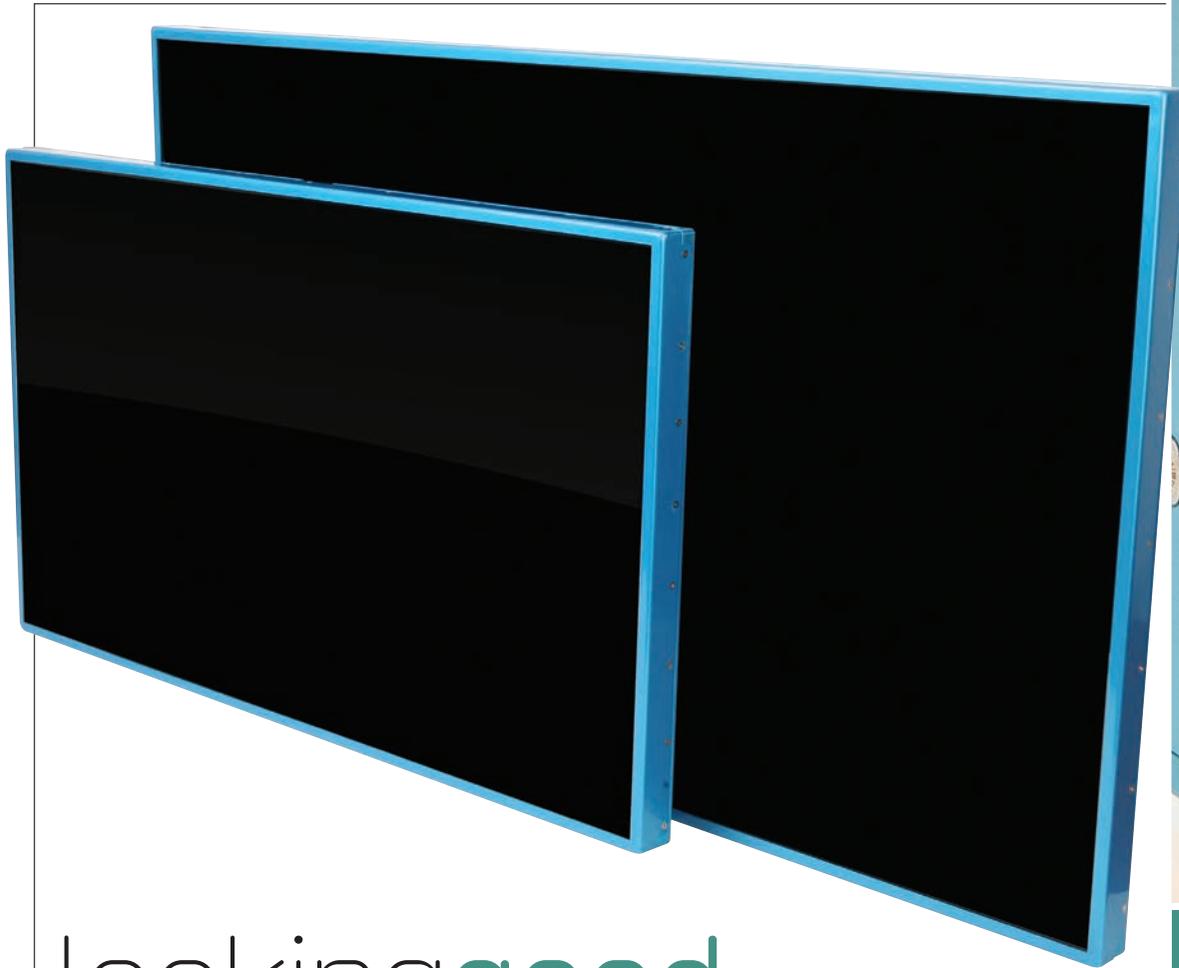
Kydex hopes designers will use its translucent materials to break with convention. "The possibilities are limitless," Cort says. "Certainly, long-awaited uses such as cabin class dividers, light shrouds and seating spring to mind. But importantly it allows designers to play with every possibility of aircraft LED lighting and achieve a multitude of colours, moods and environments. Light-diffusing Kydex FST also helps designers match the branded colour scheme of any airline, which is often infused into cabin lighting tubes – all in durable, fully compliant Kydex FST."

In fact designers are already making use of the translucent material. "One envisioned a shroud for seatback video monitors, allowing screen colours in motion to play," reveals David Scott, consultant at Kydex. "Another from a leading OEM saw an answered prayer for lighted staircase walls. From grand schemes to tiny details, light-diffusing translucent materials allow the imaginations of designers to soar."

Kydex stresses that its FST (Fire, Smoke, Toxicity) compounds are not only compliant with FAA regulations but also the standards laid down by Boeing and Airbus. "These materials offer the strength, durability and aesthetic excellence of traditional Kydex thermoplastic sheet, but with more versatility and long-term environmental benefits," Cort concludes.

In addition to the translucent option, Kydex FST is available in pearlescent and low-gloss finishes, as well as with Microban antimicrobial technology, which is designed to help prevent the growth of stain- and odour-causing bacteria.

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lookinggood

With more than 15 years of experience in the airline IFE business, Imagik is one of the world's leading suppliers of flat-panel IFE monitors for retrofit or replacement. The company designs all its electronic components (hardware, software and firmware) and external hardware and shrouds in-house to create the most efficient product in terms of power usage and weight.

Imagik is currently in the process of completing an STC for the installation of 32in monitors on all monuments on a Boeing 747, adding to its extensive list of ready-to-install monitors, brackets and shrouds.

Projects scheduled for completion in 2012 include the retrofit of Air China's Boeing 777 fleet and British Airways' Boeing 767 short-haul fleet. The latter is the company's third project with British Airways – most recently, in 2011, Imagik installed in-seat monitors in first class for the airline. Projects have also been secured with other airlines although the company has not yet been authorised to make these public.

Imagik is also on the final stages of developing a new full line of large LED monitors, ranging from 32-55in. "These will bring into the IFE

business the most advanced technology available today," suggests Claudio Ovide, general manager at Imagik. "Further lowering weight, power consumption and slightly over 1in in thickness, these monitors will bring the latest available viewing experience into the aircraft."

These units have both analogue (composite, differential, NTSC, PAL and SECAM) and digital inputs such as HDMI 1.3, DVI 1.0, SDI Display Port Input, IP-TV and optional IP-TV WiFi. The monitors also have a built-in HD player (MPEG-1, MPEG 2, MPEG-4 Part2, MPEG-4 Part 10/AVC/H.264, Blu-Ray VC-1/WMV9 SD and HD).

The company also recently introduced a new 17in LED for ceiling and bulkhead installation, to replace older CRTs and LCD units. It says these are particularly suitable for retrofitting Boeing 757 centreline installations and wide-body 74/76 and 77 ceiling mounts and bulkhead locations.

Imagik's reach has also been expanded by signing commercial and strategic agreements with 'top of the line companies', adding visibility and reach to its product line. Imagik will show its full product line at Aircraft Interiors Expo, to be held in Hamburg on 27-29 March 2012.

With retrofits for Air China and British Airways, and a new line of LED monitors, 2012 will be a busy year for Imagik

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Rollon reveals the attention to detail that goes into seat track design

righttrack

Reduced weight, compact dimensions, flexibility and reliability are clearly important OEM demands for all seat classes, but Rollon believes they are especially so in first and business class.

"While economy seats weigh around 45kg, those in higher classes can be anything from 90 to 140kg depending on the features," says Franck Michaux, head of Rollon's French subsidiary. "However, super-first-class seats are the most complex, folding flat to 180° so passengers can sleep, and sporting adjustable headrests, footrests and seatbacks. At a cost of €190,000 to €230,000 a seat, designers and engineers must carefully consider how each component contributes to the overall design – even down to items such as linear rails and bearings, which allow seats to move back and forth and armrests and footrests to slide smoothly and accurately into various positions."

The Italy-headquartered Rollon Group has been manufacturing bespoke linear bearings since 1975 and can boast guides on first- and business-class seats in Boeing 787 and A380 aircraft. "We are attending Aircraft Interiors Expo 2012 in Hamburg with our compact and telescopic families of linear guides, suitable for numerous applications in the aircraft and lightened to help overcome issues relating to light weight, reduced size and high performance," says Michaux. "From seat tracking to footrest, armrest, table and screen, features such as reliability, straightness and lightness are vital, yet each component must also be sturdy."

Design engineers have traditionally relied on titanium for certain components, a material that Michaux says has recently become more difficult to source, leading to an increase in cost as well as

delivery schedule. "Steel, though, is more widely available and offers comparable strength at roughly 25% of the price," says Michaux. "The trade-off, however, is that steel is around twice as heavy as titanium." Nevertheless, Rollon's linear rails and bearings weigh less than 1kg of the total 140kg weight of a first-class seat – a figure the company's R&D staff are looking to reduce further.

It's also vital that the linear motion components used in seats are rigid and support sufficient load capacity. Stringent tests within a chamber include 16g of acceleration in both vertical drops and side-impact testing, while the seating products should also be verified by FAA-authorized labs to gain the approvals for use on commercial aircraft. Seat rails may deform but should never break apart.

A major design and assembly issue when it comes to installing linear rails is straightness – misalignment can result in friction and stuck bearings. "Designers have ordinarily specified linear rails and bearings separately, leaving alignment tasks up to assembly technicians, which can result in time-consuming assembly processes and improper alignment," says Michaux. That's why Rollon has developed a self-aligning, pre-loaded linear guide system, which includes pre-installed rolling sliders with radial bearings that slide on internal raceways. This flexible system features three types of rails – a fixed bearing, floating bearing and a compensation rail. Fixed bearing rails act as the main load-bearing surface for radial and axial forces, while floating bearing rails are used as a support bearing for any occurring moments. The rails are mounted together, to eliminate misalignment.

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sweetmusic

The new Symphony line of galley inserts from Monogram Systems, a division of Zodiac Aerospace, is a direct response to the industry's move from a BFE to an SFE design approach. Designed to blend efficiency, convenience and aesthetics into a fully synchronised solution, the new line features steam and convection ovens, a coffee maker, a beverage chiller, a trash compactor and a water heater.

With a portfolio of products that improves the inflight experience for passengers and flight crew alike, Zodiac Aerospace can lay claim to more than 80,000 galley inserts flying on wide- and narrow-body commercial aircraft, as well as regional and corporate jets.

Many hours of research have gone into designing each of the new galley inserts in the Symphony suite so that they all work in perfect harmony, yet vitally perform individually as standalone units. Full-colour displays and intuitive, plug-and-play controls are noteworthy features designed to contribute to reliability, convenience and ease of use. "Such efficiency in design greatly simplifies the challenge of providing world-class meals and premium service in a constrained workspace, the result

being that passengers will appreciate better food and beverage quality," says Thomas Lee, director of business development for Monogram Systems.

Among the innovations is a patented brew piston in the coffee maker, the aim being to achieve optimum extracted coffee solids in every brew cycle – regardless of the size, shape or weight of an airline's pillow pack. "Reduced weight and energy consumption, meanwhile, ensure low operating costs and superior overall value for airline operators," says Lee. Aesthetics play an equally important role in the design, which incorporates interchangeable equipment panels with eye-catching graphics and themes for a wide range of motifs, cultures and decors.

"The Symphony suite sets a new benchmark for aircraft galley inserts," says Lee. "It is a totally harmonious blend of functionality, aesthetics and reliability that is intuitive for the cabin crew and will delight the flying public. We have achieved a new level of combined elegance, adaptability and convenience that will exceed airline expectations."

This new suite is available in both ARINC and ATLAS standards, making it suitable for a wide range of commercial aircraft.

A new range of harmonised galley inserts

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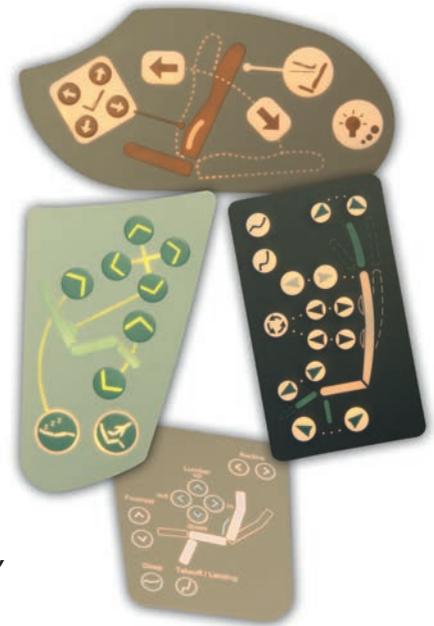
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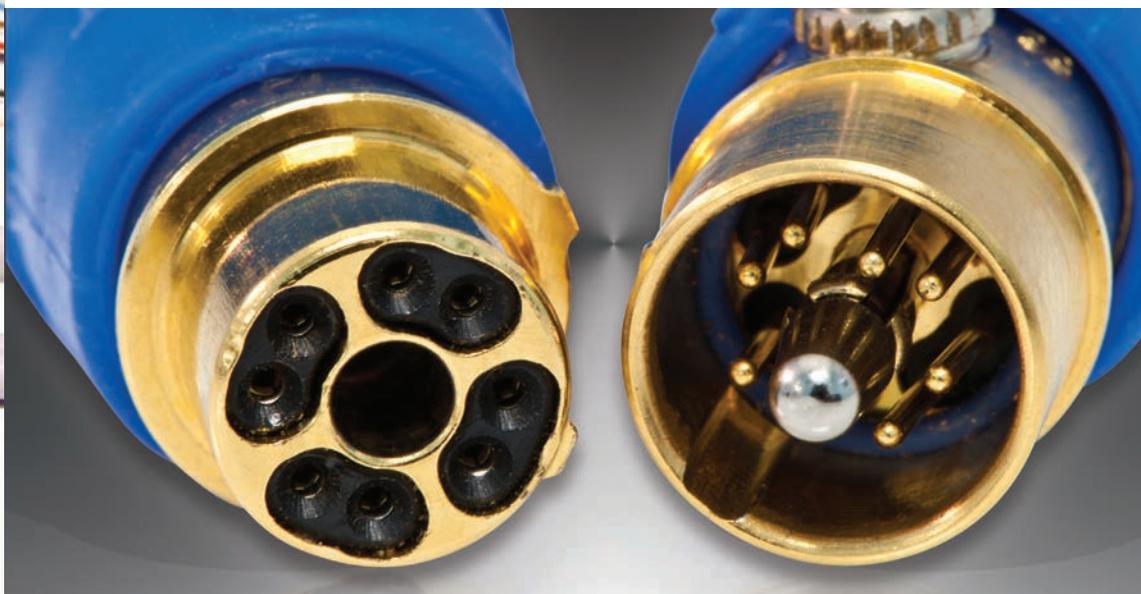
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The latest fibre-optic solutions from CarlisleIT are designed to enable faster and lighter IFE

fastforward

The new standalone Octax high-speed Ethernet connector/cable solution has recently been launched by Carlisle Interconnect Technologies (CarlisleIT) and is capable of operating at both 1Gb/s and 10Gb/s. Two cable options – a 1Gb/s version and a 10Gb/s version – are also available, both offered in 24AWG and 26AWG. CarlisleIT has also patented the technology to house four Ethernet pairs in separate low-profile cells within a small-envelope, lightweight housing.

This scalable solution was built to meet the need for greater bandwidth in the aerospace and defence markets. "IFEC suppliers will always create more product content and will need a faster pipeline," says Dan Dawson, engineering manager for component design and IFE at CarlisleIT. "The 10Gb/s option can transmit data at a faster rate than most IFE systems currently need. The scalability of the Octax system allows IFEC suppliers to install a price-competitive 1Gb/s solution that is instantly ready to meet the demands of new technology and increasingly higher data transmission requirements, minimising future upgrade costs."

CarlisleIT also offers an array of fibre cabling, assembly and associated interconnect products. For instance, LITEflight Fiber Optic Cable has been adopted by many customers in aerospace. Its LITEflight EP (enhanced performance) line of fibre-optic cabling and LITEflight HD (high density) fibre-optic interconnect products meanwhile is claimed to push the advancement of fibre interconnect products tailored to excel in harsh environments. "It also addresses demands for the lightest weight, highest speed and most rugged fibre-optic cabling and assemblies," adds

Daniel Bagby, CarlisleIT's fibre-optic product manager. "LITEflight HD is just the most recent step in that progression."

The LITEflight HD cable is designed around compatibility with the latest multifibre connectors, which allows routing and simultaneous connection of multiple fibres in a compact package. A 12-fibre bundle, capable of transmitting a dozen 100Gb/s data streams simultaneously is contained in a rugged, routeable and aerospace-qualified cable that's just 3.8mm in diameter. "This is greater than a 50% reduction in size over standard fibre cabling products," Bagby continues, "and still offers the same flexible routing, clamping and bundling options, as well as excellent abrasion, cut and impact resistance with non-flammable properties, low smoke, low toxicity and superior resistance to caustic fluids."

Bagby believes that fibre-optic technology in general offers numerous benefits. "In addition to the tremendous bandwidth available across fibre optic channels, it offers much lower weight, immunity to electromagnetic interference (EMI), no signal crosstalk, extremely long service life, security and safety," he says.

The LITEflight family is available in several configurations from 900µm buffered fibres (for applications within LRUs and other equipment) to jacketed products compatible with all standard fibre-optic connector types. They also come with all standard fibre types, including OM1, OM2, OM3 and OM4 grade fibre, bend-insensitive fibres, PM fibre and various high-performance coated fibres with overall cable temperature ratings down to -65°C and up to 260°C.

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safeandsound

The failure of IFE audio jack units is a source of much operational and engineering frustration. Depending on the airline, its cabin class configuration as well as passenger profile, Phitek Systems says such breakages can result in replacement rates from 30% to 100% (and even re-replacements) annually. These jack failures also generate increased stress for cabin crew managing the extra passenger frustration from the resulting lack of an onboard IFE experience.

IFE providers are acutely aware of this system performance vulnerability so typically require headphone jacks to have operational lifetimes of more than 30,000 connection-insertion cycles. "Contradiction exists, however, between this performance requirement for the jacks and the corresponding mechanical performance of most aircraft headphone pins, which are generally incapable of more than a few dozen insertions before failure and audio jacks are compromised as a consequence," says Roy Moody, general manager at Phitek Systems. "These failures occur because the majority of headset pins cannot withstand force applied at an angle to the audio socket, such as when passengers stand up still wearing the headphones or when neighbouring passengers become entangled in the headphone cords as they climb over seats to and from the aisles."

Moody believes the problem of pin breakage damaging audio jacks could be significantly reduced by headphone pins featuring consistently high shear strengths. He says for high-quality headphone manufacturers such consistency in pin strength can be achieved at a comparatively low cost compared with the production cost of the premium headphone (typically deployed in premium classes).

"Disposable or short-lifetime rotatable economy headphones unfortunately make up the bulk of most airlines' headphone budget and are required to be a very low-cost item," says Moody. "For manufacturers of economy headphones, ensuring and maintaining pin quality markedly drives up cost, the result being that the pins of many economy headphones have a very low shear strength and subsequently headphone plug pins break easily within the aircraft jack."

Phitek Systems' SmartMagJack is designed to solve the issue of audio jack reliability in commercial aircraft cabins without increasing operational costs. The company says the product enables the complete elimination of headphone pin breakage and corresponding jack damage.

The SmartMagJack is a replacement seat jack that is reverse-compatible with standard headphone plugs integrated with a quick-release magnetic seat jack that fits into existing aircraft seat cut-outs to minimise change-out costs. When used with passenger headphones equipped with the SmartMagPlug, the combination automatically releases headphones when potentially damaging forces are exerted from any direction, avoiding failure of both jack or headphone plug pins. Crucially, the magnetic plug is a very simple design that Phitek Systems says costs the same as traditional headphone plugs and can be bought through an airlines' existing supply chain.

Developed in-house and patented by Phitek Systems, the SmartMagJack and SmartMagPlug are standalone units that can provide airlines with a total jack-and-pin solution in a clean, simple design format that's fully functional in execution and operationally rewarding in full-cabin deployment.

A new audio jack designed to cut maintenance costs and prevent in-service failures

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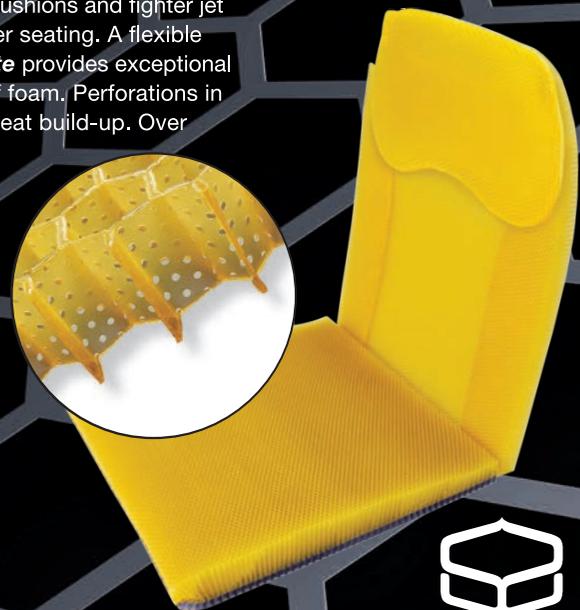
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Sacs Aerospace offers a huge range of locking and connecting products for the aerospace sector

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The Rottweil, Germany-based company Sacs was established in 2002 as a specialist in the production of fasteners and connecting systems, but is equally renowned for the development and manufacturing of aircraft interiors. In 2006, the merger of Sacs and Boysen created the Sacs Aerospace Group, with an emphasis on the development, production and sale of locking and connecting systems, as well as special solutions for the aviation industry. Further expansion continued in 2009 when the group acquired 100% of Rolf Boysen Beratungs.

The group's product range for business jets includes all types of table mechanisms, partition door mechanisms, damped hinges, armrests, flight book holders and all metallic parts within the aircraft. A variety of latches (pin, hook, trigger, double-button and emergency exit door), tie rods and struts are also offered, as well as standard parts such as inserts, studs, bolts, washers, nuts and screws. System offerings include the Ram air system for the A318-A321 aircraft, flanges fuel system for the A380 and Boeing 787 and assemblies for the ARJ21. Boysen was founded in 1967. Its main business is the

distribution of aerospace fasteners, with one of the world's largest stocks – more than 12,000 different parts.

The company's headquarters, sales office and warehouse is located in Munich, Germany, although it has additional sales offices in Hamburg as well as in France.

Sacs Aerospace Group says its global network of representatives ensures that it can respond quickly and that orders are processed on time.

Boysen's product range at Munich incorporates (but is not limited to) metric and unified fasteners and electrical components, including screws, nuts, washers, rivets, inserts, hi-loks, latches, bolts, straps, bushings, collars, wires, springs, fitting, hinges, swivels, hinge bearings, sleeves, terminals, connectors, shims, balls, bearings, quick-release pins, ground straps, seals, rings, clamps, cables, split pins, pins, sockets, binders, cylinders and tools.

As well as being a regular exhibitor at the Aircraft Interiors Expo in Hamburg, in 2012 the Sacs Aerospace Group will also exhibit a selection of its products at Farnborough International Airshow (to be held on 9-15 July 2012 in the UK).

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Why in-seat power outlets are increasingly becoming an expected service for travellers

powerplay

The market for onboard aircraft power has changed, with airlines and IFE suppliers increasingly cognizant of the needs of existing and future passengers. Alongside this, a new trend has emerged – full cabin installation of in-seat power as well as the demand for USB charging in concert with 110VAC power on all aircraft types and in every seat.

“We’ve seen a significant increase in demand for our Empower in-seat power system as well as requirements for USB charging capability,” reveals Dennis Markert, director of business development at Astronics, one of the leading companies in intelligently managed electrical power generation, distribution and in-seat power systems for aircraft. “Some of this demand is due to new data services installations, but a significant proportion is due to airlines appreciating that in-seat power is an expected feature and provides passengers with an easy way to entertain themselves, remain productive and pass the time while travelling.”

Demand for PED power and USB charging is increasing as passengers carry multiple electronic devices such as laptops, eReaders, tablets and mobile phones on board. Astronics believes offering such a feature is importantly also a brand discriminator for airlines – indeed, the number of airlines without power outlets available for their passengers’ use is diminishing rapidly.

To keep up with industry and technological advances, Astronics conducts extensive battery life testing on the most popular and newly released

laptop models and electronics devices as a matter of course. What is clear from this research is that any leaps in battery technology can be mitigated by higher processing demand as well as other power-hungry embedded features. Markert says the studies reveal that the degradation of battery life of these devices is significant within the first year of use. “With the average laptop battery lasting much less than advertised, passengers actually only experience a 1.2-hour operating period on average,” he adds. “This assumes they boarded the aircraft with a fully charged battery – which is not always the case.”

Astronics believes passengers are increasingly frustrated at huddling around one or two available power outlets in boarding areas as they struggle to charge their devices prior to boarding; and are becoming savvy as to which airlines provide in-seat power. “Some airports have even changed their power outlets to non-standard to reduce use by passengers in an effort to save on the facility’s overall operating cost,” says Markert.

In-seat power continues to play an ever-increasing role in passenger satisfaction. “Passengers are now beginning to select their airline carrier based on whether in-seat-power is available or not,” Markert concludes. “In-seat power increases the take-up rate of connectivity systems, as well as providing passengers with the ability to generate their own entertainment experience or work via their own personalised digital environment.”

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Reader Enquiry No. 512



earcandy

Designed to combine comfort, quality and style, Long Prosper Enterprise's latest product, the LPE-P3NC, is a fully equipped active noise-cancellation headphone model for first- and business-class cabins. It boasts customised around-ear earpads to enhance passenger comfort, as well as high-fidelity sound quality to suit the premium cabin.

The active noise cancellation yields a 20dB reduction in noise, which, according to the company, blocks out more than 85% of engine noise. The full coverage of the earcups also contributes to noise reduction. Long Prosper Enterprise says other benefits include a battery life of more than 40 hours and high durability – both crucial for the long-haul market.

The headphones can be customised to reflect the image of each airline, by redesigning the earcups. The company believes its approach – modifying only the earcups and not the other components – minimises lead times and eliminates additional tooling and design costs.

Everything about the product is designed with the industry's specific requirements in mind. For example, its metallic finishing is achieved using a special painting technique that Long Prosper

Enterprise says is environmentally friendly. Meanwhile, in terms of availability, LPE-P3NC is a fully certified CE and FCC consumer-grade product and can be shipped within three weeks.

With more than 30 years of experience as a major supplier of headphones to airlines, Long Prosper Enterprise is familiar with IFE systems and has expertise in manufacturing compatible headphones. It also plays close attention to the fast-moving consumer electronics industry. By working closely with several major chip manufacturers, the company aims to optimise its noise-cancellation technology without compromising sound quality.

Long Prosper Enterprise is also collaborating with Austriamicrosystems on its next-generation noise-cancellation headphone model. By combining feedback and feed-forward noise-cancellation technology, it hopes the forthcoming model will create another trend in the airline industry.

The company also offers a comprehensive range of services for its airline clients, including warehouse logistics, managing inventory levels based on customers' needs, and the refurbishment of headphones.

New headphones offering active noise reduction, comfort and efficient customisation

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Reader Enquiry no. 513

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NCH headphone Patent Number
China: 2004200828790
UK: GB2417385

LPE-P3NC



LPE-P3NC
Noise Cancellation
Headphone

LPE-P2NC



LPE-P2NC
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Tapis has been supplying fabrics for corporate, VIP and commercial aircraft for more than 35 years and in January 2012, its operations were certified to the AS 9100: Revision C Quality System Standard. The year also sees the introduction of Ultraleather Bolero (pictured above left), a faux leather designed to offer outstanding sound absorption and breathability. The material boasts improved low and mid-frequency absorption, which Tapis says will reduce cabin noise significantly, resulting in more privacy for passengers and crew, and less mental and physical fatigue.

According to the manufacturer, Ultraleather Bolero passes the most stringent commercial aviation standards (such as FAA flammability requirements) without sacrificing luxury, durability or maintainability. Ultraleather products are made from polyurethane polycarbonate, which contains no volatile plasticisers and stabilisers. They can be used for applications such as outer and inner back shells, footwells, literature pockets, console shelves, centre dividers, seating, headliners, bulkheads, sidewalls, headrests and trim.

In addition to introducing Ultraleather Bolero, Tapis continues to work closely with airlines on custom programmes – for example, matching particular looks and enabling the creation of original cabin designs. Over the past eight years, Tapis has developed custom grains and finishes in its Ultraleather fabric for leading airlines around the world, including Singapore Airlines, Etihad Airways, Swiss Air, Kingfisher Airlines and JAL. Most recently, it has worked with Emirates, Thai Airways, Air New Zealand (Business Premier

pictured above), Lufthansa, Malaysia Airlines and China Southern. On each occasion, Tapis created a customised product to meet the designer and airline's precise needs for texture and colour.

One of the most durable Ultraleather speciality fabrics is Promessa, which has a luxurious two-toned texture, yet is designed to stand up to the most demanding environments. Promessa is particularly suitable for high-wear seating applications, such as jump seats, economy-class seats and on regional jets.

Many fabrics in the Tapis product line complement each other. For example, the Ultrasuede and TapiSuede flannels are also suitable for seating applications, and have been used in combination with Ultraleather as seat inserts. Ultrasuede is made of 100% recycled ultra-microfibres, in a process optimised to be as environmentally sound – and to use as little energy – as possible. LOT Polish Airlines and El Al Airlines are just two of the airlines currently using Ultrasuede for seating applications.

TapiSuede comprises 88% high-purity recycled polyester and 12% polyurethane. The polyester fibres are made from a mixture of post-industrial and post-consumer recycled polyester. This fabric is also designed to be durable, luxurious and environmentally friendly.

TapiSuede BHC-SS maintains the same characteristics as the standard TapiSuede, but is extremely lightweight and meets the most stringent flame-retardant requirements for commercial aircraft, according to the company. This material also has the advantage of being suitable for use on panels with various adhesives.

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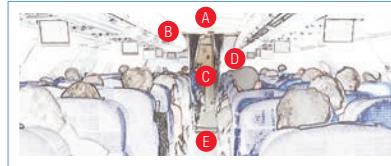
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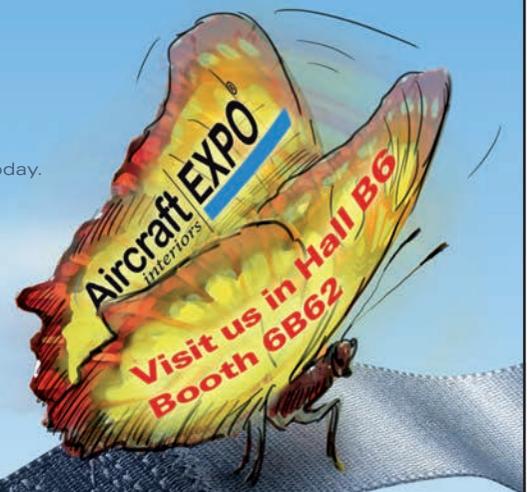
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More and more airlines are offering, or planning to offer, onboard WiFi. ARINC's solution – its Cabin Connect suite of onboard WiFi products over Inmarsat SwiftBroadband – is designed to be both flexible and cost-effective.

"Developments in SwiftBroadband technology mean we are able to offer a strong alternative value proposition for those airlines looking to profit from the increased efficiencies of a fully connected aircraft," says Lee Costin, director of ARINC's satellite solutions and cabin services. He points out that ARINC's solutions – Cabin Connect, Live CCA (credit card authorisation), AirCrew Connect and Enhanced Seatback Services – can be tailored to meet an airline's specific requirements.

Cabin Connect enables passengers to access the internet from personal electronic devices. Airlines can choose whether or not to charge for this service. If they decide to use it to generate revenue, they can offer a range of charging options – per hour, flight, month or even year. Passengers can select a prepaid option, either when they buy their ticket or on the aircraft via credit card, cash or frequent flyer miles.

Enhanced Seatback Services delivers IFEC products such as live news and seatback messaging through the embedded IFE system. "Seatback messaging can also be enhanced to offer increased email functionality," says Costin.

ARINC's Live Text News augments the existing text news product. The live media content updates continually during the flight, delivering news, sports and entertainment roundups directly to passengers through the seatback IFE.

Then there is ARINC's Live CCA product, which is designed to minimise the financial risks of onboard credit card transactions by providing

real-time authorisation and approval, giving carriers the confidence to sell higher-priced items. "With fraudulent transactions ranging between 4% and 8% of total onboard credit card transactions, many airlines recognise Live CCA as a major benefit to installing satcom on their aircraft," says Costin. "Airlines can also offer items in a retail portal knowing that the revenue gained from these transactions is guaranteed."

AirCrew Connect, the fourth component, is designed to enable airlines to provide a higher level of customer service, track information during the flight and cut operational costs. Via a direct link back to the airline's headquarters or ground operations department, cabin crew can, for example, book passenger flight connections and transfers, track lost baggage, find a hotel room, provide destination information or respond to customer service issues while airborne.

It is also possible to carry out real-time fault-finding. This means that any problems with IFE or onboard systems can either be remedied in flight or engineers can be booked to await the aircraft's arrival, with the aim of reducing the amount of downtime the airframe requires.

"Aircraft without WiFi will increasingly be at a disadvantage; passengers expect it and fully connected airlines function more efficiently," says Costin. "We are working with a large number of short- and long-haul carriers to find the best solution to their onboard connectivity requirements. We are confident that the flexibility offered by ARINC's WiFi over SwiftBroadband will enable individual airlines to create the differentiation and increased value that is so important. Factor in ARINC's customer service and 24/7 technical support and it's an offer that is hard to beat."

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combinedforce

The scent of coffee will waft through hall 6B of the Hamburg Messe exhibition centre again at this year's Aircraft Interiors Expo (27-29 March 2012), emanating from the 1,100m² Hanse Aerospace Pavilion. The 'centre of cabin competence' has enjoyed a central position at the trade fair for more than a decade. Here, some 60 companies present their cabin expertise, covering everything from construction to production, qualification and certification.

"Top quality across the supply chain is essential in the aviation industry," says Max Evers (pictured top right), managing director of Hanse-Aerospace Wirtschaftsdienst, the commercial department of one of Germany's largest supplier associations for the aerospace and aviation industry. "The same also applies to our services as the organiser of international projects, trade fair stands, congresses and events," he adds. As a qualified engineer who gained extensive engineering experience working with Airbus, Evers understands the high level of complexity and quality requirements across the aviation industry supply chain. "Essentially, the quality of the end product is dependent on the exact fit and interaction of all the systems and components," he says.

The fragrant coffee that Evers hopes will draw visitors to the stand is not any old coffee; it is actually a product developed by the association for use in aircraft. "It was during the planning of the meeting lounge for 2011 that the idea for Aromaspace coffee emerged – after all, a top quality cup of coffee should accompany any meeting!" says Evers. "Aromaspace uses the aroma-saving method of slow roasting. With this

method, we ensure a flavour that passengers can enjoy and rightfully expect. The mild aroma of these finest coffees from regions such as Honduras, Ethiopia, Columbia, Costa Rica and India will spread gently throughout the cabin. We invite airlines and VIP customers to sample the quality for themselves at the Hanse Pavilion."

The attention paid to the coffee is also representative of Evers' approach in organising the Pavilion. "It is important to keep the bigger picture in sight, without overlooking the details," he says. "Hanse Aerospace represents good service for association members – from general stand planning to individual stand equipment and exhibition catering. This ensures that exhibitors can concentrate fully on the trade fair business."

As a network of companies, communication and cooperation are vital. Hanse Aerospace uses a tool it has created specifically, Superior CooperAtioN (SCAN), to provide a platform for networking the expertise of its members – from small and medium-sized companies to universities. "The vision behind SCAN is to create a database of knowledge and competence which identifies working groups in order to complete bigger jobs together," says Evers.

He reports that SCAN has assembled enough members to justify moving up a level – the plan being to use it to manage calls for tender and enquiries. It is all part of building more bridges. "For us, this means bringing people and companies together," says Evers. "They belong together and expand possibilities for everyone. We bring together companies by offering a tailor-made framework for their networking activities at our trade fairs, events and sports events."

Hanse Aerospace explains the benefits of joining an association and reveals what it has in store for Aircraft Interiors Expo 2012

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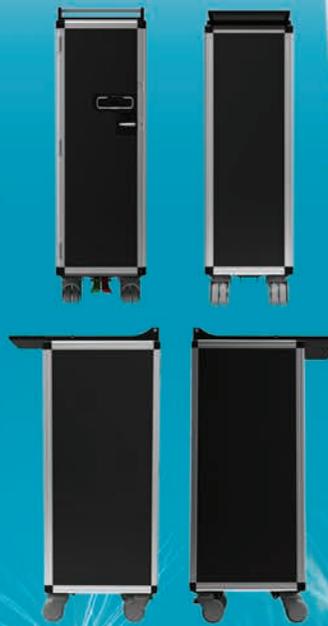
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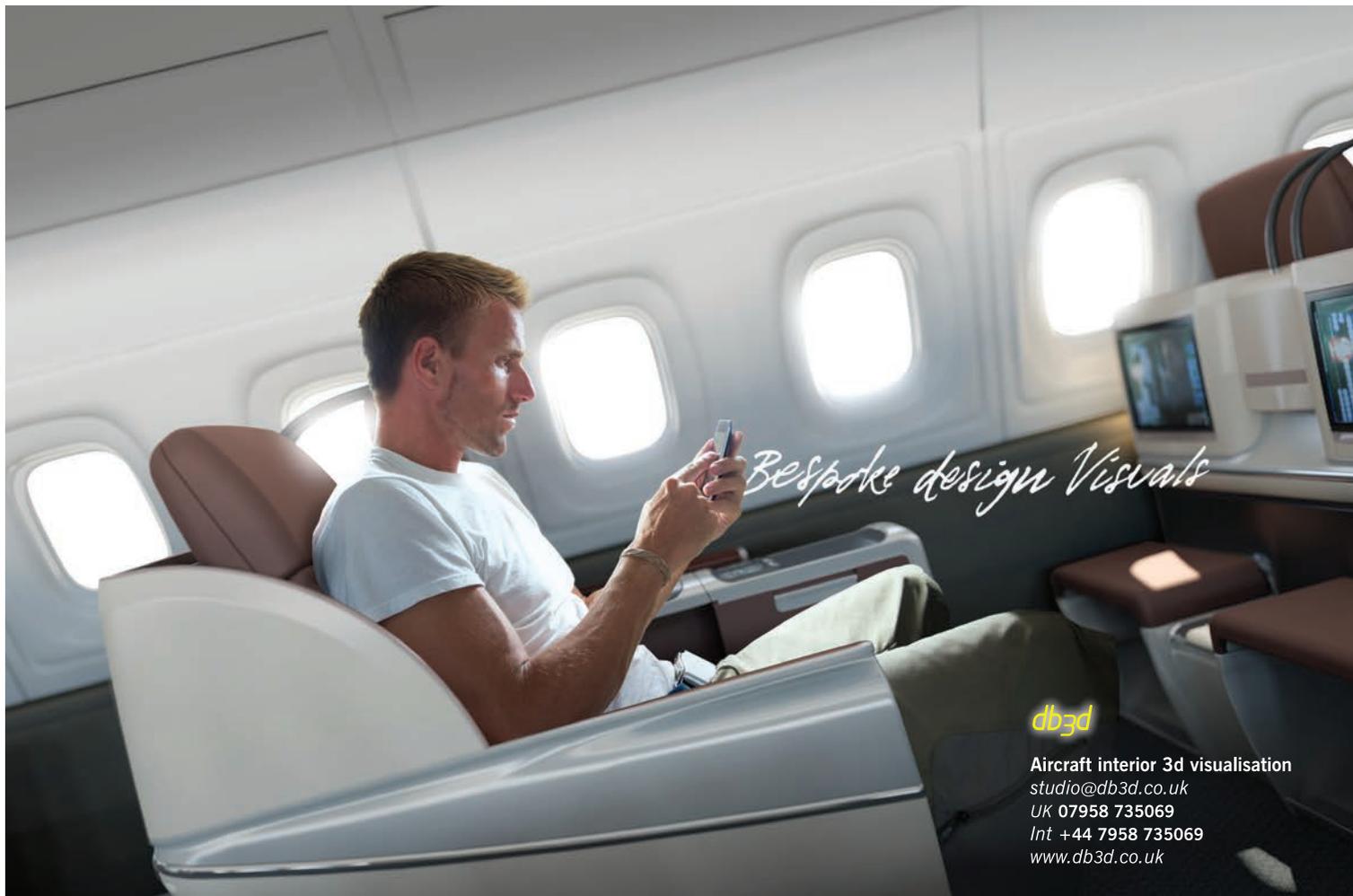
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woollywonders

For more than 60 years, Replin Fabrics has combined traditional weaving techniques with cutting-edge technology, for example using Zurpro to fireproof its fabrics. Now it has developed a treatment that it says makes its fabrics water resistant and stain repellent.

Replin Fabrics' Protection System (RFPS) is designed to ensure stains cannot penetrate the fabric: the company says that after undergoing a spot-clean and dry-clean, covers return looking like new. For curtains, the RFPS can also include insect repellent.

Replin uses non-pill technical yarns for its seat fabrics, the aim being to ensure longevity. In fact, the company promises a minimum life of four years. Its new Eclipse range of flat woven fabrics boasts OSU results from the high 30s to below 50, and can be treated with RFPS. The fabrics are particularly suitable for seat surrounds, sofas and bar areas in business and first class.

Replin also offers a range of lighter weight seat fabrics, which it claims can save US\$36,000 in fuel for a typical 200-seat aircraft, compared with leather.

With its own designers in-house, Replin can design and produce any pattern, including samples. Its sister company, Robert Noble, supplies several top fashion houses and Replin shares that eye for design. All the company's fabrics undergo a rigorous battery of tests, inspections and checks for compliance and quality. Replin's philosophy is to meet or exceed every requirement or expectation.

Replin will highlight its new looms, RFPS technology and leadership at Aircraft Interiors Expo 2012, to be held in Hamburg, Germany, on 27-29 March 2012.

liftoff

Italian seat supplier Geven recently made its entry into Airbus' catalogue of vendors for long-range aircraft with the new Piuma Alta Quota economy-class seat. An enhanced variant of the single-aisle economy-class Piuma, Piuma Alta Quota has already secured a launch customer for a line-fit A330 programme. The first delivery is scheduled for the third quarter of 2012. Geven expects the model to appeal particularly to the growing number of long-haul low-cost carriers, because it is designed to offer long-haul comfort at short-haul pitch.

Geven's engineering and R&D teams are working hard to finalise the design and development of all complementary long-range seating products, and are actively working with Airbus' team of experts on next-generation seating. Geven promises that new "sensationally futuristic" concepts will be presented to the market in the near future.

"Always thinking ahead, Geven is moving swiftly towards occupying a forever more prominent role in the world of aircraft passenger seating and cabin equipment, becoming known for reliable delivery, high-quality products and elegant Italian design and workmanship," says Rodolfo Baldascino, marketing and sales manager at Geven.

The manufacturer will unveil a new business-class seat for narrow-body applications at Aircraft Interiors Expo 2012, to be held in Hamburg, Germany, on 27-29 March 2012.



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windowshopping

MSA Aircraft Products designs and manufactures custom aircraft window shade systems, and is the originator of the patented Accordia pleated shade system. Many corporate, VIP and head-of-state aircraft operators look to MSA for window shades, and the company is also gaining ground in the commercial airline market, with installations in first-class cabins.

MSA places huge importance on product quality and reliability, as well as the ability to respond to practically any customer requirement. The Accordia window shade system is designed to last, made using a material that the company says saves weight, yet is structurally durable and functional.

In the interest of offering the latest innovations, MSA has introduced a number of new products. These include the Dual, Electrochromic/SPD and Economical models. While the Economical shade is designed for cost-constrained applications in smaller aircraft categories, the Dual and Electrochromic/SPD go a step further, adding enhanced light control in the aircraft cabin.

MSA has also entered a strategic partnership with a supplier of electrochromic/SPD lenses to evolve the development of these exciting technologies into larger-scale applications.



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trackrecord

Norduyn continues to expand its global reach as a designer and manufacturer of composite products for commercial aviation, adding more and more airline customers for its ultra-light all-composite trolley, introduced with partner LSG Sky Chefs.

"Norduyn trolleys have definitely taken off," says Patrick Phillips, director of business development at Norduyn. "Lower energy consumption is a key metric in the evaluation of our product. Once we've demonstrated that our trolleys are easier to maintain and repair than traditional aluminium trolleys, our total value of ownership emerges as superior to other market offerings."

Another key selling point is that the trolleys are factory-fitted with radio frequency identification. "We believe that airlines or trolley lessors manage far too many trolleys in their fleets. As equipment owners are challenged with shrinking revenues, efficient tracking of mobile assets becomes essential to reduce the loss of equipment and ensure more extensive usage of existing equipment," says Phillips. "The move towards better asset management is also in line with other environmental benefits enabled by our trolleys, such as low fuel consumption, a reduction of CO₂ emissions, and an overall better built and longer-lasting trolley that is recyclable at the end of its lifecycle."

The product was recognised in 2010 with the prestigious Crystal Cabin Award in the Environment, Health and Safety category. Phillips promises that innovative products for other areas of the cabin, making use of Norduyn's expertise with advanced composites, will be introduced to market in the near future.



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grandbrands

Aviation Business Consultants International (ABC International), which provides cabin interior engineering and certification services, has developed a product for operators seeking to display their corporate logo throughout the cabin.

The ABC Decorative Crest can replicate any type of company logo, and can be installed within the cabin on partitions, bulkheads, galleys and lavatories. Various styles, shapes and finishes can be proposed by ABC designers. The idea is to strengthen the airline's image and enhance brand awareness across the cabin, which is the main interface with passengers.

The product is accompanied by a product technical specification, EASA Form 1 and installation instructions. ABC says it can be installed on board by means of an EASA-approved engineering order issued by ABC as an EASA A-DOA company and easily implemented by a Part 145 maintenance station.

"The crests are manufactured in full accordance with the latest aviation industry standards and are in compliance with all the aviation authority regulations in terms of flammability (CS/FAR 25.853)," says Aberto D'Ambrosio, CEO at ABC. "The combination of lightweight materials ensures high durability and lower weight in comparison with traditional metallic milled decorative crests."

Thickness, dimensions and the final shape can be widely customised. The exposed surface is metal coated and then either polished or oxidised. The airline can choose from a wide range of metal finishes (aluminium, titanium, zinc, bronze, copper, and so on) or colours. The company offers a free 3D design study service.



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oneforall

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

In seating, MacCarthy offers design and refurbishment services, with a particular focus on first- and business-class seats.

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

Working with DuPont, MacCarthy has produced the Beresford range of lavatory worktops using Corian coupled with steel basins. The company says these ready-to-fly products are lightweight and long lasting, and with removable sink basins, they have lower maintenance lifecycle costs.

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

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airsupport

The Pneumatic Comfort System (PCS) replaces seat foam with air-filled cushions. Its Swiss inventor, Lantal Textiles, says the technology is rapidly gaining acceptance in the industry, because it offers not only weight savings and maintenance-free design, but also improved comfort.

Now, Deutsche Lufthansa has selected the PCS for its next-generation long-haul business-class seats. Lantal will supply Lufthansa with the latest iteration of the PCS, which has been jointly refined and customised for a new level of passenger comfort. With several thousand pax to be installed – Lufthansa’s long-haul fleet consists of more than 100 aircraft – this is the biggest contract for the PCS so far. The new business-class seat structures will be supplied by B/E Aerospace. The first jets outfitted with the PCS seats are scheduled for initial delivery in the first half of 2012.

“Lantal is honoured to have been selected to provide the PCS to one of the world’s leading airlines,” says Urs Rickenbacher, CEO of Lantal. “For many decades, Lufthansa has been and continues to be a highly valued customer of Lantal’s traditional textile products. The selection of our innovative PCS reinforces this long-term partnership by bringing it to a more complete service level. To be chosen to outfit Lufthansa’s new business-class seats confirms Lantal’s belief in this new technology, which has earned a reputation for reliability over the past few years.”

After several years of development and extensive reliability testing, Lantal exhibited a working prototype of the air cushion at Aircraft Interiors Expo 2004. SWISS adopted PCS as the commercial launch carrier in 2009, and its business- and first-class passengers have enjoyed the technology on the carrier’s long-haul A330-300 and A340 fleet for almost three years. The product will be on display at Aircraft Interiors Expo 2012, to be held in Hamburg, Germany, on 27-29 March 2012.

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climatechange

At Aircraft Interiors Expo 2012 (to be held in Hamburg, Germany, on 27-29 March 2012), CTT Systems will exhibit its Zonal Drying and Cair systems, both of which are in worldwide service with airlines and corporate operators alike.

The Zonal Drying System (pictured, left) minimises water accumulation in the ‘crown’ area of the passenger cabin, which is caused by a combination of condensation formed as warm cabin air rises to meet the cold outer fuselage skin, and the natural emission by each passenger and crew member of 100g of moisture an hour.

CTT Systems says this excess water can lead to increased weight (as the condensation water accumulates in the sound-suppression blankets); the formation of fungi and bacteria in the overhead sound-suppression blankets (which never completely dries out); corrosion in the overhead primary aircraft structure; and moisture-induced electrical faults in the crown area’s wiring looms.

Meanwhile, the Cair System restores humidity levels in the passenger cabin, flight deck and crew rest area to 20%. According to the company, humidity can plunge as low as 3-5% on long-haul flights, leading to a reduced resistance to sickness and disease, sleep loss, dry skin, headaches and joint pains.

Torbjörn Johansson, president of the company, and Peter Landquist, vice president of sales and marketing, will be on hand at the show to explain how the systems work.



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keepingstock

EAM RFID, a division of EAM Worldwide, was developed based on the needs of the parent company's core clients. While EAM offers safety products – life jackets, rafts and survival kits – the company identified a need for a centralised system to track and maintain those items. EAM RFID offers customised in-cabin tracking and inventory management without manual counts or traditional barcode scanners. Clients can store information from any RFID-enabled item in a centralised database.

In addition to its patented RFID-enabled life jackets, EAM has recently added Tamper Tag to its family of Tag the Craft in-cabin tracking products. This patent-pending hardware component is designed to detect the opening or disabling of underseat life jacket containers. RFID mobile scanners can read the number of every Tamper Tag within seconds. The user is immediately alerted if any containers are damaged, so the item can be replaced. The company says the application enables airlines to ensure TSA compliance for all life jackets with 100% accuracy.

EAM RFID systems can also be used as Auto-ID tags for inventory warehouse management. Handheld scanners read multiple shipments simultaneously as they enter the receiving dock. Inventory systems are updated in real time, with the aim of increasing reliability and eliminating counting errors.

"As more manufacturers tag their products with RFID, we are offering a synchronised RFID in-cabin and inventory tracking system to ensure our clients stay ahead of the curve," says Eloy Leal, director of operations and engineering at EAM.

The company will provide live demonstrations of its RFID technology solutions at Aircraft Interiors Expo 2012, to be held in Hamburg, Germany, on 27-29 March 2012.



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Want to know more about key industry individuals, but haven't got the time to search for their Facebook profile or LinkedIn page? This issue's 'FaceSpacer' is **Fernanda Toro**, travel experience director at LAN Airlines, which has expanded at a rapid rate in recent years and remains on track to merge with Brazilian carrier TAM, by the end of the first quarter 2012.

01 HOW OLD WERE YOU WHEN YOU FIRST REALIZED YOU WANTED TO GET INTO AVIATION?

As a child, I had the privilege to travel quite a bit from my home in Chile around the world – that was when my fascination with airlines and the people that work for them began. When I graduated from college, I chose to continue to travel to broaden my horizons and went abroad to get my MBA. I then lived in Singapore and had the opportunity to travel within Asia extensively, where I was very impressed by all the airlines – I particularly remember the kimonos the flight attendants wore on one particular carrier.

02 WHAT WAS YOUR FIRST JOB? My first job was in the beer industry! I worked as a sales analyst – it was really fun and I got to travel a lot. My first job in aviation was at LAN, nine years ago. I started out in the operations department, as the manager of flight attendants. At the same time, LAN started to expand into Peru and Argentina, and everything grew really fast. In that position, I had to make sure all the flight attendants were happy and well-rested, as well as secure all the clearances needed to make each LAN affiliate work well with our standards in each new market we entered. It was a very demanding but rewarding job – moments such as the first take-off of a new affiliate airline of LAN made it all worthwhile. Those are good memories that will never go away.

03 AND YOUR CURRENT ROLE? My current position is travel experience director, where I'm responsible for global service strategy. This includes the experience that the customer has from the purchase of their ticket to the onboard experience across all our products, whether in economy, premium economy or business; and across our domestic, regional, short-haul and long-haul fleets. As such, my team is in charge of the cabin interiors – from the type of IFE LAN has, through to the carpets we use, the colours – basically everything.

04 DESCRIBE LAN'S BRAND VALUES? LAN is all about the warmth and charm of South America, as well as comfort and confidence. Those values are reflected through our dedication to selecting the best elements for our passengers. So when we selected a new seat for our Premium Business cabin [Sicma's Majesty unit at 73in pitch] our goal was to enhance the passenger's rest experience, so we made sure that it wasn't only a good seat, but also an excellent bed. For long-

haul economy, we looked for the best AVOD IFE system, while short-haul economy is about simplicity and accessibility. Meanwhile our Premium Business wine list on long-haul and regional flights within South America is hand selected by the only master sommelier in South America from Chile. Free South American wines are also served on long-haul and regional flights in premium economy and economy.

05 WHAT IMPACT HAS NEW TECHNOLOGY HAD ON THE CABIN? Technology has a strong impact on the flight experience and we are always looking at new technologies and trends in the market. We are proud of our IFE system [Thales i4000], which offers more than 900 items to select from, including 100 movies, television programmes and music albums, which are constantly refreshed, as well as multiplayer games, etc. As for connectivity, we will run wireless IFE trials in 2012, and we are always looking at opportunities and how it is being deployed by other airlines. However, we feel that in our home region of South America, connectivity hasn't reached the same level of impact as it has in other markets. But we are very aware of the importance this service could play in the future inflight experience of our passengers.

06 BUT DON'T TODAY'S BUSINESS TRAVELLERS EXPECT FLAT BEDS AND CONNECTIVITY AS STANDARD? Business travellers hold high hopes when it comes to resting, so they expect the best full-flat bed. At LAN we understood this from the beginning – hence we were the first in South America to offer flat beds for our Premium Business customers. In regard to connectivity, I believe soon in the future it will reach a point where all airlines will have to offer connectivity – which is why we are looking at what's out there.

07 WHAT ARE SOME OF THE MORE EXOTIC DESTINATIONS LAN FLIES TO? LAN offers access to an unparalleled network of tourism destinations in South America. I strongly believe that places such as Easter Island, the Galapagos Islands, Machu Picchu and San Pedro de Atacama are magic places – they just generate a special energy in you. They are unique destinations that offer experiences that can be found only in South America. I have a very special memory when I went to Easter Island and I saw a couple of French passengers catching a glimpse of our business class – after they got off the plane, I heard them say "wow" – and that is what I work for. Those are the moments that give meaning to my work. That is what we want to evoke in our passengers: happiness and emotion.

08 WHERE DO YOU LIVE AND WHAT'S IT LIKE? Santiago has in recent years added modern museums, smartly designed hotels and sophisticated restaurants. The city has become decidedly more vibrant and cosmopolitan. The mountains are 40 minutes away and the beach is an hour and a half drive. In winter you can look up, see if it's a good day for skiing and just go! There are also some fantastic vineyards – basically there are very different experiences to be had close to the city, every day.

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